| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1 | B | The shaft coupling for the pump illustrated is prevented from rotating on the shaft by a _____. | lacing wire | key | set screw | lock washer | GS-0143 |
| 11 | 2 | D | Tubing is sized by _____. | allowed working pressure | cross-section area | nominal inside diameter | nominal outside diameter | |
| 11 | 3 | B | Which line on the graph shown in the illustration indicates latent heat of fusion? | Line 1 | Line 2 | Line 3 | Line 4 | SG-0001 |
| 11 | 4 | B | Short cycling of a refrigeration compressor refers to _____. | frequently grounding out | frequently starting and stopping | running too fast | running too slow | |
| 11 | 5 | D | The emergency bilge suction valve is typically used _____. | to inject cleaning additives when the bilges are extremely dirty | when the main condenser becomes fouled, in order to provide additional cooling water circulation | to connect the rose box to the independent bilge suction | if the bilges become flooded and they can not be emptied by any other means | |
| 11 | 6 | B | The by-products of oxidation, as a result of water contamination of hydraulic oil, are generally _____. | removed by cellulose type filters | gums, varnishes, and acids | always neutralized by oil additives | harmless and have no effect on system components | |
| 11 | 7 | D | A record of the types and strengths of steels used on a MODU must be included in the _____. | general plans | builder's documentation | Certificate of Inspection | construction portfolio | |
| 11 | 8 | B | Which of the fittings listed should be used for the installation of new water pump piping to permit removal of the pump for servicing? | Coupling | Union | Quick disconnect | Nipple | |
| 11 | 9 | A | A continuous watertight bulkhead on a MODU may also be a/an _____. | structural bulkhead | exterior bulkhead | centerline bulkhead | joiner bulkhead | |
| 11 | 10 | B | Which of the following describes the purpose of a striker or doubler plate? | Provides a surface for the application of force, or the installation of machinery. | Provides landing surface for the sounding bob of a tank sounding tape. | Absorbs machinery vibration. | Prevents valve stem over travel. | |
| 11 | 11 | D | A high reading at a salinity cell located in the loop seal between two stages of a flash type evaporator would indicate _____. | chill shocking is necessary to remove scale | leakage at the second-stage condenser | faulty operation of the brine overboard pump | carryover in the first-stage | |
| 11 | 12 | C | Regarding MODU construction, bulkheads in the quarters are generally _____. | structural | watertight | non-structural | continuous | |
| 11 | 13 | D | In machine shop practice, a center gage is used for checking the angle of _____. | drill points | screw threads | screw thread pitch | 60° thread cutting tools | |
| 11 | 15 | C | A portion of the cargo of an LNG carrier boils off during each voyage. How is the cargo boil off normally handled? | Compressed, condensed, and return to the cargo tanks. | Vented to the atmosphere. | Burned in the boilers. | Mixed with nitrogen and recirculated through the primary barrier. | |
| 11 | 16 | D | Air leaking into a flash type distilling plant could occur through _____. | gasketed joints | valve stems | gage glass packing | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 17 | B | The construction portfolio may be included as part of the MODU _____. | general plans | operating manual | builders documentation | Coast Guard file | |
| 11 | 18 | C | Which of the following statements represents the proper relative direction of flow through a globe valve? | Direction of flow through the valve is unimportant. | Direction of flow through the valve depends upon the type of seat design used in the valve. | Direction of flow should be from below the seat. | Direction of flow should be from above the seat. | |
| 11 | 19 | B | Vertical partitions providing strength and compartmentation on a MODU are called _____. | decks | bulkheads | joiner work | walls | |
| 11 | 20 | A | The shaded portion of the diagram shown in the illustration represents a _____. | discharge manifold | suction line | bilge system | vacuum branch line | GS-0125 |
| 11 | 21 | B | The illustrated drawing shows a correct front "F" and top "T" view of an object. Of the views labeled "1","2","3", and "4", the one that correctly represents the right side view for a third angle projection is _____. | 1 | 2 | 3 | 4 | GS-0132 |
| 11 | 22 | D | Which of the listed types steam traps operates on the principle that hot water flashes to steam when its vapor pressure is rapidly reduced? | Ball float | Thermostatic | Bimetallic | Impulse | |
| 11 | 23 | B | The lathe tool shown as "Q" in the illustration is a _____. | cutting-off tool | left hand side facing tool | right hand turning tool | universal turning tool | GS-0090 |
| 11 | 24 | C | The heat gained per pound of refrigerant in the evaporator is known as the _____. | latent heat of vaporization | sensible heat | refrigerating effect | specific heat of vaporization | |
| 11 | 25 | C | A squealing sound occurring from within an operating reciprocating air compressor is an indication of _____. | compressor overload | motor overload | tight compressor bearings | badly leaking unloaders | |
| 11 | 26 | B | A mooring winch should be equipped with mechanical brakes capable of holding _____. | half the breaking strength of the mooring line | the full breaking strength of the mooring line | the maximum expected tension of the mooring line | 50% over the working tension of the mooring line | |
| 11 | 27 | C | The requirements for special welding procedures to be used on a MODU must be contained in the _____. | vessel plans | Coast Guard file | construction portfolio | Certificate of Inspection | |
| 11 | 28 | A | The trap illustrated operates as a _____. | thermostatic bellows type steam trap | thermodynamic impulse type steam trap | thermostatic bi-metallic bellows type steam trap | thermodynamic float type steam trap type steam trap | GS-0005 |
| 11 | 29 | C | Bulkheads forming part of the tanks on a MODU are stiffened to withstand _____. | deck loads from above | dynamic forces while afloat | hydrostatic pressure | over pressurization | |
| 11 | 31 | D | Of the views labeled "1", "2", "3", and "4", select the one that correctly represents the right side view of the unnumbered object in the illustration. | 1 | 2 | 3 | 4 | GS-0003 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 32 | A | The operation of a thermostatic steam trap depends upon the _____. | thermal expansion of a fluid | position of a float | tendency of hot water to flash into steam | flow characteristics of a liquid as it passes through an orifice | |
| 11 | 34 | B | The process of removing moisture from air is known as _____. | humidification | dehumidification | vaporization | evaporation | |
| 11 | 35 | D | The relative position of the journal and bearing at operating speed is illustrated by figure _____. | A | B | C | D | GS-0121 |
| 11 | 37 | C | The reading on the micrometer scale shown in figure "B" in the illustration is _____. | 0.565 inch | 0.655 inch | 0.680 inch | 0.750 inch | GS-0081 |
| 11 | 38 | D | Which of the following describes the function of the air receiver in the compressed air system on a MODU? | Condenses moisture. | Provides overpressure protection. | Purifies the air. | Acts as an accumulator. | |
| 11 | 40 | B | A centrifugal bilge pump requires priming _____. | primarily to lubricate the shaft seals | due to the inability of this type of pump to lift water to cover the suction (eye) of the impeller | to initially unload the pump by having its head pressure equal to discharge pressure | in order to overcome the potential energy of water in the discharge line | |
| 11 | 41 | A | A suitable location for the installation of an impulse type steam trap would be in the _____. | horizontal run of drain line from the lowest point at the outlet of the heat exchanger | steam supply line to a feedwater heater | drain line from a high point in the main steam line expansion loop | vacuum drag line from the atmospheric drain tank to the main condenser | |
| 11 | 42 | A | Which of the listed conditions can lead to cavitations in a centrifugal pump? | Vapor pockets formed in the suction flow stream. | Rough casing volute surfaces. | Worn wearing rings. | Partial restriction in the discharge valve. | |
| 11 | 44 | D | Coast Guard Regulations (46 CFR) require refrigerated spaces that can be locked from the outside and cannot be opened from the inside to have an audible alarm to sound in _____. | the chief steward's berthing quarters | the galley | the wheelhouse | a manned location | |
| 11 | 45 | A | The method of framing shown in the illustration utilizes the type of construction termed _____. | transverse | web | Isherwood | longitudinal | GS-0086 |
| 11 | 46 | A | The hydraulic oil most likely to thin out when hot and thick when cold would have a viscosity index of _____. | 20 | 40 | 60 | 80 | |
| 11 | 47 | C | The decks of a MODU are supported by transverse members called _____. | trusses | deck longitudinals | deck beams | web frames | |
| 11 | 48 | B | Why is electrical power preferred over mechanical power for driving heavy machinery on drilling rigs? | More fuel efficient. | More flexible. | Lighter. | Less maintenance. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 49 | C | On a MODU, the keel is the primary strength member of the lower hull form and is laid in which direction? | Transverse | Diagonal | Longitudinal | Vertical | |
| 11 | 50 | B | How is water traveling along the shaft of a centrifugal pump prevented from entering the shaft bearing? | Shaft seal | Water flinger | Drain hole | Lantern ring | |
| 11 | 51 | A | Which drawing view or projection is shown in the illustration? | cross-sectional | orthographic | isometric | oblique | GS-0001 |
| 11 | 52 | C | Which of the following descriptions best identifies the operating principal of a flash-type evaporator? | Sea water is heated to boiling temperature while under a vacuum. | Sea water is passed over heated plates in a thin film. | Heated sea water is injected into a vacuum chamber. | Sea water is forced through a heated eductor. | |
| 11 | 54 | C | If air at 95° F dry bulb temperature and 50% relative humidity is conditioned to 75° F dry bulb temperature and 50% relative humidity, it is an example of _____. | cooling only | cooling and humidifying | cooling and dehumidifying | adiabatic cooling | |
| 11 | 56 | D | The volatility of any oil may be indicated by _____. | the flash point | the fire point | the autogenous ignition point | All of the above. | |
| 11 | 57 | A | A simplified construction plan may be included in the MODU construction portfolio provided it adequately defines the _____. | areas where special materials are used | hazardous areas | location of emergency repair equipment | type and strength of materials used | |
| 11 | 58 | C | What is a function of the wearing rings used in most centrifugal pumps? | Absorb erosion of high velocity discharge stream. | Seal pump shaft against entry of air. | Isolate the discharge side from the suction side. | Dampen the turbulent discharge flow. | |
| 11 | 59 | A | Between the side frames of a MODU, support for the deck beams is provided by _____. | stanchions | brackets | web frames | deck stringers | |
| 11 | 60 | B | A pneumercator tank gage utilizes _____. | a Bourdon tube indicator | a balance chamber | an electronic sensing line | all of the above | |
| 11 | 61 | D | A tank of a MODU, with a volume of 2,000 cubic feet, is pressed up with sea water weighing 64 pounds per cubic foot. What is the weight, in kips, of the liquid? | 54 kips | 67 kips | 78 kips | 128 kips | |
| 11 | 62 | C | For MODU's operating under the U.S. flag, the construction portfolio must contain _____. | detailed construction plans | chemical and physical properties of ABS approved steels | approved welding procedures and welding test procedures | loading conditions and limitations | |
| 11 | 63 | C | The lathe tool shown as figure "B" in the illustration is called a _____. | right hand roughing tool | cutting-off tool | round nose turning tool | left hand facing tool | GS-0009 |
| 11 | 64 | A | When liquid reaches the compressor of a refrigeration system through the suction line, the condition is called _____. | flooding back | superheating | overflowing | recycling | |
| 11 | 65 | D | In the illustration, item "5" represents a _____. | diaphragm pump | rotating vane pump | positive displacement pump | centrifugal pump | GS-0125 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 66 | B | The term 'pour point' is defined as the lowest temperature at which lubricating oils will flow _____. | rapidly | by gravity | through a standard orifice at a specified temperature | at a rate of 60cc per second | |
| 11 | 67 | A | In the MODU construction portfolio, materials which do not conform to ASTM or ABS specifications must also include the _____. | chemical and physical properties of the material | name of the alternative standard or specification | the ASTM or ABS specification the material approximates | manufacturer or origin of the material | |
| 11 | 68 | C | The part labeled "A" of the illustrated bearing is called the _____. | thrust ring | outer race | inner race | cage | MO-0001 |
| 11 | 69 | C | Deck beams on a MODU are generally spaced at equal intervals and run _____. | longitudinally | vertically | transversely | intermittently | |
| 11 | 71 | D | An acetylene pressure regulator should never be adjusted to maintain pressures exceeding 15 psig (103.4 kPa) because _____. | the relief valve will lift | the fusible plug will blowout | rapid depletion of acetylene is hazardous | this gas become extremely unstable under this condition | |
| 11 | 72 | A | The suction nozzle classification of the pump shown in the illustration can best be described as _____. | end suction | side suction | bottom suction | top suction | GS-0012 |
| 11 | 73 | D | Which lathe tool shown in the illustration would best be used on a work piece to perform a right hand facing operation? | P | V | Q | R | GS-0090 |
| 11 | 74 | C | The pressure range between the system cut-in and cut-out pressures in a refrigeration unit is known as _____. | opposing operational drag | pressure distribution | differential | system purge | |
| 11 | 75 | B | In the diagram illustrated, the direction of flow through the check valve is _____. | from right to left | from left to right | in either direction | dependent on discharge pressure | GS-0125 |
| 11 | 76 | C | Prior to the burning or welding of a fuel tank on a MODU, regulations require that an inspection be made. An entry in the unofficial logbook is required if this inspection is made by _____. | a marine chemist | the Officer in Charge, Marine Inspection | the Master or person in charge of the MODU | the National Fire Protection Association | |
| 11 | 77 | C | A welding procedure used for joining dissimilar metals used in the construction of a MODU would be recorded in the _____. | welding plan | ASTM specifications | construction portfolio | Coast Guard file | |
| 11 | 78 | A | The record of tests and inspection of fire fighting equipment on board a MODU must include _____. | the name of the person conducting the test | the weight of the charge | recommendations for the next test | all of the above | |
| 11 | 79 | D | The deck plating on a MODU is supported primarily by deck longitudinals and deck _____. | girders | stanchions | frames | beams | |
| 11 | 80 | C | The reading on the micrometer scale shown in figure "A" in the illustration is _____. | 0.9180 inch | 0.9500 inch | 0.9680 inch | 0.9910 inch | GS-0081 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 81 | C | How long must the records of tests and inspections of fire fighting equipment for a MODU be retained on board? | Six months | One year | Three years | Until the next inspection for certification | |
| 11 | 82 | A | The reading on the vernier caliper scale shown in figure "E" in the illustration is _____. | 3.360 inches | 3.610 inches | 3.925 inches | 4.360 inches | GS-0082 |
| 11 | 83 | C | A reciprocating air compressor is running roughly and vibrating excessively, indicating that the _____. | compressor is overloaded | motor is overloaded | foundation bolts are loose | belts are too tight | |
| 11 | 84 | D | Increasing the moisture content of conditioned air is known as _____. | moisturizing | dehumidification | dampening | humidification | |
| 11 | 85 | A | The master or person in charge of a MODU is required to log _____. | the date and hour of each fire drill | the names of all persons on board | only casualties which occur while underway | every event occurring on board | |
| 11 | 86 | C | In a radial piston pump, reversal and control of fluid flow are accomplished by moving the _____. | central valve | radial plunger | floating ring | cylinder body | |
| 11 | 87 | A | What must be entered in the unofficial logbook by the master or person in charge of a mobile offshore drilling unit after conducting a fire drill? | The condition of all fire fighting equipment, watertight door mechanisms, and valves used during each drill. | The location of the unit at the time each drill is conducted. | The name of each crew member who participated in the drill and their responsibilities. | All of the above. | |
| 11 | 88 | B | After conducting a boat drill, the master or person in charge of MODU shall log _____. | the names of crew members who participated in the drill | the length of time that each motor propelled lifeboat was operated in the drill | the length of time the lifeboat was in the water | the time it took to lower the boat | |
| 11 | 89 | A | The deck loads on a MODU are distributed through the deck beams to the _____. | frames | hull | stringers | plates | |
| 11 | 90 | B | One cause of leaky valves in a low pressure air compressor may be attributed to _____. | running with an air filter element different from that required by the original manufacturer's specifications | excessive operating hours without carrying out preventive maintenance | the compressor running too fast | excessive discharge pressure | |
| 11 | 91 | C | To maintain design discharge pressure from a centrifugal pump, the design clearance must be maintained between the _____. | shaft and impeller | motor and pump shaft | casing and impeller wearing rings | lantern ring and impeller | |
| 11 | 92 | B | In the illustration shown, what is the distance indicated by dimension "I"? | 1 1/2 inches | 1 3/4 inches | 1 7/8 inches | 2 inches | GS-0001 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 93 | B | Which of the following statements represents the difference between a four-jaw independent chuck and a three-jaw universal chuck? | The jaws on the three-jaw chuck can be individually adjusted. | The jaws on the four-jaw chuck can be individually adjusted. | The three-jaw chuck will hold square, round, and irregular shapes in either a concentric or an eccentric position. | Since the three-jaw universal chuck is automatically self-centering, it is always more accurate than the four-jaw independent chuck. | |
| 11 | 94 | D | Enlarging one tube end so the end of another tube of the same size will fit inside is termed _____. | belling | stretching | flaring | swaging | |
| 11 | 95 | A | Stern tube and strut bearings lined with hardwood or rubber composition materials are lubricated with _____. | saltwater | graphite | light lubricating oil | heavy lubricating oil | |
| 11 | 96 | A | The purpose of annealing any metal is to make the metal _____. | softer | smoother | harder | tougher | |
| 11 | 97 | B | When the longitudinal strength members of a MODU are continuous and closely spaced, the vessel is _____. | transversely framed | longitudinally framed | intermittently framed | web framed | |
| 11 | 98 | C | Lifeboat winches on a MODU are required to be inspected and an entry made in the logbook. What should this entry include? | The time required to lower a lifeboat. | The time required to raise a lifeboat. | The date of inspection and condition of the winch. | All of the above. | |
| 11 | 99 | A | A fluctuating and unsteady vacuum in an evaporator may be caused by _____. | wet steam entering the air ejector nozzle | pinhole leaks in the evaporator tube nests | rapid scaling on the evaporator tube nests | high water levels in the last effect | |
| 11 | 101 | D | If a radial piston hydraulic pump fails to deliver rated fluid volume, the cause can be _____. | contaminated fluid | pitted thrust rings | worn pintle bearings | obstructed suctions passage | |
| 11 | 102 | B | Pipe threads are cut with a taper to _____. | prevent over tightening the joint | provide a leak proof fit | permit easy joint disassembly | produce a fine even thread | |
| 11 | 103 | C | When the tilting box of a variable stroke axial-piston pump is perpendicular to the pump shaft, which of the following conditions will exist? | The pistons reciprocate. | The "B" end cylinder barrel rotates. | There is no fluid flow. | Power is transmitted hydraulically. | |
| 11 | 104 | C | Which of the refrigerants listed is considered ideal for most marine applications? | Carbon dioxide | Ammonia | R-22 | Sulfur dioxide | |
| 11 | 105 | A | The dual pressure-temperature regulator, shown in the illustration, is adjusted by turning the stem "L" clockwise (as viewed from the top) and the adjusting ring "B" counterclockwise (as viewed from the top). This will result in _____. | a higher outlet pressure, with a higher controlled fluid outlet temperature | a lower outlet pressure, with a corresponding decrease in the controlled fluid outlet temperature | a higher outlet pressure with a lower fluid outlet temperature | no change | GS-0045 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 107 | B | Closed impellers differ from open impellers in that closed impellers _____. | allow liquid to enter the eye from one direction only | have side walls which extend from the eye to the outer edge of the vane tips | have small impeller eyes | are not vented above the impeller eye | |
| 11 | 109 | B | A MODU having continuous closely spaced transverse strength members is _____. | longitudinally framed | transversely framed | cellular framed | web framed | |
| 11 | 110 | A | With respect to centrifugal pump design, which of the following descriptions best represents a pump utilizing two impellers? | Multistage | Axial flow | Dual coupled | Parallel flow | |
| 11 | 111 | D | What is the length of the stud used to secure the packing gland shown in the illustration? | 1 inch | 1 1/4 inches | 1 1/2 inches | 2 1/2 inches | GS-0012 |
| 11 | 112 | C | Which of the listed pipe sizes is not commonly used? | 3/8 inch | 1/2 inch | 5/8 inch | 3/4 inch | |
| 11 | 113 | C | As shown in the illustration, the maximum shaft diameter is _____. | 0.562 inches | 0.622 inches | 0.625 inches | 0.628 inches | GS-0016 |
| 11 | 114 | C | When using a sling psychrometer to determine relative humidity, the indicated difference between the dry bulb and the wet bulb reading is the _____. | relative humidity | dew point | wet bulb 'depression' | partial saturation temperature | |
| 11 | 115 | A | The static positive suction head of a pump is the _____. | distance of the suction liquid level above the center line of the pump | distance the suction liquid level is below the center line of the pump | force necessary to overcome frictional losses in the pump and piping | amount in inches of mercury the total suction head is below atmospheric pressure | |
| 11 | 116 | B | A grease lubricated ball bearing or roller bearing will run cooler if the grease _____. | fills only 10% of all void spaces within the bearing | has a high grease penetration number (is hard) | is thinned with a suitable lubricating oil | is heated prior to packing the bearing | |
| 11 | 117 | A | The ash content of a fuel oil is significant to the operating engineer because it _____. | is an indication of the amount of noncombustible material present in the oil | indicates the quantity of energy released by burning a unit amount of the fuel | is useful for determining proper atomization temperatures | reflects the overall thermal efficiency of the fuel oil service system | |
| 11 | 118 | B | What is the diameter of a cylinder whose cross-sectional area is 706.86 square inches? | 36 inches | 30 inches | 24 inches | 15 inches | |
| 11 | 119 | A | On a MODU, the deck stringer is the outboard most deck _____. | plating | beam | stiffener | stanchion | |
| 11 | 121 | C | The reading on the vernier caliper scale shown in figure "C" in the illustration is _____. | 4.015 inches | 4.715 inches | 4.340 inches | 5.925 inches | GS-0082 |
| 11 | 122 | D | Which pipe listed has the largest outside diameter? | A 3/4" pipe with a standard wall thickness. | A 3/4" pipe with an extra strong wall thickness. | A 3/4" pipe with a double extra strong wall thickness. | All have the same outside diameter. | |
| 11 | 123 | A | The reading on the vernier caliper scale shown in figure "F" in the illustration is _____. | 2.505 inches | 2.650 inches | 3.125 inches | 3.210 inches | GS-0082 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 124 | A | The sum of the sensible heat and the latent heat of any substance is known as _____. | total heat | residual heat | specific heat | superheat | |
| 11 | 125 | B | Expansion of the tube bundle in a shell-and-tube type cooler may be provided for by the _____. | packing and lantern rings | floating end tube sheet | shell foundation bolts | directional transverse baffles | |
| 11 | 126 | C | The pressure produced within the oil wedge of a rotating journal is _____. | the same as the pressure in the lubricating system | less than the pressure in the lubricating system | greater than the pressure in the lubricating system | highest at the oil groove location | |
| 11 | 127 | C | The reading indicated on the micrometer scale shown in the illustration is .3350 inches. Which of the figures listed represents this reading? | Figure A | Figure B | Figure C | Figure D | GS-0081 |
| 11 | 128 | B | Which combination of the main shaft segments listed below, that are located furthest from the main engine, are connected by the inboard stern tube shaft coupling? | Line shaft and thrust shaft | Line shaft and stern-tube shaft | Thrust shaft and stern-tube shaft | Stern-tube shaft and tail shaft | |
| 11 | 129 | A | Compared to internal structural plating, the exterior hull plating on a MODU is usually _____. | stronger | thinner | more corrosion resistant | a lower grade steel | |
| 11 | 130 | C | The gasket and the broken studs have been replaced on a tank manhole cover. Which of the following methods is satisfactory for testing the repair? | Pressurize the tank with 10 psig air, soap the repaired area, watch for visible signs of leakage or bubbles. | Fill the tank with water via the ballast pump until the innage reading corresponds to the maximum depth of the tank. | Hose test the repaired area with a minimum of 100 psig water pressure. | Fill the tank via the ballast pump until water flows from the vent line opening on deck. | |
| 11 | 131 | D | What is the distance between the center of the discharge outlet and the top of the motor illustrated? | 34 5/8 inches | 35 inches | 35 5/8 inches | 36 inches | GS-0011 |
| 11 | 132 | C | Piping cross-sections over 12 inches in diameter are sized by the _____. | inside diameter | wall thickness | outside diameter | threaded diameter | |
| 11 | 133 | A | The static suction lift of a pump is the difference in elevation between the _____. | centerline of the pump and the level of the liquid in the suction well when the source of liquid is below the pump | centerline of the pump and the suction liquid level when the source of liquid is above the pump | centerline of the pump and the level of the discharge liquid | liquid levels of the suction and discharge | |
| 11 | 134 | A | The heat identified by only a change in temperature is known as _____. | sensible heat | latent heat | total heat | residual heat | |
| 11 | 135 | B | Referring to the table shown in the illustration, your vessel has just taken aboard 30,000 gallons of fuel with an API gravity of 35.2 at 60° F. Your vessel's specific fuel consumption at full power is 0.5 lbs. per Hp-Hr. How many hours will the fuel last? | 36.20 | 42.40 | 48.60 | 54.80 | GS-0149 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 137 | B | A fuel tank on your vessel is 20 feet high, 20 feet long and 20 feet wide. If it is filled 100% with fuel having an API gravity of 35.7 at a temperature of 60° F, how many long tons of fuel are in the tank? | 177.76 | 188.25 | 196.47 | 210.84 | GS-0149 |
| 11 | 138 | C | The usual number of single-acting pistons used in a variable stroke axial-piston pump is _____. | 3 or 5 | 5 or 7 | 7 or 9 | 9 or 11 | |
| 11 | 139 | A | Which device shown in the illustration should be used to check valve clearances in a diesel engine fitted with solid lifters? | A | B | C | D | GS-0073 |
| 11 | 140 | B | Regarding the oil cooler shown in the illustration, the purpose of the internal shell baffles is to _____. | allow the water to make four passes over the tubes | allow the oil to make four passes over the tubes | prevent oxidation and coking of the lube oil as it passes through the cooler | prevent erosive tube failure due to high-velocity flow in the core | GS-0122 |
| 11 | 141 | D | In the pump shown in the illustration, what is the distance from the bottom of the inlet to the bottom end of the motor shaft? | 45 1/4 inches | 45 5/16 inches | 53 5/8 inches | 57 5/8 inches | GS-0011 |
| 11 | 142 | B | Piping cross-sections ranging from 1/8 inch to 12 inches in diameter, are sized by _____. | wall strength | nominal inside diameter | outside diameter | threaded diameter | |
| 11 | 143 | B | An axial piston pump differs from a radial piston pump as the pistons of an axial piston pump are positioned _____. | radially from the shaft | parallel to each other and to the shaft | parallel to each other but at a right angle to the shaft | at an angle to each other and to the shaft | |
| 11 | 144 | B | In reference to air conditioning, when air attains the maximum amount of moisture it can hold at a specific temperature, it is said to be _____. | superheated | saturated | condensed | convected | |
| 11 | 146 | C | Positive displacement, helical gear pumps are well suited for pumping oil because _____. | stuffing boxes eliminate the leakage problems usually associated with other gear pumps | it is not necessary to closely maintain design clearances with this pump | they are essentially self-priming and capable of a high suction lift | these pumps are designed with extreme tooth angles | |
| 11 | 147 | A | The conical steel or composition cone installed on a propeller, known as a fairwater cone, provides which of the following benefits? | Reduce turbulence | Help with lubrication | Protect against electrolytic corrosion | All of the above | |
| 11 | 148 | B | The exposed portion of the outboard propeller shaft is protected against seawater corrosion by _____. | a heavy lubricant | a covering of plastic, rubber, or shrunk-on composition sleeve | a corrosion-resistant paint | a layer of oxidation formed when the metal of the shaft is exposed to seawater | |
| 11 | 149 | B | Why are removable sleeves installed on centrifugal pump shafts? | They make it easier to replace the pump shaft packing. | They can be economically replaced as they wear out. | They can be removed when it is necessary to lighten the weight of the pump. | They increase the strength of the shaft. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 150 | A | In order for the reducing valve, shown in the illustration, to properly function, a control port is utilized between _____. | the underside of diaphragm "E" and the outlet | the inlet side and the outlet side | the underside of diaphragm "E" and the inlet | the top of piston "H" and the outlet | GS-0044 |
| 11 | 153 | C | A good quality oil used in main propulsion engine lubrication systems should be _____. | free from all chemical additives | quickly chemically oxidized | resistant to permanent emulsification | readily saponified with water | |
| 11 | 154 | B | When air at a given temperature, contains the maximum amount of moisture for that temperature, the air is said to be _____. | superheated | saturated | condensing | evaporating | |
| 11 | 155 | A | Which type of space heating systems is shown in the illustration? | Steam heating | Circulated hot water heating | Electric element heater | Forced hot air heating | GS-0150 |
| 11 | 156 | C | Which of the listed types of pumps is NOT likely to be installed in a main drainage or evacuation system? | Reciprocating pump | Centrifugal pump | High pitch rotary vane pump | Eductor pump | |
| 11 | 158 | B | In a compression type automatic grease cup, the lubricant is forced into the bearing by _____. | gravity flow | spring force | a pressure gun | a zero fitting | |
| 11 | 159 | C | The term referring to the number of teeth per inch on a hacksaw blade is known as the _____. | set | rake | pitch | thread gauge | |
| 11 | 160 | D | The valve shown in the illustration uses port "J" to _____. | open the auxiliary valve | open the main valve | bleed off downstream pressure beneath the operating piston | allow downstream pressure to be sensed by diaphragm "E" | GS-0044 |
| 11 | 161 | D | In the illustration shown, the notation 1/8"R indicates a one-eighth inch _____. | recess on one end of the tool | rough finish on both ends of the tool | 45° Chamfer on both ends of the tool | radius on one end of the tool | GS-0016 |
| 11 | 162 | B | Which of the following statements represents the advantage of rotary pumps as compared to reciprocating pumps? | The high discharge pressure of the rotary pumps permits a larger volume of fluid per unit time than the reciprocating pump. | Rotary pumps are capable of pumping more fluid than reciprocating pumps of the same weight. | Rotary pumps occupy only one-half the space of reciprocating pumps. | Rotary pumps eliminate discharge slippage of the pumped liquid, while this does not hold true for a reciprocating pump. | |
| 11 | 164 | D | Which of the following terms represents the form of heat removed from the refrigerant in the condenser of a refrigeration system? | Latent heat of vaporization | Heat of compression | Superheat | All of the above | |
| 11 | 165 | C | Which of the devices listed should be used to reshape a grinding wheel? | A round nose tool | An oil stone | A wheel dressing tool | A sharp nose tool | |
| 11 | 166 | D | Water leaking through the stern tube stuffing box is used to accomplish which of the following actions? | Cooling | Lubrication | Flushing | All of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 167 | B | Water hammer in a steam heating system can be caused by _____. | filling the auxiliary boiler with cold water | steam admitted to a cold pipe | filling the auxiliary boiler with hot water | draining a soot blower line before cracking the steam supply valve | |
| 11 | 168 | B | Main propulsion engine lube oil sumps should be constructed _____. | so as to never be integral with the main engine foundation | with a sloped bottom | only of nonferrous, non-corrosive metals | with drain/return lines terminating just above or at the designed normal level | |
| 11 | 169 | A | A major controlling factor in the location of the condensate return piping from a heating system is/are _____. | the requirement for a gravity return | the requirement for short laterals run | the requirement to minimize conflict with headroom and other services | all of the above | |
| 11 | 170 | D | If the existing vapor pressure is subtracted from the indicated pressure at the pump suction, the remainder is the _____. | pump head | total suction head | discharge head | apparent net positive suction head | |
| 11 | 171 | A | The reading indicated on the micrometer scale shown in the illustration is .9680 inches. Which of the figures listed represents this reading? | Figure A | Figure B | Figure C | Figure D | GS-0081 |
| 11 | 172 | D | A first stage unloader installed in a low pressure air compressor is unable to completely retract. This will result in _____. | overheating of the discharge valve | loss of moisture in the air charge in the receiver | frequent lifting of the intercooler relief valve | an abnormally low intercooler pressure | |
| 11 | 173 | C | Items #68 and #78 as shown in the pump illustration are identified as the _____. | shaft keyways | wearing rings | bearing retainers or spacers | journal bearings | GS-0143 |
| 11 | 174 | C | The heat removed from the refrigerant in the condenser of a refrigeration plant is the _____. | latent heat of expansion | sensible heat of condensation | heat of compression | all of the above | |
| 11 | 175 | C | The discharge side of the pump illustrated is identified by the letter '_____.' | A | B | C | D | GS-0129 |
| 11 | 176 | C | When conducting a hydrostatic test on the distillate cooler shell of a flash type evaporator, liquid appears well inside one of the tubes. In order to correct this, you should _____. | reroll the tube | seal weld the tube | plug the tube | all of the above would be considered satisfactory as a temporary repair until permanent repairs may be conducted | |
| 11 | 177 | D | Excessive leakage and premature failure of valve packing is a result of _____. | opening a valve too quickly | jamming a valve in the closed position | low pressure fluid flow through the pipeline | a scored valve stem | |
| 11 | 178 | D | Which of the following problems may be encountered by using an oil having a viscosity higher than that specified for an operating hydraulic system? | External seal leakage. | Hunting due to fast response. | Hydraulic oil film breakdown. | Increased power consumption. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 179 | C | Water leaking from a pump packing gland is kept away from the bearing housing by the use of _____. | shaft sleeves | lantern rings | water flingers | water seals | |
| 11 | 180 | B | An inadequate reciprocating bilge pump discharge is most often caused by _____. | defective intake valves | clogged suction strainers | scarred cylinder walls | clogged drain valves | |
| 11 | 182 | D | Which of the listed problems could produce a high absolute pressure within a flash type evaporator? | production of high salinity distillate | seawater feed temperature below 165° F | a leak in the first stage demister | a cracked distillate pump vent line | |
| 11 | 183 | B | Which of the following conditions should be used to support the need to change the lube oil when there has been an increase in the neutralization number? | A decrease in the viscosity of the oil | An increase in the viscosity of the oil | A change in the cloud point | A change in the floc point | |
| 11 | 184 | D | The dew point of air is reached when the wet bulb temperature is _____. | twice the dry bulb temperature | 10° F above the dry bulb temperature | 5° F above the dry bulb temperature | equal to the dry bulb temperature | |
| 11 | 185 | B | The purpose of bilge keels is to _____. | lower the center of gravity of the ship | reduce the amplitude of roll | reduce pitching | reduce yawing | |
| 11 | 186 | D | A casing drain is provided for axial piston and bent axis variable stroke pumps to _____. | vent off any accumulated air from the system | drain off any accumulated water from the pump casing prior to its being started | assist the complete removal of hydraulic oil from the system prior to opening for major or minor repairs | prevent damage due to agitation and overheating of oil accumulated in the casing as a result of normal internal leakage | |
| 11 | 187 | B | Before the longitudinal carriage feed of a lathe is engaged, you must be certain the _____. | spindle clutch is disengaged | carriage clamp screw is loosened | carriage stop clamp is tightened | thread dial indicator is zeroed | |
| 11 | 188 | B | Increasing the speed of a rotary pump above its rated speed will result in which of the following conditions to occur? | Loss of suction | Increased clearances | Decreased clearances | Decreased slippage | |
| 11 | 189 | C | The function of lubricating oil is to _____. | maintain even distribution of bearing wear | maintain a constant oil temperature | maintain a pressurized fluid film between moving surfaces | remove entrained water | |
| 11 | 190 | B | Which of the devices listed is used to maintain a snug interface between the rotating and stationary seal members shown in the illustration? | notch and keyway | spring | bellows | seal retaining ring | GS-0071 |
| 11 | 191 | B | The illustration is drawn to a scale of 3/8 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"? | 1.625 inches | 4.333 inches | 6.094 inches | 15.333 inches | GS-0007 |
| 11 | 192 | A | The tendency for lubricating oil to thin out at high temperatures and thicken at low temperatures will be characterized by a _____. | low viscosity index | high viscosity index | high neutralization number | low demulsibility quality | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 193 | B | After packing is added to the stern tube stuffing box, which of the following procedures should be observed to insure even tightening of the gland? | Listen for a smooth, regular sound. | Measure the distance between the gland and the stuffing box with a rule. | Judge by feeling the gland for an increase in heat as it is being tightened up. | Open the drain connection to allow seawater to flow in and make the distance even. | |
| 11 | 194 | A | The temperature at which water vapor in the atmosphere begins to condense is called the _____. | dew point temperature | condensation temperature | psychometric temperature | absolute humidity temperature | |
| 11 | 195 | B | One function of the air receiver in a compressed air system is to _____. | dry the air discharged from the intercooler | minimize the system's line pulsations | receive exhaust air from pneumatic accessories | remove all traces of oil from the air | |
| 11 | 196 | A | If a drill press is used to completely bore through a metal plate, feed pressure on the drill bit should be eased as the bit breaks through the bottom of the hole to prevent _____. | the drill bit from jamming and spinning the work piece | drilling undersized holes | overspeeding the spindle | overheating the drill | |
| 11 | 197 | B | Which of the following statements describes the purpose of the split inflatable seal installed aft of the primary seal assembly for the propeller shaft? | To serve as a seal when adding packing to the stuffing box. | To allow repair or replacement of the primary seal elements when the ship is waterborne. | To eliminate leakage via the propeller shaft when the shaft is not rotating. | To provide a ready means for the entry of cooling water. | |
| 11 | 198 | D | Why should a person who is performing maintenance on an air compressor, wire and tag the system valves closed? | To prevent the unexpected. | To protect the equipment. | To protect the operator performing the maintenance. | Each of the above is correct. | |
| 11 | 199 | B | With regard to the opening and closing of watertight appliances not fitted with a remote operating control or alarm system, which of the following is the master or person in charge of a MODU required to enter in the logbook? | The time required to close the appliances. | The reason for opening or closing each appliance. | The name of the person performing the opening and closing of such appliances. | The fact that the hull indicators functioned or not. | |
| 11 | 200 | C | One of the main differences between the various types of screw pumps is in the _____. | stuffing box diameter | direction of rotation of the screws | pitch of the screws | type of driving gears | |
| 11 | 201 | B | The shaft shown in the illustration has an overall length of 42 inches in addition to the following dimensions of "A" = 8", "B" = 8", "C" = 10", and "D"=8 3/16" The tapered length "X" is _____. | 6.375 inches | 7.812 inches | 8.185 inches | 8.312 inches | GS-0133 |
| 11 | 202 | A | In the spring-loaded, steam pressure, reducing valve shown in the illustration, the high pressure steam _____. | acts to close the main valve "K" | acts to open the auxiliary valve "D" | acts directly on the lower part of the main piston "H" | bleeds pressure off the controlling diaphragm "E" via the high pressure port "C" | GS-0044 |
| 11 | 203 | D | The thread form shown in the illustration is called a/an _____. | Buttress thread | Whitworth thread | Acme thread | Sharp V-thread | GS-0087 |
| 11 | 204 | A | The FIRST thing to do to ensure that a refrigeration unit will not start while undergoing repairs, is to _____. | secure and tag the electrical circuit | place a crow bar in the flywheel of the unit | inform all persons in the area not to start the unit | make a log book entry | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 206 | B | The reading on the vernier caliper scale shown in figure "D" in the illustration is _____. | 1.815 inches | 1.820 inches | 2.115 inches | 2.820 inches | GS-0082 |
| 11 | 208 | B | At which of the following locations would a duplex pressure gage most likely be located? | Fuel oil service pump discharge flange | Fuel oil strainer | Fuel oil heater | Fuel oil flow meter | |
| 11 | 209 | C | Why is the discharge pressure of a herringbone gear pump steadier than the discharge pressure of a simple spur gear pump? | Clearance between the gear teeth and casing is smaller. | The gear teeth are smaller than those of the simple spur gear pump. | One discharge phase begins before the previous discharge phase has been completed. | The herringbone gear pump has four spur gears instead of two. | |
| 11 | 210 | B | The part labeled "B" of the illustrated bearing is called the _____. | thrust ring | outer race | inner race | cage | MO-0001 |
| 11 | 211 | C | Which of the following actions, pertaining to saltwater lubricated stern tube stuffing boxes, is usually observed when the ship is expected to be in port for an extended period? | The stuffing box is continually flushed. | The drain connection is left opened. | The stuffing box gland is tightened. | The packing is adjusted for greater cooling or replaced. | |
| 11 | 212 | A | A bourdon tube-type steam pressure gage is fitted with a siphon loop to prevent damage from _____. | extreme thermal stress | the admission of condensate | pressure shock | differential expansion rates | |
| 11 | 213 | C | The thread form shown in the illustration is called a/an _____. | Whitworth thread | Square thread | Acme thread | Standard thread | GS-0088 |
| 11 | 214 | D | In a refrigeration system, the refrigerant absorbs the latent heat of vaporization in the _____. | compressor | condenser | receiver | evaporator | |
| 11 | 216 | D | Oil emulsification in engine lubricating oils will tend to _____. | decrease sludge formation in lubricating oil | cause water to separate from the oil | improve the lubricating oil viscosity | displace lubricating oil required in areas of friction | |
| 11 | 217 | B | In the system illustrated, which of the following readings should be indicated on the pressure gage, if the load (x) is 8000 lbs (3632 kg) and the piston area (y) is 10 sq. in (64.5 sq. cm)? | 80 psi (5.63 kg/cm2) | 800 psi (56.31 kg/cm2) | 8,000 psi (563.1 kg/cm2) | 80,000 psi (5631 kg/cm2) | GS-0062 |
| 11 | 218 | C | The conical steel or composition cone installed on a propeller, known as a fairwater cone, provides which of the following benefits? | Reduces turbidness | Helps with lubrication | Protects the nut | All of the above | |
| 11 | 223 | A | The taper produced by a lathe taper attachment is determined by setting the _____. | guide (swivel) bar | automatic cross feed | tailstock off center | compound rest angle | |
| 11 | 224 | B | The only means of removing the latent heat of condensation from a refrigerant in the normal refrigeration cycle is by _____. | passing it through the expansion valve | condensing refrigerant in the system condenser | passing the gaseous refrigerant through the heat interchanger on the suction side of the compressor | maintaining a high pressure on the system's receiver | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 225 | D | The converter pneumatic control bypass valve, shown in the illustration, receives its high pressure signal from the _____. | hot water return manifold | converter | hot water circulating pump discharge line | hot water supply line | GS-0151 |
| 11 | 227 | D | Which of the listed devices is used to control the admission of steam to the steam cylinder of a reciprocating pump? | Valve operating differential | Crosshead arm | Pump rod | Pilot valve and operating rod | |
| 11 | 228 | D | In the illustration, the temperature of the hot-water heating system is controlled by the temperature of the hot water supply and the temperature of the _____. | central station | room being heated | hot water return | outside air | GS-0151 |
| 11 | 229 | A | Which of the devices listed prevents water from entering a ship's hull via the propulsion shaft? | Stern tube packing or mechanical shaft seal | Deflector ring and drain | Spring bearings | Oiler rings | |
| 11 | 230 | A | With reference to a vessel's structural integrity, the most significant characteristic of a cryogenic liquid is its _____. | capability of causing brittle fractures | highly corrosive action on mild steel | vapor cloud which reacts violently with saltwater | toxicity at atmospheric pressure | |
| 11 | 232 | A | A boiler forced draft pressure gage indicates 6 inches of water. This corresponds to a pressure of _____. | .216 psi | .288 psi | .433 psi | .688 psi | |
| 11 | 233 | A | To obtain a 1/2 inch per foot taper on an 18 inch work piece, the tailstock of the lathe must be set over _____. | 3/8 inch | 1/2 inch | 3/4 inch | 7/8 inch | |
| 11 | 234 | A | The heat required to change a substance from a solid to a liquid while at its freezing temperature, is known as the latent heat of _____. | fusion | vaporization | condensation | sublimation | |
| 11 | 235 | D | A wrench that completely surrounds a nut, or bolt head is a/an _____. | adjustable wrench | open end wrench | tappet wrench | box wrench | |
| 11 | 238 | B | The degree to which the viscosity of an oil will change with a change in temperature is indicated by the _____. | weight designation | viscosity index | pour point | thermal change value | |
| 11 | 239 | D | Which of the listed reciprocating pump parts control the position of the pilot slide valve? | Moving tappets | Adjusting of the tappet collars | Stay rods | Movement of the main piston through the steam cylinder | |
| 11 | 242 | B | The reading indicated on the micrometer scale shown in the illustration is .680 inches. Which of the figures listed represents this reading? | Figure A | Figure B | Figure C | Figure D | GS-0081 |
| 11 | 243 | D | Which of the following guidelines is considered to reflect good design practices of shipboard steam heating systems? | Provide constant steam service for equipment operating throughout the year. | Provide either a common or individual reducing station for each group of units requiring the same operating pressure. | Run all piping so it may be drained by gravity. | All of the above. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 244 | B | The heat required to change a substance from a liquid to a gas without experiencing a temperature change, is defined as the latent heat of _____. | fusion | vaporization | sublimation | condensation | |
| 11 | 245 | B | The average density of brine discharged from the last stage of a fresh water evaporator should not exceed _____. | 1.0/32nds | 1.5/32nds | 2.0/32nds | 3.0/32nds | |
| 11 | 246 | C | A distinguishing feature of an eductor, when compared to other pumps, is the _____. | discharge end being smaller than the suction end | small size of impeller | lack of moving parts | ease at which the wearing rings may be changed | |
| 11 | 247 | B | While at normal sea speed the rudder movement stops, but is restored after changing over power units. At the earliest opportunity the faulty power unit is restarted with the following results: the rudder can be remotely swung in only one direction, however | only the solenoid coil 'F2' has burned out | either solenoid coil 'F1' or 'F3' has burned out | shaft "K" has developed a fault in the mechanical linkage | that pump "G" can not develop adequate discharge | GS-0123 |
| 11 | 248 | C | When securing a flash-type evaporator for an extended period of time, you should _____. | fill the unit with saltwater | fill the unit with descaling compound | completely drain the unit | tightly seal the unit to exclude air | |
| 11 | 249 | B | The portion of a hydraulic hose that determines its overall strength, is the _____. | inner tube | braided inner layer(s) | outer cover | outer armor | |
| 11 | 250 | D | Which features of a centrifugal pump reduce the need for renewing worn impellers and pump casings? | Close radial clearance between impeller hub and casing | Low rotational speed of impeller | Removable end plate | Replaceable impeller and casing wearing rings | |
| 11 | 251 | B | A centrifugal pump may fail to deliver water when first started if the _____. | water seal pipe is plugged | pump is not primed | seal ring is improperly located | impeller is flooded | |
| 11 | 252 | D | A weight of 1,000 kips is equivalent to _____. | 1,000 pounds | 2,000 short tons | 2,240 pounds | 500 short tons | |
| 11 | 253 | A | Which of the devices listed is common to all types of pumps? | A power end and fluid end | A propeller and educator | A volute and impeller | A turbine and piston | |
| 11 | 254 | C | Heat which brings about a change in the physical state of a substance without a change in temperature, is called _____. | specific heat | sensible heat | latent heat | ambient heat | |
| 11 | 255 | C | The hulls of most modern towing vessels constructed today are fabricated from _____. | wrought iron | high alloy steel | mild steel | corrosion resisting steel | |
| 11 | 257 | A | Which of the listed parts is used in a lobe-type rotary pump to allow for wear on the lobe edges? | Replaceable gib inserts | Spur gear adjusters | Casing gear thrust bearings | Replaceable liner plates | |
| 11 | 259 | A | A boiler forced draft pressure gage indicates 8 inches of water. This corresponds to a pressure of _____. | .288 psi | .433 psi | .688 psi | .833 psi | |
| 11 | 261 | C | If a centrifugal pump vibrates and is noisy when operating, the cause could be _____. | worn gland sealing shaft | worn wearing rings | a bent shaft | reversed pump coupling | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 262 | B | Which of the wrenches listed is least likely to slip off a bolt head or nut? | Open end wrench | Box end wrench | Crescent wrench | Spanner wrench | |
| 11 | 263 | B | Expansion tanks when used in a ships hot water heating system, may be of the open or closed type. In a closed type system, what would be the normal temperature range of the water? | 180° F to 212° F | 220° F to 240° F | 260° F to 280° F | 320° F to 360° F | |
| 11 | 264 | D | Latent heat can be defined as the heat which must be added to a substance in order to change it from a _____. | solid to liquid | liquid to vapor | solid to vapor | all of the above | |
| 11 | 265 | C | The designation 'schedule 80 extra strong ' refers to _____. | weight of steel plate | tensile strength of bolts | piping wall thickness | tubing bursting strength | |
| 11 | 266 | A | The reading indicated on a vernier micrometer caliper scale is .2613 inches. Which of the figure in the illustration represents this reading? | Figure A | Figure D | Figure E | Figure G | GS-0083 |
| 11 | 267 | D | Tapping threads into a blind hole should be finished by using a _____. | short tap | taper tap | plug tap | bottoming tap | |
| 11 | 269 | D | The factors that determine the service life of packing in a pump will include which of the following conditions? | type of pump | condition of the shaft | length of time in use | all of the above | |
| 11 | 271 | D | If the capacity of a centrifugal pump decreases gradually over a long period of time, you should replace the _____. | packing gland | mechanical seals | lantern rings | wearing rings | |
| 11 | 272 | D | What is the reading of the vernier micrometer caliper scale shown in figure "C" in the illustration? | 0.4258 inch | 0.4528 inch | 0.4628 inch | 0.4678 inch | GS-0083 |
| 11 | 273 | D | To absorb the wear resulting from impeller rotation and abrasives in the liquid, a centrifugal pump is usually fitted with _____. | lantern rings | bearings | casing volutes | wearing rings | |
| 11 | 274 | A | Personnel working with refrigeration systems, and subject to the exposure of refrigerants should wear _____. | face shield | a respirator | rubber gloves | an all purpose gas mask | |
| 11 | 275 | C | The ability of a metal to be hammered, or rolled out is called its _____. | ductibility | elasticity | malleability | fusibility | |
| 11 | 276 | C | A pressure reading of 00.0 psig is theoretically equal to _____. | 30.0 inches of vacuum | 300 millimeters of water | 14.7 psia | 00.0 psia | |
| 11 | 277 | C | If the foundation bolts of a reciprocating air compressor are loose, which of the conditions below will occur? | The drive belts will squeal | The unloaders will jam shut | The compressor will vibrate | The intercooler will leak | |
| 11 | 279 | D | Gate valves should not be used for throttling as _____. | the pressure drop will be excessive | air binding will develop | the installation of an equalizing line will be necessary | wire drawing of the disc will result | |
| 11 | 280 | C | To finish tapping a blind hole, it is best to use a _____. | taper tap | finishing tap | bottoming tap | plug tap | |
| 11 | 282 | C | Which of the listed types of machined 'hole' is represented by "B" as shown in the illustration? | Counterbore | Countersink | Counterdrill | Spot face | GS-0015 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 283 | C | The purpose of an air compressor unloading device is to _____. | drain water from the air receiver | drain water from the cylinders | delay the compression process until the motor is up to speed | check pump alignment | |
| 11 | 284 | D | The amount of moisture in a given sample of air, when compared with the amount of moisture the air could hold if totally saturated at the existing temperature of the sample, is called _____. | absolute humidity | specific humidity | effective humidity | relative humidity | |
| 11 | 285 | D | Which of the copper alloys listed is commonly used in heat exchangers and possesses a high resistance to corrosion? | Red brass | Manganese bronze | Copper beryllium | Cupro-nickel | |
| 11 | 286 | C | Antifriction bearings can be removed undamaged from a shaft by using an arbor press, or wheel puller with a _____. | ring gage | split die | split washer or backup ring | jack screw | |
| 11 | 288 | A | Which of the following statements is correct relative to distillation plant operation? | Distillation is the process of boiling seawater to produce vapor which is condensed into fresh water. | Evaporation is the second part of the distillation process where brine is removed. | Brine is the result of condensed sea water vapor. | Distillate is the product resulting from the evaporation of fresh water vapor. | |
| 11 | 289 | A | A leaking steam trap located in the return lines from a heating system is indicated by excessive _____. | drain tank steaming | scale returning from the convectors | steam pressure in the convectors | water in the heating system | |
| 11 | 290 | D | The minimum length of dimension "C" shown in the illustration is _____. | 27/32 inch | 11/16 inch | 21/32 inch | 33/64 inch | GS-0014 |
| 11 | 291 | C | If a centrifugal pump is driven by a constant speed electric motor and produces a discharge pressure less than designed, the cause is probably _____. | excessive pump speed | excessive suction head | worn wearing rings | gross pump misalignment | |
| 11 | 293 | C | The bearings for the illustrated pump are lubricated by _____. | a small self-contained forced feed pressurized oil system | packed grease | oil feed rings rotating through an oil bath | a drip feed oiler cup | GS-0129 |
| 11 | 294 | B | The ratio of the weight of moisture contained in a given volume of air, to the weight of moisture that the same sample would hold if saturated, is called the _____. | absolute humidity | relative humidity | specific humidity | total humidity | |
| 11 | 295 | B | Which of the listed chemicals can be routinely used to maintain the hygienic quality of potable water? | Hydrochloric acid | Chlorine | Sulfuric acid | Zinc chromate | |
| 11 | 296 | D | Which of the following statements concerning antifriction bearings installed on pumps is true? | The inner race should be free to turn on the shaft. | The outer race should be free to turn its housing. | Alignment is not a critical factor in their installation. | They are usually pressed on to their shafts. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 297 | C | The steam coils in a high pressure evaporator used for saltwater service should be descaled with _____. | a needle gun | soap and water | a wire brush | a chipping hammer | |
| 11 | 298 | D | The packing installed in the pump stuffing box is normally lubricated by _____. | gravity and feed oil cups | grease cups | hand during installation | leakage through the stuffing box | |
| 11 | 301 | D | The included angle of the chamfer in the knurled portion of the tube sizing tool illustration is _____. | 5° | 10° | 20° | 30° | GS-0014 |
| 11 | 303 | C | A lathe dog, fitted with a headless set screw, is known as a _____. | clamp lathe dog | standard lathe dog | safety lathe dog | common lathe dog | |
| 11 | 304 | A | The moisture sensitive element of a humidistat can be made of _____. | hair | copper | plastic | steel | |
| 11 | 305 | C | Which of the following statements is correct regarding an oil with a high viscosity index? | A large change of viscosity occurs with a minor change in temperature. | No change in viscosity occurs with any change in temperature. | Very little change in viscosity occurs with a significant change in temperature. | The viscosity of the oil increases with an increase in temperature. | |
| 11 | 306 | A | An organic solid lubricant, such as graphite, is suitable as an oil additive when used in _____. | machinery bearings subjected to high temperatures | antifriction bearings on general service pumps | bearings subject to fluctuating loads | line shaft bearings | |
| 11 | 307 | C | Ferrous metals are metals containing _____. | no iron | a large percentage of copper | a large percentage of iron | a large percentage of aluminum | |
| 11 | 308 | C | Which of the following clearance readings should be taken and recorded in dry-dock? | The clearances between the propeller blade tips and the hull. | The clearances between the propeller hub and the fair water cone. | The rudder bearing clearances. | The clearances between the stern tube packing gland and the retaining ring. | |
| 11 | 309 | B | Brine density in a distilling plant is measured with a/an _____. | psychrometer | salinometer | anemometer | sphygmomanometer | |
| 11 | 310 | C | For the various sizes of tubing and wall thickness used in a hydraulic system, the inside diameter can be determined if it is remembered that the inside diameter equals the outside diameter less _____. | the wall thickness | 1.5 times the wall thickness | 2 times the wall thickness | 2.5 times the wall thickness | |
| 11 | 311 | D | In the illustrated drawing, the feature indicated by the measurement 1/8" is an example of _____. | camber | radius | taper | chamfer | GS-0016 |
| 11 | 313 | A | Which of the following definitions accurately describes 'tool feed' when referring to lathe work? | The distance the tool advances with each revolution of the work. | The distance from the bottom of the cut to the uncut surface of the work piece. | The distance the work piece circumference moves past the cutting tool point in one minute. | The chip length that will be removed from the work in one minute. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 314 | B | When handling contaminated oil from a hermetically sealed refrigeration compressor unit that has burned out its motor, you should _____. | store the oil in a clean refrigerant drum | use rubber gloves | circulate the oil through a filter drier | remove the oil with a portable charging cylinder | |
| 11 | 315 | B | The greatest difference between absorbent and adsorbent filters is that absorbent filters _____. | will remove additives from the lube oil | soak up liquid contaminants directly into the filter media | do not create pressure drops in the lube oil system | attract or have liquid contaminants stick to the surface of the filter media | |
| 11 | 316 | C | The graphite in a bearing lubricant compound of graphite grease, acts as a _____. | low temperature sealer | moisture barrier | filler to smooth surface irregularities | coolant to carry away heat | |
| 11 | 317 | B | Which of the following statements describes the function of an alarm annunciator on an engine room alarm panel? | An alarm condition causes a light and siren to come on which remain on until the machinery is secured. | An alarm condition causes a flashing light to illuminate indicating the malfunction, followed by an audible alarm. When the alarm acknowledge button is depressed, the audible alarm is silenced and light stops flashing but remains illuminated. | An alarm condition gives an audible and visual alarm signal, both of which are secured when the alarm acknowledge button is depressed. | An alarm condition causes a flashing light to come on, followed by an audible alarm. When the alarm acknowledge button is depressed, the warning light is extinguished. | |
| 11 | 318 | C | When replacing ball bearings on an electric motor shaft, you should _____. | tap the outer race with a mallet | apply even pressure to the outer race | apply even force to the inner race | apply pressure evenly to both the inner and outer races | |
| 11 | 319 | D | The pump packing gland has been repeatedly tightened by small increments until the gland has bottomed. Which of the actions listed should be carried out next if the leakage continues to be excessive? | Replace all of the packing. | Replace with larger cross-sectional turns of packing. | Replace the soft packing with packing turns that are covered with lead wrap. | Continue to add more turns of packing. | |
| 11 | 320 | B | Copper is sometimes used for fluid power lines because it _____. | has good resistance to high temperatures | has high resistance to corrosion | withstands heavy vibration under heavy system loads | resists hardening under stress | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 321 | C | Excessive lost motion in the valve mechanism of a duplex reciprocating pump will cause the _____. | pump to short stroke continuously at both ends of the stroke for both cylinders | pistons to stop in mid-stroke | pump to operate sluggishly | cushioning valves to wear | |
| 11 | 323 | C | An inverted gate valve (stem pointing downward) may be subject to wear sooner than a similar valve installed in the upright position because _____. | the gate's full weight is upon the stem | the gland stud nuts are under more pressure | sediment collects in the bonnet | the packing will not properly adhere to the stem | |
| 11 | 324 | B | For safe storage, the maximum allowable temperature to which refrigerant bottles should be exposed is _____. | 100° F | 125° F | 150° F | 175° F | |
| 11 | 325 | D | Adsorption filters are not commonly used in steam turbine or diesel engine lubricating systems because they _____. | utilize exotic and expensive filtering media making them too costly for use. | are only effective at temperatures below 100° F | can adsorb no more than five times their weight in water | remove additives from the lube oil | |
| 11 | 327 | D | A graphite filler commonly mixed with grease, acts _____. | as a mild abrasive | to smooth surface irregularities | to lower the friction coefficient | all of the above | |
| 11 | 328 | A | Main engine room control console alarms are usually designed to be of the self monitoring type, meaning that an open circuit to a particular alarm circuit will _____. | cause an alarm condition | secure power to the indicator | cause a backup power supply to energize | automatically reclose within 10 seconds | |
| 11 | 329 | C | When removing roller bearings from a shaft, the force of the puller should be applied to the bearing _____. | outer race | raceway | inner race | retainer plate | |
| 11 | 330 | B | After installing a new hydraulic pump in a system, what special attention should be given to the hydraulic system? | The relief valves in the system should be readjusted. | The filters and strainers should be checked frequently. | All system pressure should be readjusted. | The system should be drained and renewed with a fluid of different operating characteristics. | |
| 11 | 331 | C | A pounding noise occurring in one cylinder of a steam reciprocating general service pump could be caused by _____. | lower than normal supply steam temperature | lower than normal supply steam pressure | improper adjustment of steam cushion valves | loss of air charge in the pump discharge plenum chamber | |
| 11 | 332 | D | An unloader is installed on an air compressor to _____. | bypass the high pressure stage to the low pressure stage on 100% of the air compressors in service | prevent excessive interstage pressure buildup | control compressor discharge pressure | remove all but the frictional load during starting | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 333 | C | Which of the speeds listed represents the synchronous speed rating of the lube oil pump motor shown in the illustration? | 1,000 RPM | 1,150 RPM | 1,200 RPM | 1,250 RPM | GS-0011 |
| 11 | 334 | D | People familiar with ammonia refrigeration systems become accustomed to its odor and may forget that the vapors _____. | in a low concentration can cause death | will dissolve in perspiration and cause caustic burns | will burn or explode | all of the above | |
| 11 | 335 | B | The speed of a radial piston hydraulic MOTOR is controlled by varying the _____. | amount of cylinder block offset with respect to the rotor | fluid flow rate discharged to the motor | length of the motor piston stroke on the power cycle | pintle discharge rate to the suction side of the pump | |
| 11 | 336 | A | A thread chaser is a hand tool that should only be used for _____. | restoring damaged threads | enlarging existing threads | cutting original threads | straightening tapered threads | |
| 11 | 337 | B | Which of the following statements best describes an oil lubricated stern tube bearing installation? | It receives its oil supply from a branch line of the main lube oil system. | No shaft liner is needed in the area of the babbitted bearing surface. | The system pressure must be lowered when maneuvering in port to prevent blowing the outer oil seal. | For precise regulation of the bearing temperature, the system is required to have its own oil cooler. | |
| 11 | 339 | C | The best method of fixing a winch motor bearing of the sealed type that is running hot is to _____. | add grease through the zerk fitting | allow the winch to run at slower speeds only | replace the bearing with a new one | apply a light oil to the bearing housing | |
| 11 | 341 | D | When piston rod packing persists in leaking on a reciprocating steam pump, the cause may be _____. | a loose tappet collar | clogged suction strainers | an open snifter valve | misalignment of the crosshead guide | |
| 11 | 342 | B | Which of the wrenches listed practically eliminates the possibility of its slipping off while tightening a nut or bolt? | Open end wrench | Box end wrench | Crescent wrench | Monkey wrench | |
| 11 | 344 | D | Ammonia when used as a refrigerant is valuable because of its high efficiency, it is however _____. | toxic | flammable | explosive | all of the above | |
| 11 | 345 | B | Which of the following valve arrangements permits the reciprocating pump liquid piston to take suction from the suction chamber, and simultaneously discharge through the discharge chamber during the up and down strokes? | Two sets of suction and discharge valves in the liquid cylinder. | Two sets of valves, one set each for suction and discharge located in the water chest. | One set of valves in the water chest and another set in the liquid cylinder. | Two relief valves, one on each of the liquid cylinder. | |
| 11 | 346 | D | A thread die will be easier to start if the end of the shaft to be threaded is slightly _____. | peened | reamed | center drilled | chamfered | |
| 11 | 347 | C | On tankers using manually operated tank valves, the deck hand wheel indicator registers the _____. | exact lift position of the tank valve disk, through 100% of its operation | oxygen content of the tank | approximate number of turns the tank valve has been opened | level of oil in the tank | |
| 11 | 348 | A | Item "B" in the pump illustration is the _____. | packing gland | stuffing box | shaft sleeve | wearing ring | GS-0129 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 349 | A | After adding grease to a ball bearing with a handheld grease gun, you should _____. | run the machine with the bearing housing drain plug open for a short while | close the bearing housing drain and add a little extra grease to compensate for air pockets in the bearing | remove the grease fitting and leave open to allow excess grease to escape | save the used grease for chemical analysis | |
| 11 | 350 | A | Which of the following terms is used to identify the pressure of a liquid entering a centrifugal pump? | Suction head | Pump head | Discharge head | Total head | |
| 11 | 351 | A | Which of the following conditions would prevent a steam reciprocating pump from delivering its rated capacity? | Excessive suction lift | Air trapped in the discharge expansion chamber | A leaking snifter valve allowing air to enter the suction side of the pump | All of the above | |
| 11 | 353 | D | A pipe coupling is a fitting having _____. | outside threads on one end and inside threads on one end | outside threads on both ends | a left-hand twist | inside threads on both ends | |
| 11 | 354 | C | When subjected to high heat from a open flame, or an electric heating element, which of the listed refrigerants will break down and produce phosgene gas? | CO2 | Methyl chloride | R-22 | Sulphur dioxide | |
| 11 | 355 | B | The construction of the main propulsion engine lube oil sump should _____. | have no plating joints of 90° | retain the lube oil as long as possible before it recirculates through the system | provide drain/return lines that are no greater than 24 inches from the pump suction | be provided with only a perfectly horizontal bottom | |
| 11 | 356 | A | Demulsibility of a lube oil is defined as _____. | the ability of oil to separate from water | the temperature at which oil flows rapidly | a measure of the water in a lube oil system | an emulsion of different grades of oil | |
| 11 | 357 | B | The clearance volume for a single stage compressor is defined as the space created between the _____. | top of the piston and bottom side of head, with the piston at BDC | piston and head, including the space around the piston to the top of the upper ring and under the valves, with the piston at TDC | bottom of the piston and bottom side of the head at TDC, regardless of upper ring location and valve placement | top of the piston and bottom side of the head at TDC as compared to that which exists between the top of the piston and bottom side of head at BDC | |
| 11 | 358 | D | Admitting steam to an improperly drained heating system could result in _____. | cutting valve seating surfaces | high velocity slugs of water in motion in the system | damage due to water hammer | all of the above | |
| 11 | 359 | B | Figure "C" shown in the illustration correctly identifies the position of the journal when the shaft is _____. | just at the moment prior to being stopped | just beginning to rotate | increasing its speed to required operating speed | operating at its normal operating speed | GS-0121 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 360 | D | New piping and tubing to be installed in a hydraulic system can be safely degreased by using _____. | alcohol | a water-based detergent | carbon tetrachloride | a special petroleum solvent | |
| 11 | 361 | B | If the discharge valve is closed before the drive motor is stopped, which of the following types of pumps will most likely be damaged? | Centrifugal | Gear | Propeller | Turbine | |
| 11 | 362 | B | Over pressurization of an air compressor intercooler is prevented by the _____. | aftercooler relief valve | intercooler relief valve | last-stage unloader | first-stage unloader | |
| 11 | 363 | D | When the relief valve opens on a refrigeration compressor discharge line, it discharges high pressure refrigerant vapor to the _____. | liquid strainer | refrigerant inlet of the condenser | inlet side of the evaporator | suction side of the compressor | |
| 11 | 364 | B | Dichlorodifluoromethane when vaporized in the presence of an open flame, will form _____. | carbon dioxide gas | phosgene gas | trichlorodifluoromethane | sulphur dioxide | |
| 11 | 365 | C | The main lube oil sump of a main propulsion engine should be constructed of _____. | coated steel plating to reduce corrosion | nonferrous metal plating to prevent corrosion | clean steel plating | pinchback plating | |
| 11 | 366 | D | The ability of an oil to separate cleanly from an oil and water mixture is referred to as its _____. | precipitation number | neutralization number | pour point | demulsibility | |
| 11 | 368 | C | The vessel's steering gear is a classic example of a positioner type automation system. The variable input is provided through the steering wheel, and the rudder position is fed back to the operating mechanism. The difference between the input signal an | system differential | proportional band | error | command input | |
| 11 | 369 | A | You would close the illustrated valve "A" by _____. | turning the handwheel clockwise, as viewed from the top | first loosening part #4, closing the valve, then retightening part #4 | turning the handwheel counterclockwise, as viewed from the top | first loosening part #8, then turning the handwheel clockwise as viewed from the top | GS-0140 |
| 11 | 370 | C | Erosive tube failure in a heat exchanger can result from _____. | high temperature | waterside fouling | excessive cooling water velocity | poor heat transfer | |
| 11 | 372 | D | In addition to a pressure gage and a relief valve, an air receiver should be fitted with a _____. | sight glass and manhole | thermometer and sight glass | thermometer and manhole | drain connection | |
| 11 | 373 | A | The device shown in the illustration is used to _____. | unload the cylinders of an air compressor | reduce the pressure in the ship's service air system | grind sewage prior to entering the sewage treatment plant | maintain correct tension on the drive belts while the compressor is in operation | GS-0029 |
| 11 | 374 | B | In the presence of an open flame or hot surfaces, chlorinated fluorocarbon refrigerants decomposes and form _____. | petroleum crystals | phosgene gas | water vapor | carbon monoxide | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 375 | D | If the refrigeration system shown in the illustration has only one liquid line strainer, the strainer will be located between points _____. | 1 and G | G and C | J and F | D and K | RA-0012 |
| 11 | 376 | B | The illustrated device operates on the principle that the height of the column is _____. | directly equal to the height of the liquid in the tank | directly proportional to the pressure developed at D | equal to the fluid pressure supplied at B | equal to the pressure of the square root of the height of liquid H, times .833 | GS-0066 |
| 11 | 377 | C | To obtain maximum efficiency, two stage air compressors are usually _____. | horizontally mounted | never fitted with intake filters | fitted with intercoolers | operated in an unloaded condition at all times | |
| 11 | 378 | B | In a pneumatic automation system, a unit producing a signal to govern the position of the controller of the measured variable, relative to the value of the measured variable, is said to have _____. | reset action | proportional action | two position action | rate action | |
| 11 | 379 | C | To make the pieces shown as "A" in the illustration a locational interference fit _____. | the piece with the hole must be heated until the inside diameter of the hole is .245 inches +/- .001 | do nothing, this is a close sliding fit but there is no way to make it a locational interference fit and a close sliding fit is an acceptable alternative | turn down a new shaft with a diameter of .250 inches +.001/-.000 | hone the shaft until the roughness value is 50 micro inches (.005 inch clearance) | GS-0019 |
| 11 | 380 | D | The function of the hydraulic telemotor transmitter used in an electro-hydraulic steering gear system is to _____. | transmit the rudder angle to the bridge indicator | prevent the control linkage from striking the stops when hard over | automatically purge all entrained air from the system | send hydraulic signals to the receiving unit | |
| 11 | 381 | A | Which of the following statements is/are true regarding hydraulic pumps in general? | Variable volumes can be obtained with gear pumps only by variation of the pump drive speed. | A radial piston pump houses sliding pistons in a stationary cylinder block through which passes a rotating pintle or ported shaft. | The amount of fluid displaced per revolution of an axial piston rotary pump is maximum when the angle of the tilting box is at right angles to the shaft. | All of the above. | |
| 11 | 382 | A | Spring reinforced oil seals are generally installed with the tail or lip of the seal facing _____. | toward the oil pressure being sealed | toward the bearing preload washer | away from the oil pressure being sealed | away from the bearing housing recess | GS-0152 |
| 11 | 384 | B | R-12 is generally considered to be a safe, nontoxic, nonflammable, and non-explosive refrigerant. It can, however, become highly toxic when _____. | superheated outside the system | in contact with an open flame | heated to the boiling point | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 385 | C | The difference between the pressure at a point being measured and that of a perfect vacuum is known as _____. | internal pressure | gauge pressure | absolute pressure | external pressure | |
| 11 | 386 | B | The diameter of a hole drilled for tapping threads into a piece of stock should be _____. | larger than the tap diameter | smaller than the tap diameter | the same size as the tap diameter | the same size as the bolt diameter | |
| 11 | 387 | B | In a low pressure air compressor, the loss of volumetric efficiency normally results from _____. | adiabatic compression in the intercooler | heating of the air leaving the cylinders | inaccurate valve timing | constant enlargement of the clearance expansion volume | |
| 11 | 388 | D | The seal piping obtains liquid from the discharge side of the pump and directs the liquid to the _____. | packing gland | wearing ring | stuffing | lantern ring | |
| 11 | 389 | A | While attempting to read a tank level indicator, the mercury column drops rapidly. This may indicate _____. | a leak in the gage line | free surface effect in the tank | an improperly calibrated gage | excess air in the balance chamber | |
| 11 | 390 | C | Lint from cleaning rags can be harmful to hydraulic systems because the lint _____. | can cause rusting of internal parts | breaks down hydraulic fluid | can clog filters and promote component leakage | solidifies and causes cracked lines | |
| 11 | 391 | D | In the hydraulic transmission shown in the illustration, the "B" end is a _____. | low pressure hydraulic pump | variable displacement hydraulic pump | constant speed hydraulic motor | fixed displacement hydraulic motor | GS-0057 |
| 11 | 392 | D | An important point of consideration when replacing a dry type intake filter on an air compressor is to _____. | use the same wetting oil on the element as is used in the compressor lubrication system | install a smaller size filter to allow for expansion of the element | install only a filter consisting of a treated paper element | select the proper size filter so that air flow is not restricted | |
| 11 | 393 | D | A refrigeration system contaminated with moisture can be affected by _____. | acid formation | sludge formation | ice in the expansion valve | all of the above | |
| 11 | 394 | D | Some chlorinated fluorocarbon refrigerants may decompose into a toxic irritating gas if it is _____. | stored at temperatures below 60 degrees Fahrenheit | charged into a system having copper fittings | allowed to mix with compressor oil | exposed to an open flame or hot surface | |
| 11 | 395 | D | Which of the following statements describes the relationship between viscosity and specific gravity? | Liquids with different viscosities will always have the same specific gravity. | Liquids with different viscosities will never have the same specific gravity. | Viscosity and specific gravity are directly proportional. | Viscosity and specific gravity are not related in that one does not define or limit the other. | |
| 11 | 397 | B | The delivery rate of a variable stroke axial piston hydraulic pump is controlled by varying the position of the _____. | slide block | tilting box | pintle | reaction ring | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 398 | B | Biasing, in a pneumatic automated combustion control system, refers to a set amount of increase or decrease in the _____. | control pressure | loading pressure | supply pressure | rate relay pressure | |
| 11 | 399 | D | If you suspect that a gage is sticking and giving an inaccurate reading, you should _____. | blow out the gage line with compressed air | tap the gage body with a wrench | remove the gage bezel and slightly move the needle | replace the gage or have it calibrated | |
| 11 | 400 | D | One advantage of a triple-effect low pressure submerged tube distilling plant over a double-effect unit is _____. | better water purity | less scale formation | less internal corrosion | greater evaporator efficiency | |
| 11 | 401 | A | In the illustration shown, what is the proper description of the hole represented by "C"? | Counterbored | Countersunk | Counterdrilled | Spot faced | GS-0015 |
| 11 | 402 | B | Which of the following descriptions should be included when identifying the length for pipe nipples? | Fully threaded, half threaded, long, and short | Close, short, long, and tank | Standard, extra-strong, double extra-strong, and schedule 80 | Cast, wrought, stainless, and brass | |
| 11 | 403 | B | To drill a hole in round stock, perpendicular to the axis of the piece, the stock should be mounted in a _____. | collet | V-block | clamp | morse sleeve | |
| 11 | 404 | A | For the proper control of the air temperature in an air conditioning system using chilled water circulation, which of the listed conditions should remain constant regardless of load changes? | Chilled water system supply temperature. | Chilled water system return temperature. | Compressor discharge temperature. | Compressor suction pressure. | |
| 11 | 405 | B | Which of the following is NOT an identifiable characteristic of a steam reciprocating pump? | Direct-acting | Diffuser | High-pressure | Vertical | |
| 11 | 406 | B | The pressure of a liquid leaving the pump can be referred to as the _____. | total head | discharge head | net positive suction head | suction head | |
| 11 | 407 | C | Obstructed suction passages in the casing or pintle of a radial piston hydraulic pump will cause the _____. | pump back pressure to decrease | pump return and discharge pressures to equalize | pumped fluid volume to decrease | pump discharge flow to drop to zero | |
| 11 | 408 | B | Potable water piping systems installed aboard ships must be _____. | disinfected monthly with a chlorine compound | independent of all other piping systems | cadmium lined to prevent internal corrosion | flushed each time potable water is taken onboard | |
| 11 | 409 | C | A pressure gage pointer responding sluggishly to changes in pressure, should be repaired by _____. | tapping the gage housing lightly | bending the needle to free the linkage | cleaning the residue from gear teeth | greasing the hair spring | |
| 11 | 410 | B | Tube leaks in the distillate cooler of a two stage flash evaporator will result in _____. | loss of second stage vacuum | contamination of the distillate | lower feed inlet temperature | contamination of the second stage condenser | |
| 11 | 411 | B | The device illustrated is known as a _____. | semi-balanced rudder | unbalanced rudder | horn-hung rudder | balanced rudder | GS-0101 |
| 11 | 412 | C | The threaded pipe fitting called 'street elbows' have _____. | male threads only | female threads only | male and female threads | interrupted threads on each end | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 413 | D | Failing to decrease the feed pressure on a drill as its point begins to break through the bottom of the work piece will cause the drill to _____. | break cleanly through the bottom of the work piece | cut an elongated hole in the bottom of the work piece | form a tapered hole in the bottom of the work piece | jam in the work piece and tend to whirl it around | |
| 11 | 414 | C | Coast Guard Regulations (46 CFR) require a method for the relief of an over pressurized refrigeration system. Which of the following statements complies with these regulations? | The relief valve from the receiver must relieve to the condenser first. | The relief valve settings shall be 1 1/4 times the maximum allowable working pressure. | A rupture disk may be fitted in series with the relief valve. | The rupture disk shall burst at a pressure not higher than 10% above the relief valve setting. | |
| 11 | 415 | C | Air leakage between the shaft and stuffing box packing in a centrifugal pump is prevented by _____. | a compressed packing gland | lantern rings between the packing rings | a liquid seal | the stuffing box gland | |
| 11 | 416 | D | The suction-force principle of operation is a typical characteristic of _____. | centrifugal pumps | jet pumps | propeller pumps | reciprocating pumps | |
| 11 | 418 | C | In an automation system, increasing or decreasing the loading pressure by a set amount is known as _____. | positioning | proportioning | biasing | controlling | |
| 11 | 419 | B | A fuel oil tank pneumercator will give an inaccurate reading if the _____. | pneumercator is recharged with the air supply open | pneumercator balance chamber bleed orifice is blocked by the oil being measured | pressure in the system is allowed to equalize | operating cock is placed in the 'vent' position when the system is not in use | |
| 11 | 421 | C | Hydraulic pumps most commonly used in steering systems are of the _____. | lobe type | screw type | axial piston type | volute type | |
| 11 | 422 | A | Fittings used to close the ends of pipe are called 'pipe_____'. | caps | ells | tees | closures | |
| 11 | 423 | B | When drilling blind holes with a standard drill press, the proper method of stopping the progress of the drill boring through the work is by _____. | moving the working table | using a depth stop | adjusting the spindle return spring | gaging chuck motion | |
| 11 | 424 | D | In a direct expansion type multi-box refrigeration system, the compressor is set up to cycle on and off by the _____. | pressurestat | high pressure cutout | solenoid valve | low pressure cutout switch | |
| 11 | 425 | C | An additive used to improve the ability of a lube oil to reduce friction is known as a/an _____. | suppressant additive | dispersant additive | extreme pressure additive | PH alkaline additive | |
| 11 | 427 | B | One advantage of a flash distilling plant when compared to a submerged tube distiller is _____. | greater distillate purity through high temperature evaporation | cold shocking for scale removal is not required | less internal corrosion because of lower brine density | less feedwater is required for equal plant capacity | |
| 11 | 428 | C | Potable and non-potable water systems aboard vessel _____. | may be temporarily interconnected with a removable spool | are permanently interconnected through a double stop valve | may never be interconnected by any means | may be connected if they are used only for wash water | |
| 11 | 429 | D | The term, whole depth of the gear, shown in the illustration, is equal to _____. | A + D | B + D | C + A | C + D | GS-0111 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 430 | D | In an electro-hydraulic steering gear system, when will the variable displacement pump be placed on stroke? | When the helm is at any angle other than amidships. | When the six-way valve is opened. | When the ram relief valves lift. | When the rudder angle is different from the position of the helm. | |
| 11 | 431 | D | In application, which of the listed sealing devices is most similar to an O-ring? | V-ring | Cup seal | U-ring | Quad ring | |
| 11 | 432 | B | A 'close nipple' is a piece of pipe that is _____. | less than 1/2 inch long | threaded along the entire length | shorter than the nipple outside diameter | thread only on one end | |
| 11 | 433 | B | Which of the pumping systems listed for use aboard ship will most likely use a propeller type pump? | Fluid power transmission system | Main circulating system | Steering gear system | Fuel oil service booster system | |
| 11 | 434 | C | Which of the listed operations will cause an automatically controlled refrigeration compressor to restart? | Closing of the solenoid valve | Closing of the expansion valve | An increase in the suction pressure | Decreasing the suction pressure | |
| 11 | 436 | B | The ability of lubricating oils to resist viscosity changes during temperature changes is indicated by the _____. | American Petroleum Institute number | viscosity index number | Seconds Saybolt Furol number | Seconds Saybolt Universal number | |
| 11 | 438 | B | Which of the additives listed is used to reduce the foaming tendency of lube oil? | Emulsifiers | Suppressants | Depressants | Extreme pressure | |
| 11 | 439 | D | In ship construction, the shell plating is arranged in strakes and assigned letter designations. If the strakes were lettered "A" through "K", the "K" strake will be _____. | at the turn of the bilge | the keel strake | the drop strake | the sheer strake | |
| 11 | 440 | D | The suction side of the illustrated pump is identified by the letter _____. | A | B | C | D | GS-0129 |
| 11 | 441 | B | The illustrated valve, figure A, needs to be repaired due to a leak across the valve disk. To disassemble the valve you should _____. | turn the hand wheel clockwise as viewed from the top, using a pipe wrench for assistance | first fully loosen part #8, then turn the handwheel clockwise to separate the bonnet from the body | first fully loosen part #8, then turn the handwheel counterclockwise to separate the bonnet from the body | tighten part #4 | GS-0140 |
| 11 | 442 | B | To connect two lengths of pipe previously set in place, you should use a pipe _____. | nipple | union | coupling | tee | |
| 11 | 443 | B | One of the steps required to increase the drilling speed of a drill press is to _____. | move the drive belt to a smaller diameter motor pulley | move the drive belt to a smaller diameter spindle pulley | change the terminal connections of the drive motor | change to a larger diameter spindle | |
| 11 | 444 | C | Saltwater is typically provided to a refrigeration system to _____. | cool the expansion valve | prevent refrigerant superheating | condense the refrigerant gas | prevent motor overheating | |
| 11 | 446 | A | Which of the figures illustrated correctly identifies the position of the journal while it is stopped? | A | B | C | D | GS-0121 |
| 11 | 448 | C | Which of the additives listed is used to lower the pour point of a lubricating oil? | Emulsifiers | Suppressants | Depressants | Extreme pressure | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 449 | B | In ship construction, the strakes are given letter designations beginning with the letter 'A.' The "A" strake is adjacent to the _____. | deck edge strake | keel | turn of the bilge strake | sheer strake | |
| 11 | 451 | C | Under normal operating conditions, the rudder is hydraulically locked unless _____. | the manual trick wheel is engaged for steering | the variable stroke pump is off stroke | a rudder order is given by the control system | an electric power system failure occurs at the steering gear | |
| 11 | 452 | D | Temporary Certificates of Inspection for offshore drilling units are effective until the _____. | Operations Manual is approved | Minerals Management Service approval is issued | classification society approval is issued | permanent Certificate of Inspection is issued | |
| 11 | 453 | B | A tapered shank drill is removed from the drill press spindle with a _____. | taper punch | drill drift | vice grip | leather mallet | |
| 11 | 454 | D | In a direct expansion type cargo refrigeration system, a box is normally changed from chill to freeze by adjusting the _____. | hand expansion valve | compressor suction valve | solenoid bypass | back pressure regulating valve | |
| 11 | 456 | B | Which of the following statements is correct concerning the viscosity of lubricating oil? | Viscosity will increase as temperature increases. | Viscosity is a measure of a fluid's internal resistance to flow. | Viscosity will decrease as temperature decreases. | Viscosity is not dependent on temperature. | |
| 11 | 458 | B | The pour point of lubricating oils is affected the most by which of the following? | Extensive centrifuging | Wax content | Water content | Acid content | |
| 11 | 459 | A | To prevent overheating and scoring of the shaft after repacking the stuffing box, which of the following procedures should be carried out? | Tighten the packing in small increments while the pump is operating. | Lubricate the lantern ring with cylinder oil before installing new turns of packing. | Tightening the gland in all the way and then backing it off slightly. | Operating the pump slowly and applying oil freely to the shaft until the packing is properly seated. | |
| 11 | 461 | B | Which of the valve arrangements listed can be used to modify the four ram hydraulic steering gear system, shown in the illustration, to a working two ram system? | Close valves 'C3', 'C4', and open valves 'B1', 'B2' | Close valves 'C2', 'C4', and open valves 'B2', 'B4' | Close valves 'C1', 'C3', and open valves 'B1', 'B2', 'B3' | Close valves 'C1', 'C2', and open valves 'B3', 'B4' | GS-0067 |
| 11 | 462 | B | The type of shaft coupling used on the pump illustrated is best described as a _____. | flexible grid coupling | solid coupling | gear coupling | jaw coupling | GS-0143 |
| 11 | 463 | A | To remove a hand held right-handed straight cut reamer after it has gone all the way through a hole, you should _____. | turn the tap wrench clockwise, simultaneously raising the reamer | tap the reamer out with a soft faced hammer | turn the tap wrench counterclockwise, simultaneously raising the reamer | work the reamer side to side to dislodge it | |
| 11 | 464 | C | A pressure drop in the liquid line of a refrigeration system may cause _____. | the solenoid valve to seize | the compressor to hunt | flash gas to form in the liquid line | the expansion valve to freeze open | |
| 11 | 465 | D | Moisture and impurities can be removed from pneumatic systems by using _____. | air intake heaters | desiccated suction strainers | multi-orificed suction valves | blowdown valves and filters | |
| 11 | 466 | B | The viscosity of an oil is a measure of its _____. | weight | internal friction | demulsibility | S.A.E. number | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 467 | B | The purpose of the propeller fairwater cone is to _____. | lock the propeller nut in position | minimize water turbulence | eliminate axial thrust | eliminate cavitation | |
| 11 | 468 | B | Although lube oils used in the main lubricating service systems should have a relatively high flash point to avoid ignition, they can create smoke and fire hazards when they _____. | are exposed to a vacuum | come in contact with extremely hot surfaces | are reduced in temperature to just above the pour point | become extremely agitated or aerated | |
| 11 | 469 | B | Vertical transverse structures in the double bottom are known as _____. | pillars | floors | ceilings | stanchions | |
| 11 | 470 | B | The reading indicated on a vernier micrometer caliper scale is .8046 inches. Which of the figure in the illustration represents this reading? | Figure A | Figure B | Figure F | Figure G | GS-0083 |
| 11 | 471 | D | When the helm is turned on the navigation bridge, which of the listed actions will be the FIRST response in the steering room on a ship equipped with an electro-hydraulic steering gear? | The pumps go to full stroke. | The six-way valve aligns itself with the running pump. | Both port and starboard cables are energized. | The synchronous receiver turns, duplicating the helm motion. | |
| 11 | 472 | C | Item "B" shown in the illustrated hydraulic circuit is used to _____. | act as a power source to operate the pumps indicated as "F" | act as a power source to operate the pump indicated as "E" | shut down the remotely operated electric motor driven pump when the watertight door has closed | shut down the operation of pump "E" when the watertight door has closed | GS-0103 |
| 11 | 473 | A | If you are hand tapping holes in cast iron, you should _____. | tap the holes without cutting oil | flood the tap with mineral oil | chamfer the edges of the holes | start tapping with a plug tap | |
| 11 | 474 | D | Certificates of Inspection for offshore drilling units are issued for a period of _____. | 24 months | 36 months | 48 months | 60 months | |
| 11 | 475 | B | Permanent centrifugal pump shaft damage due to erosion, corrosion, and wear at the stuffing box is usually prevented by _____. | wearing rings | renewable sleeves | a hardened sprayed metal coating | internally flooded lantern rings | |
| 11 | 477 | D | On vessels using reach rods to manually control the tank valves, one turn of the hand wheel on deck will produce how many turns of the valve stem at the valve? | One-fourth of a turn | One-half of a turn | Three-fourths of a turn | One turn | |
| 11 | 478 | D | The flash point of most lube oils used in a main lubricating system should be approximately _____. | 80° F to 100° F | 140° F to 160° F | 250° F to 300° F | 350° F to 450° F | |
| 11 | 480 | D | Hydraulic cranes must be properly warmed-up before being operated because _____. | warm-up allows the hydraulic system to become charged with oil | warm-up allows the relief valves to be properly tested | hydraulic strainers operate only during the warm-up period | warm-up allows the hydraulic fluid to reach proper viscosity | |
| 11 | 481 | D | In an electro-hydraulic steering gear, any change in relative position between the synchronous receiver and the follow-up gear will result in _____. | the pump going to full stroke | closing of the six-way valve | driving the rams up against the stops | a corresponding slowing or increasing of the pumped flow rate | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 484 | B | What is the reading of the vernier micrometer caliper scale shown in figure "B" in the illustration? | 0.7996 inch | 0.8046 inch | 0.8460 inch | 0.8550 inch | GS-0083 |
| 11 | 485 | D | Which of the following statements describes the function of an air compressor intake filter? | Protects against suction valve float. | Provides a positive pressure on the air inlet valves. | Prevents lubricating oil contamination of the compressed air supply. | Protects against the damaging effects of airborne solid particles. | |
| 11 | 486 | B | Which of the listed characteristics of lube oil are the most important to the engineer from an operational standpoint? | Ash content, carbon residue, and gravity | Viscosity, acidity, and demulsibility | Pour point, flash point, and precipitation number | Auto ignition point, viscosity index, and film strength | |
| 11 | 487 | D | Which of the following conditions will indicate a need for a finishing cut to be taken on the pump shaft? | Roughness | Deep ridges | Corrugations | All of the above | |
| 11 | 488 | B | A salinity indicating system functions on the basic principle of measuring the _____. | electrical inductance of water | electrical conductivity of water | specific gravity of water | hydrogen ion concentration of water | |
| 11 | 489 | B | In ship construction, the shell plating is arranged in strakes, with four of the strakes being specifically identified by name. The strake next to the keel is identified as the _____. | keel strake | garboard strake | bilge strake | sheer strake | |
| 11 | 490 | A | The number of screw threads per inch for a Standard National Coarse 1/2 inch bolt is _____. | 13 | 16 | 18 | 20 | |
| 11 | 491 | A | In the steering gear system shown in the illustration, if the maximum working pressure is applied to the face of the ram, the total force on one piston will be _____. | 209,230 lbs. | 836,920 lbs. | 836,920 in. lbs. | 24,000,000 in. lbs. | GS-0104 |
| 11 | 492 | A | After conducting a boat drill on a mobile offshore drilling unit, which of the following is the master or person in charge required to enter into the logbook? | The condition of the equipment used during the drill. | The name of the lifeboatman in charge of each lifeboat. | The location of the vessel at the time of the drill. | The time it took to lower the boat. | |
| 11 | 493 | D | The reading on a vernier caliper scale is indicated as 2.368 inches. Which of the figures shown in the illustration represents this reading? | Figure A | Figure B | Figure D | Figure G | GS-0082 |
| 11 | 494 | A | What class of bulkhead is required around the galley on a MODU? | Class A | Class B | Class C | Class D | |
| 11 | 495 | C | In a flash type evaporator, all saltwater headers are vented through individual vent cocks to the _____. | saltwater heater shell | second-stage condenser | atmosphere | second-stage flash chamber | |
| 11 | 496 | B | What is the reading of the vernier micrometer caliper scale shown in figure "E" in the illustration? | 0.3001 inch | 0.3101 inch | 0.3151 inch | 0.3251 inch | GS-0083 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 499 | C | The garboard strake is located _____. | at the very bottom center | just under the sheer line | at each side of the keel | at the turn of the bilge | |
| 11 | 500 | C | A centrifugal pump vibrates excessively during operation. Upon disassembling the pump it is found that the impeller is out of balance. Without an available spare, you should _____. | drill holes through the heavy side of the impeller until it balances | weld counterweights to the light side of the impeller | remove metal from the heavy side by machining in a lathe | acid wash and scrape the heavy side until it balances | |
| 11 | 501 | C | Which of the tolerances listed is allowed on the outside diameter of the bushing illustrated? | .060 inch | .002 inch | .0005 inch | 1.6015 inches | GS-0017 |
| 11 | 502 | A | In the steering gear unit shown in the illustration, which of the actions listed will occur as 'left rudder' is being attained? | Ram cylinder "A" is under hydraulic pressure. | Ram cylinder "H" is relieving hydraulic pressure. | Ram cylinder "D" is under hydraulic pressure. | All of the above. | GS-0104 |
| 11 | 503 | B | Lantern rings are provided on centrifugal pumps to _____. | allow illuminated inspection of shaft and packing | provide a passage for the stuffing box sealing liquid | adjust leakage at the shaft gland | allow for distortion of the wearing rings | |
| 11 | 504 | D | Moisture is removed from a refrigeration system by _____. | bleeding refrigerant from the condenser | opening a drain petcock on the oil separator | condensing the water in the heat exchanger | using a dehydrator cartridge | |
| 11 | 505 | A | Why will a two stage flash type distilling plant tend to operate more efficiently when operating in cold seawater? | The colder seawater passing through the condenser tube bundles of the various stages increases evaporator vacuum. | The amount of heated feedwater discharged from the feedwater heater aftercondenser is increased. | Fewer noncondensable gases are created by the flow of colder seawater. | More seawater is allowed to pass through the first stage overflow weir. | |
| 11 | 506 | D | Pipe friction during oil transfer will be the greatest during the transfer of a lubricating oil at 130° F with a viscosity index of _____. | 65 | 80 | 90 | 100 | |
| 11 | 508 | B | To maintain the design discharge pressure of a centrifugal pump, the clearance between the _____. | impeller and lantern ring is critical | impeller and casing wearing rings is critical | packing box and packing gland is critical | gland seal and packing gland is critical | |
| 11 | 509 | D | The garboard strake shown in the illustration is identified by the letter _____. | B | D | E | F | GS-0086 |
| 11 | 510 | C | Which of the listed pumps, shown in the illustration, is fitted with a relief valve on its discharge side? | Bilge pump | Ballast pump | General service pump | All of the above | GS-0042 |
| 11 | 511 | D | The tolerance of the largest diameter of the tool shown in the illustration is _____. | plus or minus .006 inch maximum | plus or minus .003 inch maximum | plus .003 inch | plus .000 inch to minus .003 inch | GS-0016 |
| 11 | 512 | A | The steering gear unit shown in the illustration, which of the conditions listed will occur as 'left rudder' is being obtained and only the 'No. 1' steering gear pump is running? | Cylinder end "H" is under pressure. | Cylinder end "A" is relieving. | Cylinder end "E" is under pressure. | Cylinder end "F" is relieving. | GS-0104 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 513 | C | A lantern ring is _____. | the bottom ring in a set of piston rings | the oil slinger on a spring bearing | used to distribute seal water throughout the pump stuffing box | the lifting ring on each running light | |
| 11 | 514 | A | Moisture in the refrigerant may _____. | freeze on the expansion valve seat and reduce the flow of liquid refrigerant | emulsify the oil in the condenser | freeze in the king valve | clog the oil trap | |
| 11 | 515 | B | Why would a flash type distilling unit be more efficient when operated in cooler seawater temperatures? | Steam carryover between stages is reduced. | Evaporator vacuum is increased. | The amount of available flash steam is decreased. | Feedwater flow from the feedwater heater is increased. | |
| 11 | 516 | B | The reading on a vernier caliper scale is indicated as 1.820 inches. Which of the figures shown in the illustration represents this reading? | Figure A | Figure D | Figure F | Figure G | GS-0082 |
| 11 | 518 | C | When using the draw file method, which of the listed types of files will produce a fine finish? | A double cut file | A bastard file | A single cut file | A second cut file | |
| 11 | 519 | C | The end joint formed by adjoining plates in a hull plating strake is properly identified as a _____. | bracket | scarph | butt | seam | |
| 11 | 522 | A | Which of the following precautions should be observed concerning the introduction of a fire resistant fluid into a hydraulic system? | Deterioration of paints, seals, metals, and electrical insulation may occur. | Fluid viscosity always increases as a normal result of its use. | Decreased wear rates of components is an advantage of its use. | Only chemically active filters may be used. | |
| 11 | 523 | A | Marine sanitation devices installed on vessels must be certified by the _____. | U.S. Coast Guard | American Bureau of Shipping | Society of Naval Architects and Marine Engineers | Environmental Protection Agency | |
| 11 | 524 | B | The reading indicated on a vernier micrometer caliper scale is .5260 inches. Which of the figure in the illustration represents this reading? | Figure C | Figure D | Figure F | Figure G | GS-0083 |
| 11 | 525 | B | The condensers located in the various stages of a flash evaporator are cooled by _____. | distillate | seawater | brine | air | |
| 11 | 526 | C | When cutting external threads on a steel pipe with a die, you should _____. | start the die at a slight angle with the work to create tapered threads | tap the die with a hammer to break up the chips | continue turning until the end of the pipe has gone through the die and is flush with the die face | never use a lubricant | |
| 11 | 528 | D | Which of the following conditions is most likely to cause water hammer in the potable water system? | The hydro-pneumatic tank being half full of water | The starting of the potable water pump. | A low water level in the potable water storage tank. | Rapid closing of a spring closed basin faucet. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 529 | D | The welded joint located between two plates in the same strake of hull plating is called a _____. | bracket | scarf | lap | butt | |
| 11 | 530 | B | The tendency of a flammable liquid to vaporize is indicated by its _____. | ignition temperature | flash point | flammable range | convection index | |
| 11 | 531 | A | Which of the conditions listed does the blueprint symbol shown in the illustration represent? | All surfaces are to be finish machined. | A groove must be machined at the points designated. | The thread form to be machined on the bolt. | The surface should be finished with a welded overlay. | GS-0028 |
| 11 | 532 | B | When responding to a 'right rudder' command from the amidships position, which parts of the steering gear system illustrated will be subjected to the highest pressure? | "C" and "F" | "E" and "B" | "F" and "E" | "B" and "C" | GS-0137 |
| 11 | 533 | B | On many modern tankers, which of the following devices is used to reduce cargo pump leakage to the pump room bilge? | Flinger rings | Mechanical seals | Shaft sleeves | Clipper seals | |
| 11 | 534 | D | Moisture entering a typical refrigeration system will most likely _____. | boil in the condenser | be removed by the liquid line strainers | cause sweating and frost on the evaporator coils | freeze in the expansion valve | |
| 11 | 535 | C | In a two stage flash distilling plant, which of the pumps listed is vented to the shell of the second stage in order to remove vapor from the pump suction? | Condenser circulating water pump | Feedwater heater drain pump | Distillate pump | Air ejector condenser drain pump | |
| 11 | 536 | B | The component which is used to thoroughly separate small, fine, dust-like particulate contamination from hydraulic fluid is a/an _____. | accumulator | filter | separator | strainer | |
| 11 | 538 | D | Short cycling of the potable water pump is avoided by the proper use of a _____. | hydro-pneumatic tank completely filled with compressed air at system operating pressure | hydro-pneumatic tank filled with water | charge of air, at 20 psi (137.9 kPa) above system pressure with the hydro-pneumatic tank one quarter full of water | charge of air, at system pressure, when the hydro-pneumatic tank is half full of water | |
| 11 | 539 | D | Vertical structural members used to support and transmit downward forces of a load are called _____. | pillars | stanchions | columns | all of the above | |
| 11 | 540 | B | Thermostatic steam regulating valves are used in heavy fuel oil service systems to control the _____. | double bottom fuel oil tank temperature | supply of steam flow to the fuel oil heaters | pressure of the fuel supplied to the oil burners | attemperator steam flow in the heater discharge circuit | |
| 11 | 541 | B | When the propeller blades are integral with the hub, the propeller is called a _____. | built up propeller | solid propeller | controllable pitch propeller | suction back propeller | |
| 11 | 542 | B | The best gasket material to use in cargo fuel oil lines is _____. | sheet asbestos | oil-resistant sheet packing | cork sheet packing | unvulcanized packing | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 543 | C | When fire safe or fire resistant fluid is to be used in a hydraulic system, it is important that _____. | the resultant pressure, due to the increase in fluid viscosity, is not excessive | the fluid does not dissipate too much heat | the fluid be compatible with all seal materials used | separate lube oil supply be furnished for the hydraulic pump | |
| 11 | 544 | D | Moisture in a refrigeration system can cause _____. | freezing the expansion valve closed | corrosion of system piping | improper temperature regulation | all of the above | |
| 11 | 545 | A | The reading indicated on a vernier micrometer caliper scale is .4678 inches. Which of the figure in the illustration represents this reading? | Figure C | Figure D | Figure E | Figure F | GS-0083 |
| 11 | 547 | D | During the operation of the device shown in the illustration, the required compressed air output has stabilized within a pressure range of 100-110 psi. Which of the following statements of operating conditions is correct? | Component "B" is closed and will open when output pressure had dropped below 50 psi. | Component "D" is open and will close when output pressure rises above 110 psi. | Component "F" will force "E" to be driven to the full open position. | Component "E" is modulated proportionally in response to the required output. | GS-0120 |
| 11 | 548 | B | The process of grinding, shredding, or reducing the size of sewage particles is known as _____. | detention | maceration | bulking | chlorinating | |
| 11 | 549 | D | In ship construction, which of the listed strengthening members act to support the decks? | Pillars | Girders | Bulkheads | All of the above | |
| 11 | 550 | D | The lowest temperature at which fuel combustion becomes self-sustaining in the presence of a source of ignition, is defined as the _____. | auto ignition point | flash point | burning temperature | fire point | |
| 11 | 551 | C | The reading indicated on a vernier micrometer caliper scale is .6383 inches. Which of the figure in the illustration represents this reading? | Figure B | Figure D | Figure F | Figure G | GS-0083 |
| 11 | 553 | C | What is the reading of the vernier micrometer caliper scale shown in figure "D" in the illustration? | 0.5110 inch | 0.5160 inch | 0.5320 inch | 0.5350 inch | GS-0083 |
| 11 | 554 | C | Which of the problems listed could be indicated if a sight glass in the refrigerant liquid line is full of bubbles? | Proper refrigerant charge | Faulty expansion valve | Insufficient refrigerant | Solenoid valve stuck open | |
| 11 | 557 | B | Using the information in the illustration shown, the tail of the welding symbol will _____. | designate the type of weldment | designate the welding specifications | specify the size of weldment | specify the direction of welding | GS-0030 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 558 | D | During routine maintenance the bilge manifold valves are removed. Prior to resecuring the valve bonnets, the valve _____. | disks and seats should be checked and lapped if necessary | bonnet, flange gaskets should be renewed if they were cut or torn | stem packing should be renewed if the packing has hardened, the glands have bottomed out, or the glands cannot be tightened | all of the above | |
| 11 | 559 | A | Vertical support members used to strengthen bulkheads are called _____. | stiffeners | panels | stanchions | brackets | |
| 11 | 560 | A | In diagram "A", shown in the illustration, at what draft does the vessel displace 3000 tons? | 9 ft | 6 ft | 3 ft | None of the above | SF-0024 |
| 11 | 561 | A | Design characteristics of lubricating oil sump tanks will include _____. | installation of baffles to prevent excessive sloshing of oil | sufficient capacity to contain all the lube oil in the system except for the contents of the gravity tank | cooling coils made of welded seamless steel pipe | the bottom of the sump should be integral with the shell plating | |
| 11 | 562 | C | You would open the illustrated valve "A" by _____. | turning the handwheel clockwise, as viewed from the top | first loosening part #4, opening the valve then retightening part #4 | turning the handwheel counterclockwise, as viewed from the top | first loosening part #8, then turning the handwheel counterclockwise as viewed from the top | GS-0140 |
| 11 | 563 | D | When changing to a fire resistant hydraulic fluid in a system, it is important to check the compatibility of the new fluid with the system's _____. | seals | metals and plating | paint | all of the above | |
| 11 | 564 | B | Some refrigeration systems have chemical moisture indicators installed in conjunction with the sight glass in the liquid line. If excess moisture is present in the system, the indicator will _____. | activate the driers | change color | secure the compressor | add a predetermined amount of liquid drier | |
| 11 | 566 | D | Which of the following statements describes the functions of a reservoir used in a hydraulic system? | Dissipate heat | Trap foreign matter | Separate air from the oil | All of the above | |
| 11 | 567 | C | The advantages of flash type evaporators, as compared to submerged tube type evaporators, include _____. | less internal corrosion because of lower brine density | higher temperature evaporation for lower salinity of the distillate produced | less hard scale formation in a flash evaporator | less feedwater required for a flash evaporator | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 568 | C | The aft, starboard bilge-well can not be pumped out, and back flushing has not been successful. The next practical solution will be to carry out which of the following actions? | List the ship to port in order to pump out the bilges for the remainder of the voyage. | Place 20 gals. (75.7 L) of fuel oil tank-wash into the affected bilge well for one hour to dissolve the stoppage. | Take all necessary steps to properly and safely pump out the affected bilge well, then manually 'muck' it out. | Change over and use one of the two remaining bilge pumps to dewater the starboard bilge well. | |
| 11 | 569 | D | The double bottom in a vessel is a space comprised of _____. | plating forming the engine room tank top | doubler plating installed over the flat keel plate | a watertight boundary formed by the inner bottom | compartments between the inner and outer bottoms | |
| 11 | 571 | C | The welding symbol as shown in the illustration uses a circle to indicate a/an _____. | plug weld | field weld | all around weld | round fillet weld | GS-0030 |
| 11 | 572 | A | Compared to a constant pitch propeller, a controllable pitch propeller _____. | more efficiently uses available engine power | operates at a lower efficiency at a fixed speed | produces the same torque at lower engine power | develops its rated power at a lower speed | |
| 11 | 573 | C | While responding to a right full rudder command from the amidships position, which of the cylinders illustrated will be fully pressurized on the face of the pistons? | "B" | "C" | "E" | "A" | GS-0104 |
| 11 | 574 | A | A liquid indicator sight glass is useful in determining whether or not a refrigeration system is sufficiently charged. It is generally located in the _____. | high pressure liquid line | low pressure liquid line | high pressure vapor line | low pressure vapor line | |
| 11 | 575 | C | The tool best suited for cutting pipeline flange gaskets to the correct size is _____. | a pair of tin snips | a jack knife | a gasket cutter | a ball peen hammer | |
| 11 | 576 | D | A hand hacksaw blade is normally installed in the saw frame with the teeth pointing away from the saw handle, because _____. | the blade will always break if installed otherwise | cutting fluid must flow down the teeth | the blade will overheat if installed otherwise | cutting pressure is most easily put on the forward stroke | |
| 11 | 577 | B | One distinct advantage of flash type evaporators, as compared to most other evaporators, is that in a flash evaporator shell _____. | high temperature distillate can be recirculated to induce additional flashing | scale formation is not a severe problem | cold shocking is more effective in removing scale | water purity is greatly increased at high capacity | |
| 11 | 578 | B | The bilge system is unable to pump out the aft starboard engine room bilge-well due to the bilge-well suction being fouled. With two feet of water over the top of the bilge-well, which of the following actions should be carried out? | Send the wiper into the bilge-well with a scoop and pail. | Remove the effected bilge manifold valve and attempt to back flush the line. | Simultaneously operate all available bilge pumps. | Transfer half the contents of a drum of degreaser into the bilge well and pump out the bilge well with the system. | |
| 11 | 579 | D | The purpose of swash bulkheads is to _____. | minimize the effect of a listing condition | restrict flooding within a tank | separate cargoes in a common tank | reduce liquid movement and surging within a tank | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 581 | D | Which of the following statements is correct concerning the operation of the bucket type steam trap shown? | Condensate will flow from the valve opened by the rising bucket. | The bucket will not open the valve until the trap has been completely filled with condensate. | Condensate flow is continuously controlled by the permanently maintained operating level of the bucket. | The valve is opened by the sinking bucket. | GS-0048 |
| 11 | 582 | B | A hacksaw blade is normally placed in the saw frame with the _____. | maximum possible tension on the blade | teeth pointing away from the handle | blade tooth set adjusted for maximum cutting width | teeth angled toward the saw handle | |
| 11 | 583 | B | Dual electro-hydraulic steering units usually operate _____. | with both pumps on line at the same time | with one pump on standby | with the follow-up gear disconnected | only when the rudder is moved amidships | |
| 11 | 584 | C | If a liquid sight flow indicator in a refrigeration system shows gas bubbles in motion passing inside of the glass, there is _____. | too much refrigerant in the system | oil entrained in the refrigerant | less than a full charge of refrigerant in the system | ice crystals forming in the refrigerant | |
| 11 | 586 | B | Diamond point chisels are best used for cutting _____. | oil grooves in bearings | V-grooves and inside sharp angles | holes through metal plate | keyways having square corners | |
| 11 | 589 | D | In ship construction, the hull frame members extending athwart ship are called _____. | deck frames | stringer frames | longitudinal frames | transverse frames | |
| 11 | 591 | B | An S-type trap and drain is used _____. | for all lavatory sink installations, as no other drain type is useable | whenever the 'gray' water drain system connection is located in the deck | whenever the 'gray' water drain system connection is located in a bulkhead | as a condensate drain for superheaters | |
| 11 | 592 | B | To properly install a new blade in a hand hacksaw frame, the _____. | teeth should point toward the handle | teeth should point away from the handle | blade should be kept loose in the frame | blade can be installed in any position for normal use | |
| 11 | 593 | C | If one hydraulic pump of an electro-hydraulic steering unit fails, the vessel's steering can be maintained by using the _____. | trick wheel | accumulator | standby pump | telemotor | |
| 11 | 594 | B | A sight glass is installed in the liquid line to indicate the condition of the refrigerant charge and may also indicate the _____. | condition of the expansion valve | moisture in the system | condition of the compressor suction valves | condenser temperature | |
| 11 | 595 | C | To accurately cut the proper size gasket for installation in a pipeline, you should use _____. | tin snips | a jack knife | a gasket cutter | a pair of nail clippers | |
| 11 | 596 | A | Which of the figures shown in the illustrations depicts an orthographic projection? | A | B | C | D | GS-0142 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 598 | B | If one of the bilge system manifold valves does not properly seat, the _____. | bilge well connected to that valve, plus the second bilge well being pumped will be completely emptied | bilge system will lose vacuum and prevent the other bilges from being pumped out | bilge well aft connected to that valve will siphon its contents to the forward bilge wells | all of the above | |
| 11 | 599 | B | The portion of a mechanism that utilizes manual positioning, or automatic indexing, is known as a detent. An example of a detent used aboard ship can be found in a/an _____. | rheostat | engine order telegraph | valve handwheel | fuel/air ratio control knob | |
| 11 | 600 | A | In certain circumstances, weldments are preheated before each pass to _____. | reduce internal stresses | increase the temperature gradient in the weld area | allow the use of smaller welding rods | eliminate the need for post heating | |
| 11 | 601 | D | The sectional lines drawn within the flange sections, shown in the illustration, indicate the _____. | direction of machine cutting | fit-up of flange parts | flange surface finish roughness | type of flange material | GS-0018 |
| 11 | 603 | B | Which of the filter/strainer units listed permits you to clean the element while leaving the system on the line? | Simplex | Duplex | Canister | Bypass | |
| 11 | 604 | D | A liquid sight flow indicator in a refrigeration system is examined and gas bubbles are noted in motion with the fluid flow. This means _____. | the system is fully charged | there is air leaking in from the condenser | ice crystals are forming in the refrigerant | the system contains less than a full charge of refrigerant | |
| 11 | 605 | C | A manual process used to remove small irregularities by grinding the contact surfaces together of a valve, is called _____. | spotting-in | honing | lapping-in | refacing | |
| 11 | 606 | C | The thickest deposit of scale in a flash evaporator is most likely to occur in the tubes of the _____. | distillate cooler | first stage condenser | saltwater feed heater | flash chamber | |
| 11 | 607 | A | During the normal operation (air supply 50-100 psi) of the device shown in the illustration, which of the components listed below will be open? | B | D | G | H | GS-0120 |
| 11 | 608 | D | When a linear actuator (cylinder) is being retracted without an applied load, the pressure on the oil leaving the 'cap end' will be _____. | zero | inversely proportional to the speed of retraction | inversely proportional to the flow rate at the rod end | increased as the speed of retraction increases | |
| 11 | 609 | D | A recirculating line is provided in the potable hot water system to _____. | maintain uniform inlet conditions for the pressure tanks | maintain flow rates which will eliminate fluid film formation in the piping | return overflow from the pressure tanks back to the potable water tanks | maintain the desired temperature range throughout the system | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 610 | D | Which of the figures illustrated correctly identifies the position the journal will assume in its bearing after it has attained operating speed? | A | B | C | D | GS-0121 |
| 11 | 611 | D | For cutting thin tubing or sheet metal, the proper hacksaw blade should have _____. | the teeth pointing towards the handle | the blade and teeth of 'all-hard' quality | 14 teeth per inch | 32 teeth per inch | |
| 11 | 612 | B | The reading on the vernier caliper scale shown in figure "G" in the illustration is _____. | 2.308 inches | 2.368 inches | 2.380 inches | 2.965 inches | GS-0082 |
| 11 | 613 | A | The action necessary to use the steering gear room trick wheel when transferring the steering control from the wheelhouse to local control, is to _____. | align the trick wheel to the rudder angle position before engaging | set the six-way control valve in the trick wheel position | open the power transfer switch before engaging the trick wheel | always place the rudder in the midship position to engage the trick wheel | |
| 11 | 614 | D | In an operating refrigeration system low on refrigerant, a liquid line sight glass will _____. | be clear | be blue | be light green | show bubbles | |
| 11 | 615 | B | Why should the use of metallic or semi-metallic packing hooks or pullers be avoided on bronze or brass shafts, rods, plungers, or sleeves? | Heat transfer is restricted. | Scoring may result. | Valve seat will be damaged. | Bonnet corrosion may result. | |
| 11 | 616 | B | Less scale formation occurs in a flash evaporator than in a submerged tube evaporator because _____. | the distillate produced has greater purity | no boiling occurs on heat transfer surfaces | evaporation occurs at a higher rate | the incoming feed is at a higher temperature | |
| 11 | 617 | D | Which of the components listed will be open during the start-up mode (air supply 0-50 psi) of the device shown in the illustration? | B | C | D | E | GS-0120 |
| 11 | 618 | D | As a rule of thumb, when pressure is applied to hydraulic oil, the oil will _____. | not be compressed, as liquids are not compressible | reduce in volume by 1% for every 100 psi increment | increase in volume by 1% for every 1,000 psi increment | reduce in volume by 1/2% for every 1,000 psi increment | |
| 11 | 619 | A | The inner bottom of a ship is the _____. | plating forming the engine room tank top | doubler plating installed over the flat keel plate | watertight boundary formed by the skin of the ship | compartment between the tank top and skin of the ship | |
| 11 | 621 | D | When listed by pitch, which of the hacksaw blades listed would be the most suitable for cutting thin tubing? | 14 teeth per inch | 18 teeth per inch | 24 teeth per inch | 32 teeth per inch | |
| 11 | 622 | B | Vessel propellers are classified as being right hand or left hand. A right hand propeller turns clockwise when viewed from _____. | the bow | the stern | the port side | the starboard side | |
| 11 | 624 | B | Which of the listed reasons could cause frost to form on the suction line of a refrigeration compressor? | Shortage of refrigerant in the system. | Expansion valve is stuck open. | Liquid line service valve is closed. | Condenser cooling water temperature is too high. | |
| 11 | 625 | B | To properly remove packing from a valve stuffing box, you should use a _____. | sharpened rod of silver solder | packing puller | chisel and hammer | screw driver | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 626 | A | The primary reason low pressure evaporators produce distillate more efficiently, and with less scale formation, than high pressure evaporators is _____. | evaporation is accomplished in a vacuum | due to the higher temperature of the incoming feed | due to the latent heat of evaporation principle | evaporation in a submerged medium produces more distillate | |
| 11 | 629 | C | The outer strake of the inner bottom on each side of the ship is called the _____. | rider plate | outer plate | margin plate | stealer plate | |
| 11 | 631 | C | The rubber bladder or separator bag installed in a hydraulic accumulator should only be filled with _____. | pure water | pure oxygen | dry nitrogen | dry hydrogen | |
| 11 | 632 | B | When drilling holes larger than 1/2 inch, a smaller pilot hole should be drilled first to _____. | ensure the maximum cut by the large drill | provide a path for the dead center of the drill | allow the use of a drill with a lesser lip clearance angle | increase the cutting speed of the drill bit | |
| 11 | 633 | C | Which of the following actions will occur with the steering system shown in the illustration when responding to a left rudder command from amidships? | The rudder stock "G" turns counterclockwise. | Only hose "J" will be placed under pressure during this maneuver. | The starboard ram will extend aft. | The six-way valve "N" will be opened. | GS-0137 |
| 11 | 634 | C | If the refrigeration compressor crankcase is sweating, the cause may be due to _____. | a shortage of refrigerant | the compressor running continuously | liquid refrigerant returning to the compressor | the compressor short cycling on the high pressure cutout | |
| 11 | 635 | A | Copper coil tubing is best cut with a _____. | tubing cutter | hand hacksaw | pipe cutter | flare cutter | |
| 11 | 636 | C | The illustration shown is called an exploded drawing and is intended to show the _____. | internal shape of all component parts | total number of parts in the assembled component | parts aligned in the correct order of reassembly | disassembled component in a one point perspective view | GS-0025 |
| 11 | 638 | C | When normal operating pressure is applied to the hydraulic oil used in a high-pressure system, the oil _____. | viscosity will decrease | volume will increase | volume will decrease | pour point will be reduced | |
| 11 | 639 | B | In a longitudinally framed ship, the longitudinal frames are held in place and supported by athwart ship members called _____. | stringers | web frames | pillars | brackets | |
| 11 | 641 | C | Which of the listed components of a hydraulic system would enable the pump to be temporarily shutdown, and yet still provide an instantaneous source of hydraulic force? | Modulator | Pressure compensator valve | Accumulator | Sump actuator | |
| 11 | 642 | C | To cut angle iron and heavy pipe with a hand hacksaw, you should use a blade with what number of teeth per inch? | 14 | 18 | 24 | 32 | |
| 11 | 643 | C | The figures shown in the illustration shows two different positions of the same steering gear hydraulic pump. Which of the following statements is correct? | Changing from position I to position II will change the direction of pump rotation. | Position I is changed to position II by the follow-up gear as the desired rudder angle is approached. | Changing from position I to position II will always reverse the direction of fluid flow. | Changing from position I to position II requires a position change of the six-way valve. | GS-0102 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 644 | A | If the suction line between the evaporator and compressor is frosting up, the cause may be due to the thermal expansion valve _____. | thermal bulb coming loose from the suction line | needle valve is stuck closed | thermal bulb is in a cold air stream | all of the above | |
| 11 | 646 | B | Most solenoid valves are actuated by _____. | a spring | an electromagnet | the force of gravity | refrigerant pressure | |
| 11 | 647 | B | The air compressor shown in the illustration, when used aboard a vessel is typically operated as _____. | an on-off cycle unit | a constant capacity unit | a diesel engine air start unit only | a constant pressure unit while operating under all load conditions | GS-0119 |
| 11 | 648 | D | Increased internal leakage, in addition to poor hydraulic system response, and inadequate lubrication, is the result of _____. | pump bearings in poor condition | excessively worn actuator-piston packing | broken directional control valve centering springs | low hydraulic oil viscosity | |
| 11 | 649 | C | The structural members of the hull extending in a fore and aft direction are called _____. | frames | joiners | longitudinals | knees | |
| 11 | 650 | D | The minimum number of crew members permitted by law to operate your vessel can be determined by checking the _____. | Muster List ("Station Bill") | A. B. S. Certificate | Master's crew list | Certificate of Inspection | |
| 11 | 653 | C | When there is no movement of the rams on an electro-hydraulic steering gear, the tilting box of the running pump is _____. | set for maximum torque | on the purge and vent stroke | in the neutral position | rotating backwards | |
| 11 | 654 | D | If a refrigeration compressor crankcase is sweating, the trouble could be caused by _____. | excessive superheat | a minor amount of air in the system | normal oil circulation with the refrigerant | the expansion valve being stuck in the open position | |
| 11 | 658 | D | Which characteristic or condition will have the greatest effect on increasing a hydraulic oil's viscosity? | Pour point | Cloud point | Vacuum | Pressure | |
| 11 | 659 | C | In merchant ship construction, the term 'scantlings' refers to the _____. | factor of safety involved with the hog and sag characteristics of the hull | hull girder strength in terms of the standard model | designed size of the beams, stiffeners, and shell plating | ICE strength classification of the hull | |
| 11 | 660 | C | Before boring a blind tapered hole, a good shop practice to follow is to _____. | use a tapered reamer | drill to the large diameter of the taper | drill to the small diameter of the taper | bore a straight hole | |
| 11 | 662 | B | When coming to the end of a cut using a hand hacksaw, you should _____. | stop applying the cutting fluid | reduce cutting speed and pressure | change to a finer cut blade | increase cutting speed and pressure | |
| 11 | 663 | D | Rotation of the steering wheel on the navigation bridge initiates oil pressure being applied to the steering gear rams by _____. | regulating the oil flow with the six-way valve | moving the automatic differential valve | moving the follow up indicator which regulates the six-way valve | varying the angle of a tilting box or eccentricity of a floating ring | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 664 | B | Frosting or sweating of the suction line of a reciprocating refrigeration compressor indicates a condition which could result in severe damage due to _____. | minor amounts of oil in the refrigerant | liquid slugging | insufficient refrigerant | a failed heat interchanger | |
| 11 | 665 | B | A knocking sound from one cylinder of an operating air compressor indicates _____. | a defective or broken high pressure unloader | a loose valve plate | excessive overload | no compression | |
| 11 | 666 | B | In order to take suction on the lube oil drain tank cofferdam with the bilge pump shown in the illustration, how many suction side valves must be open? | One | Two | Three | Four | GS-0042 |
| 11 | 668 | B | Sluggish response or action of the hydraulic actuators may be a result of _____. | insufficient load | excessively high oil viscosity | relief-valve pressure setting too high | reservoir level being maintained two inches above normal | |
| 11 | 669 | D | The shaft coupling for the illustrated pump is rotated by the motor coupling using a/an _____. | wire serpentine grid | interlocking flexible claws | internal gear ring | special bolts and flexible rubber inserts | GS-0143 |
| 11 | 670 | C | The valve labeled 'V-4', for the illustrated device, is the _____. | pump suction valve | oily water inlet valve | processed water discharge valve | oil drain control valve | GS-0113 |
| 11 | 671 | D | The purpose of an accumulator in a hydraulic system is to _____. | collect any dirt in the system | collect fluid from any small leak | preheat the fluid during cold weather | store potential energy in the form of hydraulic fluid under pressure in the system | |
| 11 | 672 | D | A swing check valve is used in a pipeline to _____. | maintain a preset pressure on the line | closely regulate the amount of flow | relieve excessive pressure on the line | allow flow in one direction only | |
| 11 | 673 | D | When the desired rudder angle is attained by a typical double ram electro-hydraulic steering gear, the _____. | ram relief valves bypass oil to stop rudder movement | six-way valve shifts to the neutral flow position | steering pump electric motor is de-energized by the transfer switch | follow-up gear takes the hydraulic pump off stroke | |
| 11 | 674 | C | A refrigeration system compressor crankcase is sweating or unusually cold. This is an indication of _____. | a shortage of refrigerant in the system | air in the system | an accumulation of liquid refrigerant in the crankcase. | a shortage of oil in the crankcase | |
| 11 | 675 | D | A hacksaw blade will start a cut more easily if you _____. | apply maximum pressure at the start of the cut | coat the saw blade with soap before starting the cut | turn the saw blade at right angles to the saw frame | file a nick where the cut is to be started | |
| 11 | 676 | D | Operating a rotary pump at speeds in excess of design requirements could cause _____. | decreased clearances between rotating parts | decreased slippage to the suction side of the pump | air binding in the discharge ports | erosion and excessive wear | |
| 11 | 677 | B | One of the functions of the component labeled "E", shown in the illustration, is to _____. | act solely as a heat exchanger | act as a lube oil sump | provide storage for compressed cryogenic gases | act as a cyclonic pneumatic dehydrator | GS-0119 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 678 | A | A solenoid, direct-acting, three-position, spring-centered, directional control valve is used in a hydraulic system to control a linear actuator. Midway through extension, the push button is released, but the actuator continues to extend slowly. Which | A centering spring has broken and jammed the spool movement preventing the spool from recentering. | One of the two solenoids has sustained an open in its respective coil. | The pump coupling has been damaged preventing the pump from developing its required operating speed. | The detent mechanism has failed, preventing the valve from operating. | |
| 11 | 679 | A | In ship construction, structural hull members installed athwart ship are _____. | deck beams | stringers | girders | breast hooks | |
| 11 | 680 | C | In accordance with the Coast Guard Regulations (46 CFR), which of the following situations requires an official logbook entry and is considered the responsibility of the chief engineer? | Ensuring that the emergency lighting and power systems are operated and inspected at least once in each week the vessel is navigated. | Seeing that all lifeboat winch control apparatus including motor controllers, limit switches, etc. are examined at least once in each 3 months. | Obtaining a sample of all fuel oil received on board to be used as fuel along with ascertaining all particulars such as vendor, producer, flash point, etc. | All of the above. | |
| 11 | 682 | B | The illustrated valve is known as a _____. | lift gate valve | swing check valve | swing globe valve | butterfly lift valve | GS-0056 |
| 11 | 683 | C | When the helm demands a 20° right rudder movement from an electro-hydraulic steering gear, which of the listed actions will be the FIRST action to happen when this rudder position is attained? | The six-way valve opens. | The steering service pump motor is stopped. | The follow-up gear takes the pump off stroke. | The cylinder relief valves bypass oil to the suction side of the pump. | |
| 11 | 684 | B | Refrigeration system compressor crankcase sweating is an indication of _____. | insufficient lube oil circulating through the system | excessive circulation of lube oil through the system | insufficient refrigerant in the system | an overworked compressor | |
| 11 | 685 | D | Which of the following is/are true concerning the pump shown in the illustration? | For classification purposes the pump would be termed end suction. | The impeller wearing ring would be identified by piece #8. | The casing is of a double volute design. | All of the above. | GS-0143 |
| 11 | 687 | A | The device shown in the illustration is lubricated by _____. | air pressure forcing lube oil to areas of friction | a small spur gear pump | splash-type lubrication provided in the compressor | gravity feed provided by component "A" | GS-0119 |
| 11 | 688 | D | A solenoid direct-acting three-position spring-centered directional control valve is used in a hydraulic system to control a linear actuator. When the remote push button is depressed to extend the actuator it fails to move, even though the pump is in o | A spring at one spool end has broken and jammed, preventing the spool from shifting. | The 'extend' solenoid coil has developed an open. | The pump coupling is damaged and pump is unable to turn at its required speed. | Any one of the above will cause the actuator to not move. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 689 | C | A vertical shaft having a rudder attached to its lower end and having a yoke, quadrant, or tiller fitted to its upper portion by which it may be turned, is the _____. | rudder frame | rudder post | rudder stock | stern post | |
| 11 | 690 | D | Which bearing will carry the load on two small points diametrically opposite to each other? | Needle | Tapered roller | Roller | Ball | |
| 11 | 691 | B | The notation '10-24 tap' appears on a drawing. The number "24" indicates the _____. | number of holes involved | number of threads per inch | size of hole | tightness of fit | |
| 11 | 693 | A | To charge a bladder type hydraulic accumulator _____. | remove all hydraulic system pressure and bring the pneumatic pressure to the accumulator preload pressure | remove all hydraulic system pressure and bring the pneumatic pressure to the system's design pressure | increase the pneumatic pressure until the hydraulic system reaches its design pressure | allow the accumulator to completely fill with gas charge at atmospheric pressure, shut off the air chamber, and add hydraulic fluid until proper pressure is reached | |
| 11 | 694 | D | Sweating of the refrigeration system compressor crankcase is caused by _____. | too much superheat | insufficient superheat | suction pressure too low | excessive refrigerant returning to the compressor | |
| 11 | 695 | C | The pump shown in the illustration is a _____. | piston pump | diaphragm pump | centrifugal pump | reciprocating pump with piston valve gear | GS-0012 |
| 11 | 696 | B | An increase in rotor clearances in a rotary pump will _____. | increase discharge pressure | decrease pump capacity | decrease pump cavitation | decrease reaction ring clearance | |
| 11 | 697 | B | Lubricating oil is added to the device shown in the illustration by using the component labeled _____. | D | F | M | R | GS-0119 |
| 11 | 698 | B | Air entrained in the hydraulic fluid, or trapped in an actuator will cause the actuators to move with a jerky motion. This action is a result of _____. | the trapped air being compressed to a pressure above the maximum pump discharge pressure, then re-expanding and lowering in pressure after the actuator moves | the trapped air being compressed to operating system pressure, then dropping in pressure as the actuator moves, allowing the air to re-expand, then repeating the process | air being capable of moving loads more effectively than a liquid | air providing better lubrication of internal components, found in Hydraulic Systems, than hydraulic fluids | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 700 | A | The mutual action between parts of a material to preserve their relative positions when external loads are applied to the material, which tends to resist deformation when subjected to external forces, is known as _____. | stress | strain | shear strength | ultimate tensile strength | |
| 11 | 701 | C | The needle valve (piece #3) shown in the illustration, is held in the test valve body (piece #2) by a _____. | press fit | spring loaded clamp | machine screw thread | fillet weld | GS-0020 |
| 11 | 703 | B | In an electro-hydraulic steering system, rudder movement is maintained in close synchronization with the steering wheel position by means of the _____. | trick wheel | follow-up control | six-way valve | Rapson slide | |
| 11 | 704 | C | Crankcase sweating in a refrigeration system is caused by _____. | a stuck solenoid valve | a shortage of refrigerant | too much oil in circulation | too much superheat | |
| 11 | 705 | D | The letters 'NC' in '1/4-20 NC' indicates the bolt is _____. | made of nickel-cadmium metal | made of non-corrosive metal | not clad with any coating | threaded with national coarse threads | |
| 11 | 706 | B | The pump shown in the illustration can best be described as a centrifugal _____. | multistage pump with a single suction closed impeller | single stage pump with a single suction closed impeller | single stage pump with a double suction closed impeller | single stage pump with a single suction open impeller | GS-0012 |
| 11 | 707 | C | The device shown in the illustration is used to _____. | pump cargo oil or bilges | circulate refrigerant through the ships service refrigeration system | compress air | separate large quantities of oil-water emulsions | GS-0119 |
| 11 | 708 | A | Air trapped in one end of a hydraulic actuator may be indicated by _____. | erratic or jerky motion of the actuator | a pump discharge pressure that is consistent, but higher than normal | consistently faster response or movement of the actuator | over speeding of the pump | |
| 11 | 709 | D | Which of the following statements is true concerning the instrumentation or alarms provided at the main control station for an automated main propulsion plant? | Nonvital alarms are separated from vital alarms. | Provisions are made through simulation or actual condition for testing all audible and visual alarms and indicating lights. | All alarm circuits should be in operation when the system is on the line. | All of the above. | |
| 11 | 710 | D | A chief engineer's responsibilities include making logbook entries whenever fuel oil is received. In accordance with Coast Guard Regulations (46 CFR), this log entry must include the _____. | name of the vendor | name of the oil producer | flash point (closed cup method) of the fuel oil certified by the producer | all of the above | |
| 11 | 711 | A | Figure "B", shown in the illustration, is dimensioned to indicate a/an _____. | interference fit | clearance of .005 inch | running fit | tolerance of .005 inch | GS-0019 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 714 | B | If a refrigeration system compressor crankcase is sweating, you should _____. | add refrigerant to the system | adjust the thermal expansion valve to the proper setting | adjust the float valve to the proper holding pressure | open the hand expansion valve | |
| 11 | 715 | C | A P-type trap and drain is used _____. | for all lavatory sink installations, as no other drain type is useable | whenever the 'gray' water drain system connection is located in the deck | whenever the 'gray' water drain system connection is located in a bulkhead | as a condensate drain for superheaters | |
| 11 | 716 | B | Which of the following descriptions identifies the centrifugal pump shown in the illustration? | Single inlet and dual direction of rotation | Single inlet and one direction of rotation | Double inlet and dual direction of rotation | Double inlet and one direction of rotation | GS-0130 |
| 11 | 718 | B | When new piping sections have been fabricated for installation in a hydraulic system, prior to installation the piping should be _____. | cleaned using a water-based detergent | descaled by using a pickling solution | hydrostatically tested to 100% of maximum working pressure | all of the above | |
| 11 | 719 | D | A cofferdam is a/an _____. | empty space between tank tops and bilges | cement baffle in a fresh water tank | tank for storing chemicals | empty space separating compartments to prevent the contents of one compartment from entering another in case of leakage | |
| 11 | 720 | B | If the drill point lips are ground at different angles, the drill will _____. | overheat rapidly from rubbing | cut an oversized hole | cut a continuous chip | jam in the hole and break | |
| 11 | 721 | B | Proper hacksaw cutting is accomplished when pressure is applied only on the _____. | backward stroke | forward stroke | front of the hacksaw frame | top of the hacksaw frame | |
| 11 | 722 | A | In order for the vessel to discharge its cargo to a shore facility from #6 centerline tank, with the #7 main deck manifold valve open, which of the listed valve combinations, shown in the illustration, must be opened and which of the valves must be closed | 1, 2, 4 and 9 open 3, 5, 6, 8 and 10 closed | 1, 4, and 10 open 2 closed | 1, 2, 5 and 6 open 3 and 4 closed | All valves are open to gravitate | GS-0139 |
| 11 | 723 | B | Before performing any maintenance on a hydraulic system storing energy in an accumulator, you should _____. | pressurize the system to test for leaks | bleed off all pressure within the system | operate the machine until it reaches normal temperature | disconnect the pump pressure control switch | |
| 11 | 725 | A | The term '5/16-24' describes _____. | machine bolt size and threads per inch | steel plate gauge size and thickness | bearing puller size | cutting torch tip size | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 726 | A | A multistage centrifugal pump can be BEST described as having _____. | two or more impellers housed together in one casing and mounted on a single shaft | a single stepped impeller mounted in a progressively staged casing | a large radial clearance between the impeller and casing to prevent overheating due to friction | an increase in the discharge velocity of the liquid with a corresponding decrease in pressure through the stages | |
| 11 | 727 | A | The major difference between the discharge and suction valves installed in most low pressure, reciprocating air compressors is that _____. | one valve seats upwards, while the other seats downwards | the reed valves used on the discharge are made substantially thicker and heavier than the suction valves | the suction valve springs exert a greater tension than the discharge valve springs | the discharge valve springs exert a greater tension than the suction valve springs | |
| 11 | 728 | B | If you attempt to tighten a leaking hydraulic fitting with pressure on the system, you will _____. | be successful every time | find that the pressure will prevent the components from being tightened | cause the system to vibrate | dislodge any scale in the tubing, and it will damage the system | |
| 11 | 729 | A | The annual reinspection of a tank vessel, holding a two year Certificate of Inspection endorsed, 'Inspected and Approved for the Carriage of Flammable or Combustible Liquids of Grade A', must _____. | where possible, be made between the tenth and fourteenth month of the period for which the certificate is valid | be preceded by written application by the master, owner, or agent of the vessel | be undertaken only when all cargo tanks are empty, gas free, and made accessible for internal examination | all of the above | |
| 11 | 730 | A | Propeller pitch speed minus ship speed divided by the propeller pitch speed is termed _____. | apparent slip | true slip | pitch | propulsive efficiency | |
| 11 | 731 | C | As sometimes utilized with centrifugal pumps operating with a high suction lift, foot valves are primarily designed to _____. | give the pump motor, or driver, positive protection when operating in a shutoff condition | provide a means of supplying sealing fluid for the impeller shaft stuffing box | enable the pump and its suction line to remain primed prior to starting the pump | afford the pumping system protection against water hammer and surging | |
| 11 | 732 | C | Salt water ballast is to be discharged into the #6 port and starboard wing tanks. Which combination of valves, illustrated, must be opened, and which valves should be closed? | 3, 4, 7 and 9 open; 1, 2, 5, 6 and 10 closed. | 1, 2, 7 and 9 open; 3, 4, 5, 6, 8 and 10 closed. | 1, 3, 5, 6, 8 and 10 open; 2, 4, 7 and 9 closed. | 1, 2, 5 and 6 open; 4, 7, 8 and 9 closed. | GS-0139 |
| 11 | 733 | A | Which of the devices listed, when used on an electro-hydraulic steering gear, keeps the movement of the rudder closely in step with the steering wheel? | The follow-up gear | The rudder angle indicator | The synchronous electric transmitter | A rudder angle limit switch | |
| 11 | 734 | A | The sensible heat of air is dependent upon the _____. | dry bulb temperature | wet bulb temperature | saturation temperature | water vapor superheat | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 735 | D | What should be done if localized scoring is discovered on a pump shaft sleeve during routine maintenance inspection? | Reassemble the pump and provide more water leak off for lubrication. | Check for parallel alignment of the sleeve radial face to the sleeve bore. | Reassemble the pump and set the governor to obtain a slower speed. | Correct the cause of scoring and install a new shaft sleeve. | |
| 11 | 736 | D | The designation '1/4-20' describes _____. | cutting torch tips size | pipe thread die size | steel plate thickness | machine bolt size and threads per inch | |
| 11 | 737 | D | Which of the following statements represents the path of air flow passing through a typical two stage, low pressure, reciprocating, air compressor? | Intercooler, L.P. cylinder, H.P. cylinder, and air cleaner | L.P. cylinder, air cleaner, intercooler, and H.P. cylinder | Air cleaner, L.P. cylinder, H.P. cylinder, and intercooler | Air cleaner, L.P. cylinder, intercooler, and H.P. cylinder | |
| 11 | 739 | C | A lightening hole, shown in the illustration, is identified by the letter _____. | A | H | J | all of the above | GS-0086 |
| 11 | 740 | A | In accordance with Coast Guard Regulations (46 CFR), the hailing port marked on the stern of a vessel indicates _____. | the port where the vessel is permanently documented | the place in the same marine inspection zone where the vessel was built | where one or more of the owners reside | all of the above | |
| 11 | 741 | C | Differential pistons used in some reciprocating air compressors, serve to provide _____. | a means of distributing side pressures over a wider area of each cylinder | a means of unloading during start-up | more than one stage of compression by each piston | a variable compression ratio enabling the output to be varied to suit any load condition | |
| 11 | 742 | B | It is necessary to discharge salt water ballast into the #6 centerline tank. Which combination of listed valves illustrated, must be opened and which valves must be closed? | 2, 3, 5 and 6 open; 4, 7, 8, and 9 closed | 1, 3, 5, 6 and 9 open; 2, 4, 7, 8, and 10 closed | 4, 7, 8 and 9 open; 3, 5, 6 and 10 closed | 2, 5, 6 and 9 open; 1, 3, 6 and 10 closed | GS-0139 |
| 11 | 743 | B | Before doing any work on a hydraulic system equipped with accumulators, you should _____. | drain the accumulators and purge with oxygen | bleed off all stored energy from the accumulators | completely charge the accumulators to prevent system energy loss | pump the hydraulic fluid into the accumulators to prevent fluid loss | |
| 11 | 744 | D | Which of the problems listed could cause erosion of the expansion valve disks and seats? | Overcharging the system with refrigerant | Faulty compressor suction valve | Failure of the high pressure cutout | Flash gas formed in the liquid line | |
| 11 | 745 | D | A pump shaft that is bent or distorted should normally be _____. | repaired by a suitable welding process | straightened by applying heat and torsion | reconditioned by metalizing and machining | replaced with a satisfactory spare | |
| 11 | 746 | C | The quantity and density of brine discharged from the last effect of a flash type evaporator should be kept at a constant value so as to _____. | prevent scale accumulation in the first effect heat exchanger surfaces | maintain a constant distillate outlet temperature | ensure distillate quality and distilling plant efficiency | prevent any salinity in the distillate produced | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 747 | C | If an air compressor is used to supply compressed air to outlets throughout the engine room and on deck of a vessel, the system is known as the _____. | combustion control air system | supply air system | ship's service air system | low pressure deck air system | |
| 11 | 748 | D | If the hydraulic compression type tubing fitting, shown as figure "C" in the illustration begins to leak, you should _____. | apply more thread seal and retighten part 'IV' | apply thread seal tape around the threads between part "II" and 'IV', then reassemble and tighten | replace part "III" | replace part "I" | GS-0100 |
| 11 | 749 | D | An international and coastwise load line assignment and certificate has been issued to a vessel by the American Bureau of Shipping, under the authority of Coast Guard Regulations (46 CFR), for a period of _____. | 1 year | 2 years | 4 years | 5 years | |
| 11 | 750 | C | When it is necessary to repair a refrigeration system using R-134A and the system will be open for more than a few minutes, the open ends of the system should be _____. | dehydrated | purged | plugged | evacuated | |
| 11 | 751 | C | The 'pitch' of a screw is the _____. | angle formed by adjacent flanks of a thread | number of threads divided by the length of the threaded portion of the screw | distance between corresponding points on adjacent threads | angle of taper formed by the centerline of the screw and the crests of the thread | |
| 11 | 752 | B | The use of a needle valve in a piping system is recommended when requiring _____. | high pressure drops | close regulation of flow | no pressure drops | no back flow | |
| 11 | 753 | B | The hydraulic tubing installation shown as figure "D" is INCORRECT and will probably leak when in operation because the tubing _____. | will contract in diameter and expand in length under pressure | and its fittings cannot be properly installed and tightened | will stretch and overstress the male threads on the fitting | cannot flex at right angles to the pressure applied by the fluid because it is not properly twisted | GS-0065 |
| 11 | 754 | C | A constant hissing sound at the thermal expansion valve will always indicates _____. | proper refrigerant control | a faulty refrigerant control valve | a lack of refrigerant | the flow of 100% liquid refrigerant passing to the evaporator | |
| 11 | 756 | C | In a two stage flash type evaporator, the brine overboard pump is vented directly to the _____. | saltwater heater shell | first stage distilling condenser | second stage flash chamber | air ejector condenser | |
| 11 | 757 | A | If an air compressor is used to supply air primarily to the combustion control system and other pneumatic controllers, the entire system is known as the _____. | control air system | forced draft air system | supply air system | ships service air system | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 758 | A | The component of the illustrated compression fitting, figure "C", used to seal and eliminate leaks between the tubing and the fitting, is part _____. | I | II | III | IV | GS-0100 |
| 11 | 759 | C | A shot of anchor chain has a length of _____. | 6 fathoms | 12 fathoms | 15 fathoms | 45 fathoms | |
| 11 | 760 | B | Air entrained in the hydraulic fluid, or trapped in an actuator will cause the actuators to move with a jerky motion. This action is a result of _____. | the trapped air being compressed to a pressure above the maximum pump discharge pressure, then re-expanding and lowering in pressure after the actuator moves | the cyclic expansion and contraction of air due to the motion of the actuator | air being capable of moving loads more effectively than a liquid | air providing better lubrication of internal components, found in Hydraulic Systems, than hydraulic fluids | |
| 11 | 762 | A | When replacing packing rings in the stuffing boxes of reciprocating pump piston rods, the ends of the rings should be cut _____. | square | beveled | step-designed | diagonal | |
| 11 | 763 | C | Hydraulic system tubing should be anchored every three or four feet to prevent _____. | excessive pump cavitation | expansion and contraction of the tubing | tube fitting leaks from vibration and pressure surges | tube flexing at right angles to the applied fluid pressure | |
| 11 | 764 | D | A cracked diaphragm in a thermostatic expansion valve will cause the valve to _____. | return to a neutral position | flood the evaporator | open | close | |
| 11 | 765 | B | In order to distribute the side pressures over a wide area of the cylinder walls and liners, which of the listed types of pistons are used in modern low pressure air compressors? | Differential | Trunk | Barrel | Valve-in-head | |
| 11 | 767 | D | Which of the listed operating conditions would have the greatest effect on the volumetric efficiency of an operating reciprocating air compressor? | The density of the air entering the compressor. | The temperature of the air entering the compressor | The designed rotating speed of the compressor. | A leaking head gasket. | |
| 11 | 768 | C | The components used to 'lock' the hydraulic tubing in place when assembling the illustrated compression fitting "C" are items _____. | I and III | I and II | II and III | III and IV | GS-0100 |
| 11 | 769 | C | Which of the listed systems related to an engineer's signal alarm panel is required to be indicated by a continuously illuminated light while in operation? | Deaerating tank low level | Shaft alley bilge high level | Port or starboard steering gear motor running | No. 1 diesel generator low lube oil pressure | |
| 11 | 770 | B | Which of the following is the minimum internal diameter of the main bilge suction piping permitted by Coast Guard Regulations (46 CFR Part 56) on a vessel over 150 gross tons? | 1 1/2 inches. | 2 1/2 inches. | 3 1/2 inches. | 4 1/2 inches. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 771 | C | Broken valve strips in an operating low pressure air compressor will cause _____. | an immediate crankcase explosion | oil contamination in the compressed air | a decrease in compressor capacity | no immediate loss of the compressed air capacity | |
| 11 | 772 | D | During the inspection of a low pressure pump, the wearing ring is determined to have a clearance of 0.011" - 0.013", you should _____. | replace the worn wearing ring | install a new oversized casing ring | machine the worn wearing ring and refit | leave the existing wearing rings in place | |
| 11 | 773 | D | Which of the listed illustrations shows the INCORRECT method for installing hydraulic tubing? | A | B | C | D | GS-0065 |
| 11 | 774 | B | Which of the problems listed represents the major difficulty encountered with thermal expansion valve operation? | Lube oil passing through the system. | Moisture or foreign matter collecting at the valve seat and orifice. | Variable spring tension caused by the changing temperature. | Frost on the liquid line. | |
| 11 | 775 | C | What basic dimensions are used in describing machine bolts? | Diameter and length only | Diameter and cross section only | Diameter, length, and number of threads per inch | Diameter, head size, and shoulder length | |
| 11 | 776 | C | The impeller shown in the illustration is best described as a/an _____. | axial flow impeller | semi-open impeller | single suction closed impeller | double suction mixed flow closed impeller | GS-0012 |
| 11 | 777 | B | A viscous film of oil collected between the valve face and seat of a low pressure reciprocating air compressor will _____. | prevent the valve from wire drawing | retard the opening and closing of the valve | have no effect on compressor operation | provide quieter valve operation | |
| 11 | 779 | D | Short cycling of the potable water system's pump is prevented by using _____. | constant speed supply pumps | variable speed supply pumps | variable delivery supply pumps | a hydro pneumatic pressure tank | |
| 11 | 780 | B | If the pump for a hydraulic anchor windlass is over heating, the cause may be _____. | increased pump speed | excessive pump discharge pressure | too low of a tilting box angle | low pump speed | |
| 11 | 782 | D | Compared to poppet and other mechanically operated valves, which of the following advantages is gained by using a thin plate (feather) low lift type valve in an low pressure air compressor? | They improve compression efficiency. | They operate with a minimum of noise. | They are simple and easy to replace. | All of the above. | |
| 11 | 783 | A | According to Coast Guard Regulations (46 CFR), where cargo pump shafts on tankers pierce bulkheads _____. | readily accessible gastight glands shall be provided | compressed air shall be used as the primary means to discharge cargo | a pressure gauge or manometer shall be installed on the bulkhead to ensure the gastight seal is maintained | the glands are to be kept under continuous suction with power ventilation | |
| 11 | 784 | C | If a refrigeration compressor were short cycling on the low pressure cutout switch, the probable cause for this might be the _____. | system was overcharged with refrigerant | high pressure switch was improperly adjusted | expansion valve strainers were fouled | suction valves were leaking slightly | |
| 11 | 785 | D | Machine bolts are identified by their _____. | type of head | major diameter and length | threads per inch | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 786 | B | A metal file has become clogged with filings and should be cleaned with a file _____. | scraper | card | oilstone | dressing tool | |
| 11 | 787 | B | The function of the springs used with channel or plate-type valves for reciprocating air compressors is to _____. | open the valves during downward strokes | provide positive closing of the valves | reduce compressor discharge pulsations | reduce air intake and exhaust pulsations | |
| 11 | 789 | B | Where should you expect to find striking plates on liquid storage tanks? | In the bow of the ship at the waterline. | On the bottom of a fuel or ballast tank under the sounding tube. | Under the counter above the propeller blade tips. | On the cofferdam manhole. | |
| 11 | 790 | C | The part of the anchor windlass that engages the anchor chain for lifting is called the _____. | warping head | fairlead | wildcat | capstan | |
| 11 | 791 | A | Air blowing from the intake air filter of an operating air compressor indicates _____. | broken inlet valves | broken discharge valves | pulsations in the air distribution system | overloading of the air distribution system | |
| 11 | 792 | C | Which of the listed valve types is typically used for suction and discharge valves on modern low pressure air compressors? | Poppet | Rotary | Reed | Sliding | |
| 11 | 793 | A | When any low pressure distilling plant is operated with less than the designed vacuum, the _____. | heat level rises | heat level drops | capacity increases | scale formation decreases | |
| 11 | 794 | B | If a refrigeration crankcase compressor were short cycling on the low pressure cutout switch, the cause might be that the _____. | system was overcharged with refrigerant | system was low on refrigerant | suction valves were leaking slightly | relief valve was leaking slightly | |
| 11 | 795 | D | Heavy pressure on the ends of a file will cause the work surface to become _____. | tapered | smooth | rough | rounded | |
| 11 | 796 | D | Which of the valves listed will be cycled from fully open to fully closed when the handle is turned 90°? | A rising stem gate valve | A globe stop valve | A check valve | A butterfly valve | |
| 11 | 797 | B | Which of the following problems would be the probable cause for the faulty operation of a reciprocating air compressor suction valve? | Carbon build up in the piston ring belt. | Faulty operation of a cylinder unloader. | Compressor operation in an area of high relative humidity. | Lifting of intercooler relief valve. | |
| 11 | 798 | A | In which of the listed hydraulic systems will the installation of an oil cooler be necessary? | Constant tension mooring winch system | Hatch cover system | Watertight door system | Internal combustion engine hydraulic starter system | |
| 11 | 799 | D | In accordance with Coast Guard Regulations (46 CFR), a steam propelled cargo vessel over 25 gross tons may have a Certificate of Inspection issued for _____. | one voyage only | a specific period of time to cover a described situation | a time period not exceeding 2 years | all of the above, depending upon the pertinent circumstances | |
| 11 | 801 | C | In the illustration shown, an efficient seal is maintained between the suction cover and the volute by _____. | good metal-to-metal contact | sealant between the two parts | an asbestos gasket | compressing the packing rings | GS-0012 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 802 | B | Which of the following problems could cause air to blow out through the inlet air filter of a running compressor? | Excessive compression in the cylinder | A broken intake valve | A dirty inlet filter element | An improperly adjusted discharge valve | |
| 11 | 803 | D | The striped flexible hose installation shown is incorrect and will probably fail under pressure because the hose will _____. | expand under pressure and split along the axis of the stripe | flex and rupture at the twist indicated by the stripe | expand in diameter and rupture in the twisted area | pull out of the fittings as the hose contracts in length | GS-0064 |
| 11 | 804 | C | A refrigeration unit will tend to short cycle when operating _____. | under heavy loads | during hot gas defrost | under light loads | during starting conditions | |
| 11 | 805 | C | A vacuum is initially created in a flash type distilling plant by _____. | the flashing of the feed water | the condensation of the saltwater feed | air ejectors, eductors, or a separate vacuum pump | condensation of the distillate | |
| 11 | 806 | B | Most pump manufacturers recommend that the discharge piping for centrifugal pumps be one size larger than the pump discharge nozzle to _____. | reduce the pump discharge pressure | reduce the frictional losses due to fluid flow | increase the pump discharge pressure | allow rapid venting of entrained air | |
| 11 | 810 | C | The principal purpose of an anchor windlass chain stopper is to _____. | tie off the warping head lines | absorb the brake thrust of the anchor windlass | hold the anchor chain while riding at anchor | lock the intermediate clutch shaft to the wildcat | |
| 11 | 812 | D | Which of the following problems can result in below normal pressure in the intercooler of an operating low pressure air compressor? | Defective pressure pilot valve | Defective receiver relief valve | Leaking intake valves on the high pressure cylinder | Leaking discharge valves on the low pressure cylinder | |
| 11 | 814 | B | If a refrigeration compressor is short cycling on high head pressure, you should _____. | purge the condenser if the waterside is dirty | check for proper water flow through the condenser | increase the high pressure cutout setting | reduce the cooling water flow | |
| 11 | 815 | A | Which of the listed tools should be used to remove a tapered roller bearing from a shaft? | An arbor press | A steel drift pin and hammer | An acetylene torch and hammer | A tapered 'come-a-long' | |
| 11 | 816 | A | Most pump manufacturers recommended that the discharge piping for centrifugal pumps be _____. | one size larger than the pump discharge nozzle | the same size as the pump discharge nozzle | one size smaller than the pump discharge nozzle | installed with a short radius elbow at the pump | |
| 11 | 817 | B | If all of the air charge has been lost from a ship service air receiver, the compressor mechanical unloading system will _____. | fail to work, and the drive motor will trip the circuit breaker as the compressor will be overloaded | fail to function as designed, but the compressor having no load will start with little or no difficulty | still function normally at start-up | Still function normally, but the safety interlock will stop the drive motor | |
| 11 | 818 | A | If the fixed orifice in the evaporator steam supply line were to be removed, the steam pressure reducing valve located upstream would _____. | be unable to maintain steam flow unless the proper range spring were to be installed | be suitable for maintaining the required steam flow under all load conditions | handle the operation satisfactorily as the control orifice develops an impedance to the steam flow | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 819 | D | Every automated machinery plant must have an 'engineer's assistance' alarm. Power for this alarm should be taken from the _____. | main bus | emergency bus | standby generator | general alarm power supply | |
| 11 | 820 | C | The reading indicated on a vernier micrometer caliper scale is .3101 inches. Which of the figure in the illustration represents this reading? | Figure C | Figure D | Figure E | Figure G | GS-0083 |
| 11 | 821 | C | How many cap screws are used to secure the motor bracket to the volute shown in the illustration? | One | Three | Four | Cannot be determined from the information given | GS-0012 |
| 11 | 822 | A | Excessively low air pressure occurring in the intercooler of a reciprocating air compressor is caused by _____. | leaky discharge valves on the LP cylinder | leaky discharge valves on the HP cylinder | insufficient intercooler cooling | low ambient air pressure | |
| 11 | 823 | A | If you install a hydraulic hose on a unit and fail to leave sufficient room for expansion, which of the following problems will develop? | The hose may pull loose from its fittings. | The components connected by the hose will be damaged. | The hydraulic unit will fail to acquire any power. | The hydraulic fluid will overheat and breakdown. | |
| 11 | 824 | B | The refrigeration compressor in a water cooled refrigeration system is short cycling on the high pressure cutout switch. One reason for this could be the _____. | system is low on refrigerant | high pressure cutout switch is improperly adjusted | discharge valves are leaking slightly | discharge valves are leaking excessively | |
| 11 | 825 | D | In the operation of a flash type evaporator equipped with air ejectors, the air and non-condensable gases are evacuated directly from the _____. | first stage flash chamber | second stage flash chamber | first stage after condenser | second stage distilling condenser | |
| 11 | 826 | C | Most pump manufacturers recommend that the suction piping dimension for centrifugal pumps be _____. | one size smaller than the pump suction nozzle | the same size as the pump suction nozzle | one size larger than the pump suction nozzle | installed with a short radius elbow at the pump | |
| 11 | 827 | C | The usual method of unloading a low pressure air compressor at start-up is accomplished by _____. | holding the discharge valve open | the use of a precharged accumulator | holding the suction valve open | temporarily discharging to the air receiver | |
| 11 | 828 | A | Hydraulic systems typically operated for intermittent service do not require the use of oil coolers and would include all of the following except _____? | Constant tension mooring winch system | Hatch cover systems | Watertight door system | Internal combustion engine hydraulic starter system | |
| 11 | 830 | C | In a spring opposed, diaphragm-type, pneumatic power unit shown in the illustration, the force exerted on the spring is equal to the air pressure multiplied by the _____. | area of the internal plate | number of spring coils | area of the diaphragm | tension rating of the spring | GS-0051 |
| 11 | 832 | C | Slipping drive belts on a ship service air compressor is a probable symptom of _____. | low lube oil viscosity | fouled intercoolers | a failed unloader | high air receiver pressure | |
| 11 | 833 | A | If you install a new hydraulic hose in a hydraulic system, the hose must be long enough to allow for contraction to prevent _____. | failure of the hydraulic hose connection | excessive flow through the line | friction in other areas of the hydraulic system | overheating of the hydraulic fluid | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 834 | A | The refrigeration system compressor is short cycling on high head pressure when the sea water cooling temperature is 72° F. In this situation, you should _____. | check for sufficient cooling water flow through the condenser | purge noncondensable gases from the receiver | reset the thermostatic expansion valve | completely purge the high pressure side of the system | |
| 11 | 835 | C | The proper file for a finishing cut on soft metal, such as brass, is the _____. | smooth cut file | warding file | mill file | second cut file | |
| 11 | 837 | D | Unloading of a low pressure, reciprocating, air compressor at start-up can be accomplished by _____. | holding the L.P. discharge valve open | the use of a precharged accumulator | using a permanently enlarged clearance expansion volume | temporarily discharging back to the compressor intake | |
| 11 | 838 | B | If one of the bilge manifold valves is prevented from seating, the _____. | bilge-well connected to that valve, plus the second bilge-well being pumped will be completely emptied | bilge system will lose vacuum, preventing other bilges from being pumped out | aftermost bilge-wells connected to that valve will siphon their contents to the forward bilge-wells | all of the above | |
| 11 | 839 | A | The location of a vessel's frame stations may be obtained from which of the listed drawings? | Profile | Base line | Cross section | Buttock | |
| 11 | 840 | D | Which of the following precautions should always be carried out in dry-dock? | Liquids should never be transferred between tanks without consulting the dock master. | If sea valves have been disassembled, all bonnets must be checked for leakage when the ship is refloated. | Before refloating, all sea chest strainers should be verified as having been replaced. | All of the above. | |
| 11 | 841 | D | Which pump illustrated is fitted with a suction strainer? | Bilge pump | Ballast pump | General service pump | All of the above | GS-0042 |
| 11 | 842 | C | If an electric motor driven air compressor fails to start, it may be due to a _____. | leaking discharge valve | jammed suction valve | tripped overload relay | broken discharge unloader | |
| 11 | 843 | B | Machinery driving fuel oil transfer and fuel oil service pumps must be fitted with a remote means of stopping the machinery from _____. | within the space concerned | outside the space concerned | the throttle station | within the fireroom | |
| 11 | 844 | A | The compressor in an air-cooled condensing refrigeration system is short cycling on the high pressure cutout switch. A probable reason for this is the _____. | system is overcharged with refrigerant | system is low on refrigerant | discharge valves are leaking excessively | discharge valves are leaking slightly | |
| 11 | 845 | B | The efficiency of a flash type evaporator can be increased by _____. | lowering brine discharge density | decreasing the absolute pressure of each stage | increasing the saltwater feed heater temperature | increasing the pressure at the spray pipe | |
| 11 | 846 | A | Open end wrenches are _____. | nonadjustable solid wrenches | intended for gripping round objects | not suitable for tubing fittings | used with a speeder handle | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 847 | B | An air compressor can be unloaded at start-up by _____. | holding the discharge valve open | relieving the intercooler pressure to the atmosphere | using an enlarged, permanently opened clearance expansion space | a precharged accumulator | |
| 11 | 848 | D | Which of the following actions should be taken FIRST if a bilge well of a multiple suction bilge system is unable to be pumped out? | Open the bilge pump for inspection. | Remove each of the suction manifold valves. | Remove only the suction manifold valve to the affected bilge well. | Attempt to pump out another bilge well to determine if the entire system is affected. | |
| 11 | 849 | D | Why do roller bearings have higher loading capacities than ball bearings? | They are installed with tighter clearances. | They are subject to less pitting and metal fatigue. | They have a greater tolerance for high speed applications. | They have a greater contact area. | |
| 11 | 850 | D | With regards to fluid flow control, an advantage of pneumatic control systems over electrical control systems is _____. | practically no limit to the power available for a given system | no transmission losses | low energy input | continued control through temporary electrical power losses | |
| 11 | 851 | B | All of the manifold valves shown in the illustration are _____. | gate valves | stop-check or stop valves | stop valves operated from above the bulkhead deck | stop-check lift valves operated from above the bulkhead deck | GS-0042 |
| 11 | 852 | C | The seat of a butterfly valve will most likely be constructed of _____. | Monel | stellite | a resilient material | admiralty metal | |
| 11 | 853 | C | Flexible hose under pressure in a hydraulic system will _____. | tend to twist about its long axis | expand in length and in diameter | contract in length and expand in diameter | flex at right angles to the applied pressure | |
| 11 | 854 | C | The compressor in the ship service refrigeration system is short cycling on the high pressure cutout switch. The probable reason for this is the _____. | discharge valves are leaking excessively | discharge valves are leaking slightly | condenser is getting insufficient cooling water flow | system is low on refrigerant | |
| 11 | 855 | C | Which of the following statements describes the relationship between flash point and ignition temperature? | Both are higher than normal burning temperatures. | The flash point is always higher. | The ignition temperature is always higher. | They are not necessarily related. | |
| 11 | 859 | D | In the illustrated steam pressure reducing valve, the purpose of the item labeled "C" is to _____. | provide sensing of downstream pressure to the control diaphragm | equalize pressure above and below the power piston | equalize pressure above and below the pilot valve | provide a supply conduit of actuating steam for the power piston | GS-0044 |
| 11 | 860 | B | On tank vessels using an automatic tape wells, free movement of the tape is normally checked by _____. | removing the side plate | operating the hand clutch | comparing with a hand tape | using litmus paste | |
| 11 | 861 | B | In order for all of the bilge pump discharge to pass through the oily water separator, shown in the illustration, the oily water separator bypass valve must be _____. | completely open | completely closed | only cracked open | throttled | GS-0042 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 862 | D | The valve depicted in the illustration shown is a _____. | gate valve | check valve | globe valve | butterfly valve | GS-0055 |
| 11 | 863 | D | Coast Guard Regulations (46 CFR) require remote controls for stopping fuel oil service pumps. These controls shall be _____. | located at the control platform | provided with a locked cover | accessible to authorized personnel only | protected against accidental operation | |
| 11 | 864 | B | If a refrigeration compressor will not start, the reason may be _____. | the pressure regulating valve is not closing | an excessive lack of refrigerant in the system | badly leaking discharge valves | worn piston rings | |
| 11 | 865 | C | The lowest temperature required to cause self-sustained combustion of a substance independent of any outside source of ignition is called _____. | explosive range | flash point | ignition temperature | combustion temperature | |
| 11 | 868 | C | The aft starboard bilge well is clogged, and back flushing has not been successful. The next practical solution would be to _____. | change the trim of the ship to port in order to pump out the bilges for the remainder of the voyage | place 20 gallons ( 75.7 L) of fuel oil tank wash into the affected bilge well to clear the blockage | properly and safely empty the well with a portable pump then manually muck it out | all of the above | |
| 11 | 869 | B | According to the illustration, which of the following statements represents the order of events required to occur for the device to close? | A vacuum is created in chamber "III" as water flows from the toilet, drawing "C" into the closed position. | Once "C" has lifted, "A" will reseat with water passing through "H", pressure gradually builds in chamber "I", developing sufficient force to reseat "C". | A vacuum is created in chamber "III" as a result of the high flow rate of water passing through this chamber, drawing "C" down on its seat. | Releasing "E" physically draws "C" down on its seat. | GS-0155 |
| 11 | 870 | C | On tank vessels using an automatic tape well for gauging tanks, the hand clutch is used to _____. | adjust the tape weight | lower the thieving rod | roll up the tape | calibrate the tank | |
| 11 | 871 | C | Automatic pressure control valves for steam service require periodic maintenance inspections because they _____. | are subjected to high compressive stress | are subjected to a wide range of temperatures and pressures | continuously throttle steam which results in wire drawing and erosion of the valve | receive high pressure air from the pilot valve | |
| 11 | 872 | D | Double cut files are most effective when used for _____. | sharpening tools | draw filing | finish work | rough work | |
| 11 | 873 | D | Which of the listed figures represents the configuration and alignment of the inlet/outlet head, as viewed from the tube side? | A | B | C | D | GS-0122 |
| 11 | 874 | C | When a refrigeration compressor motor fails to start, the FIRST thing that should be checked for is a _____. | loose expansion valve control bulb | low differential setting on the H.P. cutout | blown fuse in the motor circuit | faulty suction pressure regulator | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 876 | A | Air compressors are equipped with unloading systems for the purpose of _____. | removing all but the frictional load during starting | relieving intercoolers of high temperature buildups | providing high starting torque in the drive motor | seating valve plates during compressor shutdown | |
| 11 | 877 | B | The simplest method to use for determining if a centrifugal pump is operating as designed, is to _____. | closely observe the pump discharge temperature | close off the discharge valve, and watch for a rise in pressure | momentarily close off the suction valve, and watch for a rise in pressure | use a clamp on ammeter and compare the readings to past records | |
| 11 | 878 | D | The pressure of an operating hydraulic system, as indicated by a pressure gauge, is a result of the fluid flow overcoming _____. | internal resistance to flow | resistance of the internal components | the load applied to the system | all of the above | |
| 11 | 879 | D | As shown in the illustration, a section of pipe with a 3.068 inch internal diameter, has a wall thickness of .216". When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the | 4.714 inches | 5.054 inches | 5.161 inches | 5.498 inches | GS-0108 |
| 11 | 880 | A | When pressure is applied to the Bourdon tube gage shown in the illustration, the _____. | gage pointer will move in a clockwise direction | sector and pinion will remain stationary | gage tube expands and grows longer | connecting link changes the set point of the pointer | GS-0114 |
| 11 | 881 | A | Which of the listed pumps, shown in the illustration, can be used to take suction on the forward, port, engine room bilge? | Bilge pump | Ballast pump | General service pump | All of the above | GS-0042 |
| 11 | 882 | C | Which of the following statements concerning butterfly valves is correct? | Special tools are required for lapping or grinding. | It is impossible to throttle flow with a butterfly valve. | To close the valve, it is only necessary to turn the handle a quarter of a turn. | The butterfly valve should never be used in a freshwater system. | |
| 11 | 883 | A | Which of the listed illustrations correctly represents the installation of a hydraulic hose? | A | B | C | D | GS-0063 |
| 11 | 885 | B | As shown in the illustration, the eccentric reducer, used as a transition piece between a centrifugal pump suction flange and the suction piping flange, must be installed with the _____. | large diameter flange connected to the pump | reducer arranged to prevent the accumulation of air in the suction piping | eccentric portion above the pump suction centerline | eccentric portion at right angles to the pump suction centerline | GS-0089 |
| 11 | 886 | C | The names plug, bottom, and taper refer to _____. | pipe fittings | measuring instruments | machinist's hand taps | drill press parts | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 887 | B | One of three available centrifugal salt water service pumps is in operation with a sea water temperature of 50° F. The cooling temperature of all systems supplied by this pump appear to be high. Therefore, you should _____. | only need to start a second pump and operate it in parallel | start a second pump and place it on line, close the discharge valve on the original pump and watch for a rise in the discharge pressure | after starting the second pump open the casing vent valve of the first pump, then secure the first pump | after starting the second pump secure the first pump and do nothing else with the salt water service system | |
| 11 | 888 | B | Pressure in an operating hydraulic system is developed _____. | only by the pump as its primary function | by resistance to the fluid flow through the system | by the thermal input to the system's fluid | solely by the charge applied by the accumulators | |
| 11 | 891 | B | On small passenger vessels, separation of machinery and fuel tank spaces shall be _____. | provided between each of these spaces by watertight and/or vapor tight bulkheads | separated from accommodation spaces by watertight and/or vapor tight bulkheads | not considered as essential | separated from accommodations spaces by non-continuous bulkheads | |
| 11 | 892 | A | Which of the listed types of files is the best for producing a fine finish on metal? | Mill | Float | Warding | Second cut | |
| 11 | 893 | B | Which of the following systems, according to Coast Guard Regulations (46 CFR) must have an emergency stop, protected with a glass enclosure, and located outside of the machinery space? | Main fire pump | Fuel oil service pump | Main circulating/bilge injection valve | All of the above | |
| 11 | 894 | C | The accumulation of air and other non-condensable gases in a refrigeration system will _____. | cause a loss of the liquid seal | create a vapor lock in the liquid receiver | collect in the condenser | cause foaming of the oil in the crankcase | |
| 11 | 895 | B | The rudder pintle is identified in the illustration by the item lettered _____. | A | B | E | F | GS-0101 |
| 11 | 896 | A | An eccentric reducer, used as a transition piece between a centrifugal pump suction flange and the suction piping flange, must be installed with the eccentric portion below the suction pipe centerline to _____. | prevent the formation of air pockets | allow sediment to settle on the bottom | reduce vapor pressure of the water entering the pump suction | slope the suction line upward at the pump | GS-0089 |
| 11 | 897 | D | Which pump installation would require an external source of sealing water? | Main jacket water cooling pump | Salt water service pump | Auxiliary fire pump | Centrifugal bilge pump | |
| 11 | 899 | C | If a block and tackle arrangement were rigged as shown in figure "C" of the illustration and "W" is 250 lbs, the amount of force "P" required to hold the load stationary would be _____. | 83.33 lbs. | 104.16 lbs. | 125.00 lbs. | 250.00 lbs. | GS-0110 |
| 11 | 900 | A | When the pressure on a compound gage is released, the gage pointer is returned to zero psig by action of the _____. | Bourdon tube | spring return arm | compound diaphragm | compensating spring | |
| 11 | 901 | C | Hand taps are provided in sets of three, with each being known as _____. | taper, plug, and finish | short, medium, and long | taper, plug, and bottom | starting, through, and finishing | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 902 | B | A lube oil filter can be used to remove most contaminants from lube oil. A contaminant which will remain in the lube oil after filtering is _____. | acid | diesel oil | sediment | water | |
| 11 | 903 | D | When installing a hydraulic hose, which of the following precautions should be taken? | The hose should not be twisted. | The hose should be protected with a sleeve if it is subjected to rubbing. | There should be some slack in the hose. | All of the above. | |
| 11 | 904 | B | Air entering an air-cooled refrigeration system is indicated by _____. | frosting of the liquid line | higher than normal head pressure | a clear sight glass | abnormally cold reefer boxes | |
| 11 | 905 | A | Which of the following files will produce the finest surface on a work piece being finished filed in a lathe? | A mill file | A double cut file | Any bastard cut file | All warding files | |
| 11 | 906 | C | How often should cargo oil pump relief valves on tank vessels to be tested? | Prior to each cargo discharge operation. | At least once each voyage. | At least once a year. | At each biennial inspection. | |
| 11 | 907 | D | In most horizontally split centrifugal pump casings, wearing rings are prevented from rotating by _____. | swelling the wearing rings into the casing | using wear rings with a larger than normal outside diameter and having the casing 'crush' them in place | using one dowel pin pressed into the side of the ring, then fitting the pin into a hole drilled into the side of the casing ring grove | using an extended lip formed on one half of the ring and using the upper casing half to trap the lip when the casing is reassembled | |
| 11 | 910 | C | Pigtails, or siphons, are used to protect Bourdon tube-type gages from the direct exposure to steam by _____. | changing the direction of the steam flow | rapidly reducing the steam velocity | creating a condensate seal | bleeding off a portion of the steam | |
| 11 | 911 | B | Round split dies are usually adjustable to _____. | allow threading on oversized stock | control the tightness of the thread fit | to help start the die squarely on the round stock | allow threading up to a shoulder | |
| 11 | 912 | A | The general service pump is to be used to remove clean water from the No. 3 port double-bottom cofferdam and discharge it through the ballast overboard discharge. What are the minimum number of valves, shown in the illustration, that must be opened on both the suction and discharge to accomplish this task? | Four | Five | Six | Seven | GS-0042 |
| 11 | 914 | D | The presence of bubbles in a refrigeration system liquid line may _____. | promote refrigerant dehydration | be absorbed in the receiver | cause low condensing pressure | carry moisture and lead to corrosion | |
| 11 | 915 | A | A mill file is used to _____. | produce a very fine finish by draw filing | produce a coarse finish by push filing | file lead | file plastic | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 916 | C | Dirt should not be allowed to contaminate a grease lubricant because the _____. | dirt will cause corrosion of bearing | bearings will leak oil excessively | dirt is very abrasive when mixed with grease | grease will become inflammable | |
| 11 | 917 | A | The function of a centrifugal pump double volute casing is to _____. | reduce radial thrust on the impeller | double the liquid velocity through the pump when compared to a single volute | reduce hydraulic end thrust | provide the effect of multi-staging | |
| 11 | 919 | D | A cylindrical tank measures 10 feet in diameter and 20 feet in length, weighs 4 long tons when empty. When completely filled with a petroleum product having an API gravity of 35.5 at 60° F, what is the total weight of the tank and its contents in long ton | 29 long tons | 33 long tons | 37 long tons | 41 long tons | GS-0149 |
| 11 | 920 | D | Differential pressures can be measured with the use of a _____. | diaphragm type gage | pressure transducer | manometer | all of the above | |
| 11 | 921 | B | If you are cutting external threads by hand and you start the die at an angle, the threads will _____. | be out of round on the work | be cut crooked on the work | be rough, weak, and easily broken | straighten out after the third revolution | |
| 11 | 922 | D | Which of the listed statements is a characteristic of the liquid charged power element used with thermostatic expansion valves? | At the designed operating temperature, the liquid refrigerant charge has changed to a vapor. | The liquid refrigerant tends to collect at the bellows or diaphragm and reduces the valve sensitivity. | The sensing bulb is empty of liquid refrigerant charge at the designed operating temperature. | The sensing bulb is never emptied of liquid refrigerant under normal operating conditions. | |
| 11 | 924 | A | Air trapped in a refrigeration system using a water-cooled condenser is usually indicated by _____. | unusually high head pressure when compared to the existing temperature of the liquid refrigerant | higher than normal liquid level in the receiver | unusually lower than normal discharge pressure when compared to the existing temperature of the liquid refrigerant | higher than normal liquid refrigerant temperature | |
| 11 | 925 | A | Which of the following types of files will produce a fine finish when draw filing? | Mill cut | Bastard | Double cut | Second cut | |
| 11 | 926 | B | The valve best suited for throttling gas or liquid flow in a pipeline is the _____. | gate valve | globe valve | check valve | plug cock | |
| 11 | 927 | D | In order to properly remove air from the casing of a centrifugal pump when starting, the pump should have a _____. | positive head | negative suction head | mechanical seal | vent valve attached to the casing at the top of the volute | |
| 11 | 928 | D | A hydraulic flow control circuit is shown in the illustration, and is known as a _____. | metered-in circuit | metered-out circuit | bleed-in circuit | bleed-off circuit | GS-0107 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 929 | D | In the refrigeration system illustrated, the liquid line strainer is located between the _____. | solenoid valve and thermal expansion valve only | solenoid valve and back pressure valve only | condenser and receiver only | receiver and solenoid valve only | RA-0005 |
| 11 | 930 | B | According to the illustrated water filled U-tube draft gage, what is the converted draft reading in pounds per square inch? | .072 psi | .144 psi | .216 psi | .324 psi | GS-0115 |
| 11 | 931 | C | The tool used in precision work to smooth or enlarge a slightly undersized hole, is called a _____. | round out | round file | reamer | hole driller | |
| 11 | 932 | A | Copper sheet metal that is to be used as a gasket, is usually annealed by heating it to a cherry red color, and then _____. | dousing it in cold water | cooling it slowly in air | quenching it slowly in oil | drawing its temper quickly | |
| 11 | 933 | D | Scale accumulation on evaporator heat exchange surfaces _____. | increases brine density | increases distillate salinity | reduces metal corrosion | reduces heat transfer | |
| 11 | 934 | B | Excessive circulation of the lubricating oil with the refrigerant in a refrigeration system will cause _____. | carbon deposits on the compressor suction valves | the evaporator temperature to increase | rapid corrosion of the thermal expansion valve | no operating problems | |
| 11 | 935 | C | The first step when resetting the slide valves on a duplex reciprocating pump is to _____. | position the steam pistons on 3/4 stroke | ensure the balance piston is on the down stroke | place the steam pistons in the mid stroke position | measure the present port openings to ensure reassembly will be the same | |
| 11 | 937 | C | Which of the following centrifugal pump components converts the liquid kinetic energy of velocity to the potential energy of pressure? | Impeller | Electric motor | Volute | Eye | |
| 11 | 939 | D | If the temperature in a hot air manifold were found to be 122° F, what will be the equivalent reading on the centigrade scale? | 35° C | 40° C | 45° C | 50° C | |
| 11 | 940 | D | The pressure indicated by the U-tube manometer shown in the illustration is equal to _____. | -2 inches of water | +2 inches of water | -4 inches of water | +4 inches of water | GS-0115 |
| 11 | 941 | C | An American Standard Tapered pipe thread has a taper of _____. | 1/4 inch per foot | 1/2 inch per foot | 3/4 inch per foot | 1 inch per foot | |
| 11 | 942 | D | When replacing a gasket in a six-bolt flanged joint, in what order should the bolts be tightened? | Each bolt should be installed and tightened in consecutive order in the clockwise direction. | Each bolt should be installed and tightened in consecutive order in the counterclockwise direction. | Install and tighten bolts 1, 3, 4, 2, 5, and 6, in that order. | Install and tighten bolts in pairs which are opposite each other in the flange (1-4, 2-5, and 3-6). | |
| 11 | 944 | B | Sludge may form in the crankcase of an air conditioning compressor as a result of _____. | bubbling refrigerant | overheating and oxidation | lowered operating temperatures | reducing the cloud or floc point | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 945 | A | Which of the following statements is correct concerning the 'flash point' of a liquid? | It is lower than the ignition temperature. | It is the temperature at which a substance will spontaneously ignite. | It is the temperature at which a substance, when ignited, will continue to burn. | It is the temperature at which the released vapors will fall within the explosive range. | |
| 11 | 947 | B | The primary function of a centrifugal pump volute is to _____. | develop a high velocity liquid | convert velocity to pressure | limit hydraulic end thrust | initiate flow | |
| 11 | 949 | A | If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots? | 13.82 tons | 15.61 tons | 16.00 tons | 16.37 tons | |
| 11 | 950 | A | The adapter for the tachometer shown in the illustration is designed for reading shaft RPM as long as the shaft is accessible _____. | at one end | at any point along its length | to the impeller | to the impulse transmitter | GS-0117 |
| 11 | 951 | B | The complete tool used for manually cutting threads on pipe is called a pipe _____. | tool and die | stock and die | tap | chaser | |
| 11 | 953 | C | The purpose of the six-way valve used in an electro-hydraulic steering system is to _____. | parallel rudder motion to the steering wheel | take the pump off stroke when desired rudder angle is attained | redirect hydraulic fluid flow when changing over pumps | ensure positive contact between the Rapson slide and the rudder post | |
| 11 | 955 | C | Shown in the illustration is a mechanical shaft seal providing constant surface contact, regardless of hull deflections, draft, or sea conditions while underway. This is ensured by the _____. | drive alignment bolts | adapter plate | bellows | inflatable seal | GS-0135 |
| 11 | 956 | B | The second stage feed water temperature and shell absolute pressure in a multistage, flash type, distilling plant is _____. | higher than the first stage feedwater temperature and absolute shell pressure | lower than the first stage feedwater temperature and absolute shell pressure | the same as the first stage feedwater temperature and absolute shell pressure | not related to the feedwater temperature and absolute shell pressure | |
| 11 | 957 | B | The percentage of impurities in a specific fuel oil sample is determined by _____. | settling in a fuel tank | testing in a laboratory centrifuge | burning in a calorimeter | testing in a closed cup | |
| 11 | 958 | D | Which of the following statements describes the actions of an axial piston motor with a full deflection variable position tilting box? | Control over speed, direction, and stopping would be better than having the pump equipped with the tilting box. | Maximum speed when rotated in the 'hauling in' direction would be obtained with the tilting box just prior to neutral stroke, while 'pay out' would be the opposite. | Maximum torque, when rotated in the 'pay out' direction would be obtained with the tilting box just prior to neutral stroke, while 'hauling in' would be the opposite. | Maximum speed in either direction of rotation would be achieved just beyond of neutral stroke, making reversal of direction difficult. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 959 | A | A ship travels 234.02 nautical miles in 24 hours at an average propeller speed of 60 RPM. If the propeller pitch is 20.07 feet, what is the propeller slip during this passage? | 17.95% | 20.46% | 22.10% | 26.20% | |
| 11 | 960 | C | To avoid corrosion and/or oxidation of the element, a thermometer bulb is often protected by a 'well' or casing. In addition to protecting the element, the 'well' will also _____. | cause consistently higher than actual readings | cause consistently lower than actual readings | require a longer time for the element to reach thermal equilibrium with the system being measured | increase the sensitivity of the element | |
| 11 | 961 | C | Taps and dies used for threading pipe are _____. | not hardened | not fluted | tapered | straight | |
| 11 | 962 | B | Which of the following types of files is generally used for finishing? | A double cut file | A single cut file | Any bastard cut file | Only a double bastard cut file | |
| 11 | 964 | C | Sludge may be formed in the oil in the crankcase of a reciprocating air conditioning compressor as a result of _____. | refrigerant bubbles in the lube oil | refrigerant reducing the lube oil viscosity | oxidation of the lube oil from overheating | reducing the floc or cloud point of the oil | |
| 11 | 966 | C | The temperature of the steam flow to the saltwater feed heater, in a flash type evaporator can be manipulated by a/an _____. | pressure regulator within the supply orifice | thermally actuated bypass valve | attemporator in the steam supply piping | sensor wired in with the three-way salinity dump valve | |
| 11 | 967 | B | Assume identical impeller diameter, width and speed. Which of the following impellers will produce the greatest liquid velocity? | A single stage straight vane impeller | A single stage curved vane impeller | A dual integral impeller unit operating at 10% lower speed | A dual impeller with multiple stepped curved vanes | |
| 11 | 968 | B | With regards to axial piston hydraulic pump/motor power units, motor speed is a function of fluid flow rate generated by the pump. Which of the following statements describes why the motor is NOT manipulated as is the pump? | The designers of the equipment have never considered the use of the tilting box with a hydraulic motor. | A comparable pump tilting box if used in a hydraulic motor, would eliminate the hydraulic lock to the system when the motor is placed in neutral stroke. | Reduction gears would be required if a hydraulic motor were designed with a tilting box. | A tilting box hydraulic motor could never produce more than one horsepower. | |
| 11 | 969 | C | In the circle illustrated, the circumference is 62.8 feet. What is the area of the shaded portion? | 27.5 square feet | 28.0 square feet | 28.5 square feet | 29.0 square feet | GS-0134 |
| 11 | 970 | B | What characteristic can be applied to Refrigerant 134a when compared to R-12? | It is corrosive. | It is not compatible with mineral based lubricants. | It is visible as a blue fog. | It has a distinctive taste. | |
| 11 | 971 | B | The tool used for cutting external pipe threads is called a pipe _____. | cutter | stock and die | threader | ratchet cutter | |
| 11 | 972 | A | A reading of 0.625 inch on a micrometer with a 2 to 3 inch range would be equal to _____. | 2 5/8 inches | 2 7/16 inches | 3 1/8 inches | 3 9/16 inches | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 974 | A | Foaming of the oil in a refrigeration compressor crankcase is caused by _____. | refrigerant boiling out of solution from the lube oil | liquid refrigerant flooding the compressor and system | lube oil viscosity being reduced by refrigerant dilution | compressor suction pressure suddenly increasing | |
| 11 | 975 | B | To properly make and fit a new gasket to a flange, you should _____. | place the gasket over the flange and knock off the excess material with a lead mallet | remove excess gasket material by trimming with scissors or tin snips | make up the flanged joint to make an impression of the flange surfaces to insure a pattern for proper alignment | cut grooves into the flange with a chisel to ensure good gasket contact | |
| 11 | 976 | C | In a two stage flash evaporator, heated feed water is vaporized in the _____. | first effect tube nest | distiller feedwater heater | first and second stage flash chambers | first and second stage vapor separators | |
| 11 | 978 | B | Dry seal threads, typically used for tubing to pipe connectors, and threaded piping in hydraulic systems are _____. | the same as National Pipe threads | different than NPT as the crest of a matching thread is in contact with the trough of the opposing thread | different than NPT as the flanks of the matching threads are in contact with the opposing threads | the same as National Fine threads | |
| 11 | 981 | B | When installing a new rotary pump, the suction piping should _____. | be of the same diameter as the pump suction connection | be at least one size larger than the pump suction connection | be the next size smaller than the pump suction connection | be sloped to the pump | |
| 11 | 982 | A | In sewage treatment, the term 'maceration' refers to the process of _____. | breaking up solid matter into fine particles | precipitating nondecomposed waste in a collection tank | chemically adjusting the sewage pH to 7.0 | eliminating bacterium coli from the sewage | |
| 11 | 983 | D | Excessive scale formation in a distilling plant may result from _____. | poor distillate quality | reduced evaporator capacity | low brine concentration | improper vacuum regulation | |
| 11 | 984 | B | In a refrigeration system, foaming of the crankcase oil may cause the _____. | expansion valve to overfeed | compressor to knock | water regulating valve to fail | crankcase drains to plug | |
| 11 | 985 | A | If a continuous and steady flow of lube oil is provided, which of the listed pressures represents the lowest supply pressure at which a small high-speed bearing can be safely lubricated? | 1 psig | 5 psig | 10 psig | 15 psig | |
| 11 | 986 | A | The final heating of the feed water in a flash type distilling plant is carried out by _____. | low pressure steam admitted to the feedwater heater | heat exchange in the first-stage feedbox | vaporization in the first-stage flash chamber | heat exchange in each stage distiller condenser | |
| 11 | 987 | C | The centrifugal pump component responsible for converting the mechanical energy of the liquid being pumped, to that of kinetic energy is the _____. | electric motor | volute | impeller | diffusion nozzle | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 988 | D | In which of the listed hydraulic system components could an O-ring seal be satisfactorily used in providing a seal? | High pressure pump shaft casing | Low pressure pump shaft casing | Linear actuator without nylon insert | Relief valve spool | |
| 11 | 989 | D | As shown in the illustration, a section of 4.5 inch internal diameter standard weight, seamless steel pipe, has a wall thickness of .355". When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 5.498 inches | 6.511 inches | 7.069 inches | 8.184 inches | GS-0108 |
| 11 | 990 | D | An example of an anti-friction bearing is a _____. | rubber cutlass strut bearing | line shaft or spring bearing | Kingsbury thrust bearing | ball bearing | |
| 11 | 992 | C | The device shown in the illustration which is used for removing moisture from the liquid refrigerant in the system, is located between points _____. | A and B | B and C | C and D | D and E | RA-0012 |
| 11 | 993 | B | The follow-up gear on an electro-hydraulic steering gear _____. | relieves excessive fluid pressure | takes the pump off stroke when the desired rudder angle is attained | synchronizes wheel position with the rudder position | returns the rudder to midposition when the wheel is released | |
| 11 | 994 | A | Excessive oil foaming in the crankcase of a refrigeration compressor can result in _____. | overheated compressor bearings | excess lube oil viscosity | carbon deposits on the compressor piston rings | wax crystals forming in the lubricant | |
| 11 | 995 | B | A metal scribe commonly found on a Combination Square measuring tool should only be used to _____. | remove packing | mark on metal | punch gasket holes | clean file teeth | |
| 11 | 996 | D | In a two-stage flash evaporator, the sea water feed temperature is increased as it passes through the _____. | first-stage distilling condenser | second-stage distilling condenser | salt water feed heater | all of the above | |
| 11 | 997 | B | The basic function of the centrifugal pump impeller is to _____. | directly increase the pressure of the liquid being pumped | directly increase the velocity of the liquid being pumped | convert the potential energy of the liquid to kinetic energy | separate air from the liquid being pumped | |
| 11 | 999 | B | It is desired to operate an air compressor with a 12 inch flywheel at a speed of 510 rpm. If the motor runs at 1750 rpm, what size motor pulley should be used? | 2.5 inches | 3.5 inches | 4.5 inches | 5.5 inches | |
| 11 | 1000 | C | Which of the listed characteristics is typical of a strip chart graphic recorder? | The time graduations fan out from the center. | The data charts are more easily stored than the circular charts. | The variable being measured is drawn on rectangular coordinates. | Strip charts are more difficult to read than circular charts. | |
| 11 | 1001 | D | One complete turn of a micrometer screw will move the spindle _____. | 0.001 inch | 0.0025 inch | 0.010 inch | 0.025 inch | |
| 11 | 1002 | C | Pipe thread taps are _____. | not hardened | not fluted | tapered | straight | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1003 | A | A roughened checkered surface is machined by a lathe on round stock using a _____. | knurling tool | checkering tool | chamfering tool | threading tool | |
| 11 | 1004 | C | Which of the following statements is correct concerning a typical shipboard multi-coil refrigeration system? | The liquid receiver functions to collect and remove noncondensable gases. | A thermostatic expansion valve is used to control refrigerated space temperature. | Refrigerant temperature in an evaporator is directly related to refrigerant pressure. | Dehydrators must be used continuously in a refrigeration system. | |
| 11 | 1005 | C | One of the consequences in continuing to operate a centrifugal bilge pump with the discharge valve closed, is that the _____. | motor overload will open | relief valve will open | pump will overheat | motor will overheat | |
| 11 | 1006 | A | Which of the listed punches can be properly used to free a tapered pin 'frozen' in its hole? | Drift punch | Aligning punch | Center punch | Prick punch | |
| 11 | 1007 | D | If a centrifugal pump is being driven by a steam turbine and the discharge valve is closed off, the pump will _____. | slow down | run cooler | speed up by 5% until the discharge valve is reopened | no longer continue to internally convert the resultant energy imparted to the pump | |
| 11 | 1008 | A | The device illustrated is considered to be a pump. Which of the following statements is true if it is to be used as a hydraulic motor? | Pressurized fluid would have to be supplied to the existing indicted casing outlet. | Roller vanes would have to be exchanged for sliding vanes. | The diameter of the rotor would have to be increased. | Nothing could be done to convert this device to a hydraulic motor. | GS-0074 |
| 11 | 1009 | B | The mechanical efficiency of a particular centrifugal bilge pump is 92.5%. What is the smallest horsepower motor that can effectively operate this pump at a capacity of 100 gpm with a discharge head of 15 feet? | 1/4 HP | 1/2 HP | 3/4 HP | 1.0 HP | |
| 11 | 1010 | C | Which of the listed types of bearings is an example of a half bearing? | Piston pin bushing | Thrust bearing | Spring bearing | All of the above. | |
| 11 | 1011 | C | When using a one inch micrometer, a reading of .875 is equal to _____. | 1/2 inch | 5/8 inch | 7/8 inch | 15/16 inch | |
| 11 | 1012 | B | The process of grinding or shredding sewage into smaller particles is known as _____. | detention | comminution | bulking | skimming | |
| 11 | 1015 | B | If an operating bilge pump is developing good vacuum, but is unable to discharge any water, which of the following problems is the most probable cause? | The wearing rings are excessively worn. | The suction strainer is clogged. | The discharge valve is clogged. | The shaft is worn. | |
| 11 | 1016 | C | Which of the additives listed will maintain the suspension of fine residue particles in lube oil? | Floc point | Suppressant | Dispersant | All of the above. | |
| 11 | 1017 | A | A centrifugal pump produces flow with a resulting discharge head by energy conversion. It is typical for the energy conversion to follow the order of _____. | mechanical energy to kinetic energy to potential energy | mechanical energy to potential energy to kinetic energy | potential energy to mechanical energy to kinetic energy | kinetic energy to mechanical energy to potential energy | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1019 | C | Upon a vessel's departure from point "A" at 1206, the counter reading was 616729. At midnight, the counter reading was 672889, at which time the engine speed was increased to 82 RPM, and remained the same speed until its arrival at point "B" at 1140 the following day. If the vessel is equipped with a 20' 8" diameter propellor, having a pitch of 20', and apparent negative slip of 6.65% was calculated for the passage, what observed distance was covered? | 353.2 miles | 364.8 miles | 398.4 miles | 413.9 miles | |
| 11 | 1020 | C | The size of ball and roller bearings can be identified by the _____. | rolling member size | inner race cone width | manufacturer's numerical code | outer ring width | |
| 11 | 1021 | C | The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____. | parts of the file | shape of the file | distance between the parallel cuts on the file | size of the file | |
| 11 | 1022 | D | An advantage of a helical gear pump over a simple gear pump is that the helical gear pump is capable of _____. | maintaining a steadier speed | delivering liquids over greater distances | operating for longer periods of time | producing a smoother discharge flow | |
| 11 | 1023 | B | To properly cut an odd numbered thread with a lathe using the thread dial indicator illustrated, you should close the lathe split, or half-nut on _____. | any line on the dial | any numbered line on the dial | odd numbered lines only | even numbered lines only | GS-0084 |
| 11 | 1024 | B | Refrigerant is normally sub cooled in a refrigeration or air conditioning system condenser to _____. | maintain adequate coil back pressure | prevent flashing in the liquid line | reduce refrigerant volume in the system | reduce compressor discharge line loading | |
| 11 | 1025 | D | What is the reading of the vernier micrometer caliper scale shown in figure "G" in the illustration? | 0.2280 inch | 0.2340 inch | 0.2520 inch | 0.2470 inch | GS-0083 |
| 11 | 1026 | B | The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____. | shape of the file | coarseness of the file teeth | size of the file | cuts of the file | |
| 11 | 1027 | B | A pump is defined as a device that _____. | produces pressure | imparts energy to a fluid to move it from point "A" to point "B" | creates a vacuum to move a liquid in all installations | is to develop a pressure differential | |
| 11 | 1029 | C | A vessel departed from point "A" at 1206 with a counter reading of 616729 and arrived at point "B" with a counter reading of 731929 at 1148 the following day. This vessel is equipped with a 20 foot 8 inch diameter propeller, with a pitch of 20 feet. The o | 1.04% | 1.29% | -6.65% | -11.04% | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1030 | A | Restrictions occurring in the small orifices of pneumatic control system components can be caused by _____. | moisture in the compressed air supply | excessive dryness in the compressed air supply | pressure surging in the compressed air receiver | insufficient lubrication of the system components | |
| 11 | 1031 | D | The best tool to use when attempting to widen the opening of a flanged joint, in preparation for renewing the gasket, is a _____. | gasket cutter | spud wrench | scraper | flange spreader | |
| 11 | 1032 | A | A file handle is fitted to the file's _____. | tang | point | taper | heel | |
| 11 | 1033 | A | To properly cut even numbered threads using the lathe thread dial indicator shown in the illustration, you should close the lathe split or half-nut on _____. | any line on the dial | even numbered lines only | odd numbered lines only | any unnumbered half line | GS-0084 |
| 11 | 1034 | A | The principal purpose of subcooling liquid refrigerant prior to its entering the expansion valve is to _____. | increase the refrigerating effect by decreasing the amount of flash gas | allow the refrigerant to enter the throttling device in a saturated condition | increase the refrigerating effect by increasing the amount of flash gas | minimize the temperature drop of the liquid as it passes through the solenoid valve to the outlet side | |
| 11 | 1035 | A | If a bilge pump is able to develop vacuum, but is unable to sufficiently pump out the bilges, you would check for all of the following EXCEPT _____. | the circuit breaker | for leaks in the suction piping | relief valve is not properly seated | the suction strainer | |
| 11 | 1036 | B | Item "E" as shown in the illustration is known as a _____. | rudder stock | rudder post | rudder gudgeon | pintle | GS-0101 |
| 11 | 1039 | A | While starting a hydraulic anchor windlass, you observe that hydraulic pressure does not develop in spite of the proper operation of the electric drive motor. Which of the following actions should you take FIRST to restore pressure? | Make certain that the hydraulic reservoir is filled to the proper level. | Inspect the disc brake on the electric motor for proper operation. | Check the electric motor for an open overload relay contact. | Check for full voltage supply to the electric motor. | |
| 11 | 1040 | C | A primary element used with flow measurement devices highly suitable for liquids containing solids in suspension, is a _____. | concentric orifice | convergent nozzle | venturi tube | pilot tube | |
| 11 | 1041 | A | To safely remove the piston rod packing from the steam end of a reciprocating pump, you should _____. | use a packing hook | open the throttle valve and 'blow' the old packing out | do nothing, as this type of pump utilizes O-rings in lieu of packing | open the steam chest and pry the packing loose with a scraper | |
| 11 | 1042 | B | The tang of a file is the part that _____. | does the cutting | fits into the handle | has crosscut teeth | is opposite the handle | |
| 11 | 1043 | C | When a lathe is used for thread cutting, the number of threads per inch produced is determined by the speed relationship between the _____. | drive motor and spindle | spindle and feed rod | lead screw and head stock spindle | lead screw and feed rod | |
| 11 | 1044 | C | Subcooling is a method of reducing the temperature of the liquid refrigerant below its _____. | freezing point | floc point | condensing temperature | compression temperature | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1045 | B | The valve which is most suited for regulating the flow through a pipeline is a _____. | gate valve | globe valve | swing-check valve | plug-cock valve | |
| 11 | 1046 | D | The reading on the micrometer scale shown in figure "D" in the illustration is _____. | 0.4710 inch | 0.4715 inch | 0.4810 inch | 0.4815 inch | GS-0081 |
| 11 | 1047 | C | A centrifugal pump must have a stuffing box liquid sealing line and seal cages installed if the pump _____. | suction head is high, and is handling a cool, debris free liquid | is handling a liquid with a temperature of less than 150° F | suction lift exceeds 10 inches Hg vacuum | discharge is less than 25 psi | |
| 11 | 1048 | D | The illustrated hydraulic pump graphic symbol is used to depict a _____. | parallel, pump unit | two-stage, pump unit | duplex, pump unit | combined, pump unit | GS-0098 |
| 11 | 1049 | A | A standard grade of 3 inch steel pipe has an outside diameter of 3.5 inches and an inside diameter of 3.068 inches. What is the nominal size of steel pipe having an outside diameter of 4.0 inches and an inside diameter of 3.548 inches? | 3.5 inches | 3.75 inches | 3 inch nominal size pipe of schedule 80 thickness | 3 inch nominal size pipe of schedule 160 thickness | |
| 11 | 1050 | B | Which of the screwdrivers listed is produced with a tip to fit screws with a four way or cross slot? | Standard | Phillips | Allen | Torx | |
| 11 | 1051 | A | In order to prevent overheating of the packing in the stern tube stuffing box, _____. | the gland is properly adjusted to permit a slight leakage of sea water | stave-type rubber seals are used | cooling water is supplied from the fresh water cooling system | the gland nuts must be tightly taken up to prevent any water leakage | |
| 11 | 1052 | B | Many micrometers are equipped with a ratchet stop at the end of the thimble to _____. | click at each increment of measure | prevent the user from closing the tool with too much force | stop the spindle from sliding out of the barrel | eliminate ratchet movement | |
| 11 | 1053 | B | A follower rest should be used with a lathe to machine _____. | large diameter stock between centers | threads on long slender shafts | work mounted on the lathe carriage | round stock to a finished dimension | |
| 11 | 1054 | B | In the illustrated refrigeration system, component "G" is the _____. | expansion valve | compressor | filter drier | condenser | RA-0012 |
| 11 | 1055 | C | Which of the drill sets listed would commonly be referred to as a 'Jobbers Set'? | A set of numbered size drills from 1 to 60. | A set of lettered size drills from A to Z. | A set of fractional size drills from 1/16" to 1/2". | A set of fractional size drills from 1/2" to 2". | |
| 11 | 1056 | A | If the chemical analysis of a lube oil sample taken from the main propulsion machinery indicates an increased neutralization number the _____. | acidity has increased | viscosity has decreased | demulsibility has improved | tendency to foam is guaranteed to occur | |
| 11 | 1057 | B | The proper design of a centrifugal pump must include a seal cage and sealing line when the pump _____. | takes suction from a low temperature pressurized tank | takes suction from a hot well | is handling a liquid at less than 150° F | has a high positive suction head | |
| 11 | 1058 | C | The illustrated hydraulic pump graphic symbol is used to depict a/an _____. | series-flow pump unit | two-stage pump unit | double pump unit | combined pump unit | GS-0097 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1059 | C | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 3.5 inches. When the pipe is bent into a 90° turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge o | 1.050 inches | 2.670 inches | 5.498 inches | 6.912 inches | GS-0108 |
| 11 | 1061 | B | Some vessels are equipped with a water lubricated stern tube. When at sea, operating under normal conditions, the water service valve from the ship's saltwater system to the bearing should be _____. | closed, and no leakage permitted across the shaft packing | closed, and only slight leakage permitted across the shaft packing | open, and no leakage permitted across the shaft packing | open, and only slight leakage permitted across the shaft packing | |
| 11 | 1062 | C | The correct torque value for a micrometer torque wrench is reached when _____. | the scale is read on the handle | the dial is read on the handle | an audible click is heard and the handle releases | a dial lights on the handle | |
| 11 | 1063 | B | To commence cutting threads with a metal lathe, you should engage the _____. | feed-change lever | split or half-nut | back gear lever | thread-chasing dial | |
| 11 | 1064 | C | Heat is removed from the cooling system, shown in the illustration, by component _____. | 5 | 3 | H | E | RA-0012 |
| 11 | 1065 | A | When using a micrometer to measure a drill for size, you should measure across the drill _____. | margins | flutes | shank | web | |
| 11 | 1066 | A | A good quality lubricating oil used in any machinery, should be _____. | acid free | capable of emulsifying | a rapid oxidizer | additive free | |
| 11 | 1067 | D | Centrifugal pumps are designed with sealing lines _____. | to prevent the fluid being pumped from pouring out of the stuffing box when a high suction head is available | in place of mechanical seals | in place of slinger rings | to prevent air from entering the pump casing along the shaft | |
| 11 | 1069 | A | An 8" diameter wheel is driving a 20" diameter wheel via a pair of belts. The power input is supplied by a 5 HP motor rotating the driving wheel at 300 RPM. If the efficiency of the transmission is 80%, what RPM and torque is delivered to the driven wheel? | 120 RPM at 4 HP | 160 RPM at 4 HP | 220 RPM at 4.5 HP | 220 RPM at 4.8 HP | |
| 11 | 1070 | A | A rotameter, when used to indicate the rate of fluid flow in distilling plants, is essentially an area meter consisting of a _____. | movable float riding on a rod centered in a tapered tube | piston uncovering a port whose opening is directly proportional to fluid flow | movable orifice plate venturi tube and high pressure tap | rotating vane transmitting nutating motion to a counter mechanism | |
| 11 | 1071 | C | Which of the following methods applies to how a vacuum is created by a jet pump or an eductor? | Centrifugal force converted into potential energy. | A reciprocating plunger directly applying force to a fluid. | A rapidly moving stream of fluid passing through a nozzle. | A propeller drawing a fluid through a Venturi nozzle. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1072 | B | For greater accuracy, some micrometers have a vernier scale making it possible to read in increments of _____. | five thousands of an inch | ten thousands of an inch | twenty five thousands of an inch | one fortieth of an inch | |
| 11 | 1073 | B | The 60° taper angle machined on work supported by lathe centers is most easily machined by the _____. | taper attachment | compound rest | tailstock set-over method | headstock set-over method | |
| 11 | 1074 | D | Under normal conditions, the refrigerant enters the compressor in an operating refrigeration system as a _____. | liquid | dry saturated gas | wet saturated gas | superheated vapor | |
| 11 | 1075 | B | The most accurate method of measuring the setting of an inside caliper is to use a/an _____. | thread micrometer | outside micrometer | engineer's scale | dial indicator | |
| 11 | 1077 | A | Sealing lines provide sealing liquid flow to the stuffing box of a centrifugal pump _____. | to help lubricate the shaft packing | to limit the outflow of seawater from the stuffing box of a pump provided with a high suction head | in place of sealing gages | in place of mechanical seals | |
| 11 | 1078 | D | As routine maintenance, the bilge manifold valves are periodically removed and examined. Prior to resecuring the valve bonnets, the valve _____. | disks and seats should be checked and lapped if necessary | bonnet flange gaskets should be renewed if they were cut or torn | stem packing should be renewed if the packing has hardened | all of the above | |
| 11 | 1080 | D | A hydrometer measures specific gravity by comparing the _____. | density of a substance in water with the density of the same subject in air | differences in volume between water and the liquid measured | mass of substance measured with the density of the same substance | buoyancy of an indicator in water with the buoyancy of the same indicator in the liquid being measured | |
| 11 | 1081 | C | An excessive amount of water is prevented from entering a vessel using a water lubricated stern tube bearing by the use of the _____. | propeller hub | lignum vitae | shaft packing | labyrinth seal | |
| 11 | 1082 | A | A micrometer screw has a pitch of _____. | 40 threads per inch | 50 threads per inch | 75 threads per inch | 100 threads per inch | |
| 11 | 1083 | D | A taper may be turned on a lathe by _____. | setting over the tailstock | using the compound rest | using the taper attachment | all of the above | |
| 11 | 1084 | C | Refrigerant enters the condenser as a _____. | high pressure liquid | low pressure vapor | high pressure vapor | low pressure liquid | |
| 11 | 1085 | C | If the thimble of a micrometer were turned through one complete revolution, the micrometer would open or close by a linear distance of _____. | .001 inch | .010 inch | .025 inch | .100 inch | |
| 11 | 1086 | B | A micrometer would be used to measure _____. | microseconds | round stock diameter | electrical resistance | low voltages | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1087 | B | Early models of the flash-type evaporators used a separate shell-and-tube heat exchanger as the air ejector condenser. More recent models use a combined air ejector condenser with the _____. | distilling condenser | salt water feed heater | distillate cooler | flash chamber | |
| 11 | 1089 | B | If the pump for a hydraulic anchor windlass is overheating, the cause may be _____. | excessive drive motor speed | excessive pump discharge pressure | too low of a tilting box angle | insufficient drive motor speed | |
| 11 | 1090 | C | Coast Guard Regulations (46 CFR), require that an indicating light, located at the propulsion control station, be illuminated if there is an overload that would cause overheating of the _____. | forced draft blower motor | fuel pump motor | steering gear motor | condensate pump motor | |
| 11 | 1091 | B | When a vessel is underway, a small amount of water is allowed to leak through the water lubricated stern tube stuffing box in order to _____. | flush out silt and mud which can accumulate from shallow water | prevent overheating of the packing | ensure positive coolant flow through the strut bearings | prevent seizing of the rubber strips in the bearing bushing | |
| 11 | 1092 | D | The rotating part of a micrometer is the known as the _____. | anvil | sleeve | frame | thimble | |
| 11 | 1093 | D | To safely change spindle speeds on a lathe, you must first _____. | disengage the spindle clutch | engage the feed change lever | disengage the feed reverse lever | stop the lathe rotation | |
| 11 | 1094 | D | At point "D", shown in the illustration, the refrigerant is a _____. | low pressure gas | low pressure liquid | high pressure gas | high pressure liquid | RA-0012 |
| 11 | 1096 | B | A small hole gauge is used in conjunction with a/an _____. | feeler gauge | micrometer | surface gauge | angle gauge | |
| 11 | 1097 | D | The function of seal cages, or lantern rings installed in the centrifugal pump stuffing boxes, is to _____. | cool the shaft | lubricate the packing | seal air from entering along the shaft | distribute the sealing liquid within the stuffing box | |
| 11 | 1098 | C | The device shown in the illustration has displayed a continuing tendency to leak, despite using extreme care in its installation during numerous repair efforts. Which of the following conditions might be used to prevent the pump shaft leakage from reoccurring with this device? | Apply an adhesive between the shaft and part "D". | Apply an adhesive between parts "D" and "E". | Apply an adhesive to part "G". | Apply an adhesive between part "F" and the shaft. | GS-0071 |
| 11 | 1099 | A | The capacity of a particular ballast pump is 200 gallons per minute. Approximately how long will it take to ballast a tank with 68.5 long tons of seawater? | 1.5 hours | 2.0 hours | 2.5 hours | 3.0 hours | |
| 11 | 1100 | A | Coast Guard Regulations (46 CFR) require an audible and visible alarm to be actuated in the pilothouse when the actual position of the rudder differs from the position ordered by the follow-up control system by 5 degrees° or more for more than _____. | 30 seconds for ordered rudder position changes of 70 degrees | 16 seconds for ordered rudder position changes of 5 degrees | 10 seconds for ordered rudder position changes of 2.5 degrees | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1101 | B | An oil fog lubrication system is recommended for _____. | gear shaft bearings | high speed ball bearings | low and moderate speed ball bearings | heavily loaded pinion gear bearings | |
| 11 | 1102 | C | Which of the devices shown in the illustration is designed for both inside and outside measurements? | A | B | C | D | GS-0073 |
| 11 | 1104 | A | In the illustrated refrigeration system, refrigerant exists in its liquid form when it is between components _____. | H and K | L and F | G and D | D and L | RA-0012 |
| 11 | 1106 | A | Which of the projections represents the left side view of the object "X" in the illustration? | A | B | C | D | GS-0022 |
| 11 | 1108 | D | In a six month period, the illustrated device has needed to be replaced twice due to excessive grinding of part "E". Which of the listed aids might assist in reducing this problem? | Use a softer material for part "D". | Increase the contact surface area of part "F". | Increase the contact surface area of part "E". | Increase the thickness of the cover gasket at point "H". | GS-0071 |
| 11 | 1109 | D | The collision bulkhead is located _____. | on the bridge deck | between the passenger and cargo areas | at the stern of the ship | as the first watertight bulkhead aft of the bow in the ship | |
| 11 | 1110 | A | According to Title 46 CFR, of the equipment listed below, which equipment must be tested NOT more than 12 hours prior to getting underway from a U.S. port when the voyage is to be of 48 hours or greater duration? | Steering gear | Shaft generator | All external vessel control communications and alarms | All of the above | |
| 11 | 1111 | D | In a flash distilling unit, evaporator feed (seawater) first absorbs heat in the _____. | vapor feed heater | air ejector condenser | saltwater heater | distillate cooler | |
| 11 | 1112 | D | Which of the listed numeric values represents the smallest size drill? | #0 | #1 | #60 | #80 | |
| 11 | 1113 | A | Which of the lathe operations listed is best done with the carriage locked in position? | Facing work held in a chuck. | Turning work held between centers. | Threading internal threads. | Boring an angled hole. | |
| 11 | 1114 | C | Heat is removed from the refrigerant, as shown in the illustration, in the labeled part _____. | L | K | H | G | RA-0012 |
| 11 | 1115 | A | If you turn the adjusting screw clockwise of a spring-loaded, internal pilot, pressure reducing valve, you will _____. | compress the adjusting spring against the diaphragm | release spring tension from the diaphragm | increase steam pressure to the reducing valve | decrease spring tension in the main valve | |
| 11 | 1116 | A | The function of lubricating oil is to _____. | reduce friction between contact surfaces in motion | provide even distribution of bearing wear | reduce the accumulation of harmful detergents | maintain a constant oil temperature output at each bearing | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1117 | A | While at sea, the flash type evaporator is discharging the output to the distill tanks. If it becomes necessary to reduce the feed water temperature below 165° F, you should _____. | continue the current evaporator operation | dump the evaporator to the bilge | secure the evaporator until the feedwater temperature can be raised to 165° F or more | raise the tripping point at the salinity indicating panel for the three-way valve | |
| 11 | 1118 | C | Which of the labeled parts would be considered as the 'dynamic seal ring' portion of the illustrated device? | A | B | E | G | GS-0071 |
| 11 | 1119 | C | If hot oil comes in contact with a diesel engine turbocharger, catches fire, and causes in excess of $25,000 (US dollars) damage to your ship, by law this must be reported to the _____. | engine manufacturer | American Bureau of Shipping | USCG Officer in Charge, Marine Inspection at the next port | vessel underwriters | |
| 11 | 1120 | A | Coast Guard Regulations (46 CFR), make certain requirements regarding over current protection. Steering gear feeder circuits shall be protected only by _____. | a circuit breaker with instantaneous trip | motor running over current protection | a nonrenewable link cartridge fuse | a renewable link cartridge fuse | |
| 11 | 1121 | A | Carbon deposits forming on the discharge valves of an air compressor are caused by oil deterioration under high pressure. The first step in reducing these deposits would be to _____. | reduce the discharge temperatures with intercoolers | increase the compression ratio | use a high viscosity oil | increase the oil volatility | |
| 11 | 1122 | B | When a flash evaporator is being operated in extremely cold water, you may need to throttle the seawater supply to _____. | prevent cold shocking the evaporator | maintain the feedwater temperature above the required minimum input temperature | avoid flooding the evaporator shell | increase the evaporator distilling rate | |
| 11 | 1123 | C | The dead center of a lathe can be properly used only after the end of the work piece has been _____. | counter bored | tapered | center drilled | convexed | |
| 11 | 1124 | B | Flash gas formed in the liquid line of a refrigeration system may cause _____. | pressure at expansion valve inlet to increase | expansion valve pins and seats to erode | expansion valve capacity to increase | pressure difference across the expansion valve to increase | |
| 11 | 1125 | C | Which of the drill sizes listed represents the largest size drill? | A | X | Z | XX | |
| 11 | 1126 | B | Which of the illustrations depicts the correct procedure for applying pipe dope? | A | B | C | D | GS-0046 |
| 11 | 1128 | D | The device shown in the illustration is commonly known as a/an _____. | quad seal | soft-packing seal | spring seal | mechanical seal | GS-0071 |
| 11 | 1129 | B | Overheating of the hydraulic fluid in an electro-hydraulic anchor windlass can result from a/an _____. | overload on the pump motor | low fluid level in the reservoir | low fluid viscosity around the shaft seal | high oil level in the sump | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1130 | C | According to Coast Guard Regulations (46 CFR), which of the following statements is correct regarding the steering apparatus requirements for a vessel over 250 feet in length? | Hydraulic structural rudder stops are mandatory. | On hydraulic type steering gears, a suitable arrangement of check valves in the main piping system may be considered as a means of steadying the rudder. | A separate auxiliary means of steering is not required where the main gear is of the dual power hydraulic type, having two independent pumps and connections. | All of the above. | |
| 11 | 1131 | B | A dirty intercooler on the ship service air compressor will result in _____. | decreased compression ratio | higher than normal power consumption | unloader malfunction | water in the lubricating oil | |
| 11 | 1132 | B | Which of the listed conditions will cause the feed water, that has not flashed to vapor in the first-stage of a flash evaporator, to flow into the second-stage? | Gravity siphon effect | Higher vacuum in the second-stage | Difference in brine density between first and second stages | Lower pressure in first-stage | |
| 11 | 1134 | B | In a refrigeration system, the heat normally producing the flash gas at the thermostatic expansion valve, is obtained from _____. | the hot gas bypass connection at the three-way valve | the portion of liquid refrigerant which does not flash | exposure to the high ambient temperature within the coil | exposure to the high ambient temperature of the cooled space | |
| 11 | 1135 | B | Sealing lines provide sealing liquid flow to the stuffing box of a centrifugal pump _____. | to prevent seawater from passing out the stuffing box when a high suction head is present | to cool the shaft | in place of mechanical seals | in place of lantern rings | |
| 11 | 1136 | B | A twist drill gage can be used to measure the drill's _____. | length | diameter | clearance angle | web thickness | |
| 11 | 1137 | D | Under normal operating conditions, the highest temperature and pressure conditions existing for flash-type evaporators will occur in the _____. | first stage | second stage | brine pump discharge | salt water feed heater | |
| 11 | 1138 | C | An axial piston hydraulic motor is caused to rotate by fluid flow from a comparably designed variable displacement pump fitted with the illustrated device. If the motor stalls, due to excess load, the pump tilting box will seek neutral stroke until the h | A | E | I | J | GS-0040 |
| 11 | 1139 | B | A 30 HP electric motor is rotating shaft "A" at 300 rpm. What is the horsepower and rpm at shaft "B", if the efficiency of the spur gears is 67%? | 20 H.P. at 200 RPM | 20 H.P. at 900 RPM | 30 H.P. at 100 RPM | 30 H.P. at 900 RPM | GS-0136 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1140 | D | Electric and electro-hydraulic steering gear motors are required by Coast Guard Regulations (46 CFR) to be _____. | protected by a circuit breaker set at 125% and a thermal overload device | provided with a running motor over current protection device | served by a single two conductor cable | served by two feeder circuits | |
| 11 | 1141 | B | A dirty intercooler on an air compressor will cause _____. | damage to the unloader operating diaphragm | an increase in current flow to the motor | high pressure in the receiver | an excessive consumption of crankcase oil | |
| 11 | 1142 | A | Which of the following actions should be taken if during a routine maintenance inspection of a centrifugal pump, localized scoring on a pump shaft sleeve is detected? | Correct the cause of the scoring and repair the sleeve or replace with a new one. | Reassemble the unit and provide more water leak off for proper lubrication. | Check for parallel alignment of the sleeve radial faces to the sleeve bores. | Reassemble the unit and adjust the governor to obtain a slower speed. | |
| 11 | 1143 | C | Which of the metals listed below can be cut with the highest operating lathe speed? | Cast iron | Mild steel | Aluminum | Soft brass | |
| 11 | 1144 | C | High vapor superheat in a refrigeration system, may be caused by a/an _____. | increased capacity of the compressor | more efficient operation of the thermal expansion valve | decreased capacity of the compressor | loss of receiver capacity | |
| 11 | 1145 | C | In a two-stage flash-type evaporator, excess brine in the first stage automatically passes _____. | directly to the second stage feed heater | directly overboard through the brine cooler | into the second stage flash chamber | into the second stage vapor condenser | |
| 11 | 1146 | B | The size of a drill is usually marked on the _____. | point | shank | taper | flute | |
| 11 | 1148 | A | A variable displacement pump is fitted with the illustrated device, the discharge flow rate will be reduced as described by which of the following statements? | Part "H" will move to block the replenishing pump oil flow across part "G" as flow across hydraulic motor decreases. | When part "D" rotates counterclockwise, part "E" will rotate clockwise allowing part "G" to slide towards the set point spring 'F.' | As high side pressure increases part "A", "B", and "C" will work together to reestablish the original tilting box angle. | The increase in high side pressure will gradually increase the tilting box angle of the variable displacement pump. | GS-0040 |
| 11 | 1150 | A | Coast Guard Regulations (46 CFR) require that electric and electro-hydraulic steering gear motors shall be _____. | served by two electric power feeder circuits | provided with a motor running over current protection device | protected by a circuit breaker and a thermal overload device | served by a single two conductor cable | |
| 11 | 1151 | D | Excessive lube oil consumption by a reciprocating air compressor can be caused by _____. | increasing the operating pressure differential | using oil having an excessive viscosity | intercooler or aftercooler leaks | carrying the oil level higher than normal | |
| 11 | 1152 | D | The total length of stroke in a reciprocating steam pump can be adjusted by _____. | increasing or decreasing the number of packing rings around the piston rod | variations in the throttle adjustment | twisting the stay rod in a clockwise direction | changing the setting of the tappet collars on the pilot valve operating rod | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1153 | B | Which of the following statements best defines 'depth of cut' in lathe work? | The distance to tool point advances with each revolution of the work. | The distance from the bottom of the cut to the uncut surface of the work piece. | The distance the work piece circumference moves past the cutting tool point in 1 minute. | The chip length that will be removed from the work in 1 minute. | |
| 11 | 1154 | B | In which of the listed refrigeration system components does superheating of the refrigerant take place? | Expansion valve | Evaporator | Drier | Receiver | |
| 11 | 1156 | A | With regards to the diaphragm controlled, internally piloted, steam pressure reducing valve illustrated, as the _____. | outlet pressure drops, the valve stem will move down | outlet pressure drops, the valve stem will move up | diaphragm ruptures, the valve will close | adjusting spring is compressed further, outlet pressure will decrease | GS-0054 |
| 11 | 1157 | C | The vacuum maintained in the salt water feed heater shell of a flash-type evaporator is generally accomplished by _____. | a separate air ejector unit | a direct unimpeded connection between second stage and salt water feed heater | by an external line from the first stage via a fixed orifice | the fixed orifice provided in the steam supply line | |
| 11 | 1158 | C | In the device illustrated, if part "D" rotates clockwise then part "E" will rotate _____. | counterclockwise and act upon part "H" | clockwise and act upon part "H" | counterclockwise and act upon part "G" | clockwise and act upon part "G" | GS-0040 |
| 11 | 1159 | D | Sounding tubes and access openings for fuel oil tanks on cargo vessels are permitted by Coast Guard Regulations (46 CFR) to be located in which of the listed spaces? | Washrooms | Laundries | crew lounge | none of the above | |
| 11 | 1160 | B | An electric driven steering gear power unit is required by Coast Guard Regulations (46 CFR) to be capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds under emergency power with the vessel running ah | 7 knots | 10 knots | 15 knots | 20 knots | |
| 11 | 1161 | C | Excessive lube oil consumption in a reciprocating air compressor is an indication of _____. | leakage in the aftercooler | leakage in the intercooler | worn or broken piston rings | defects in the high pressure unloader | |
| 11 | 1162 | C | Which of the lubricants listed is the best to use on a reciprocating pump rod? | Engine oil. | Oil mixed with kerosene. | Graphite and oil. | Vegetable oil. | |
| 11 | 1163 | C | When stock is being turned down on a lathe, the outside diameter is reduced by an amount equal to _____. | the depth of cut | one half the depth of cut | twice the depth of cut | twice the rate of feed | |
| 11 | 1164 | D | In a refrigeration system, the amount of refrigerant admitted to the evaporator is directly related to _____. | the compressor discharge pressure | condenser cooling water temperature | the solenoid valve differential pressure | the superheat of the refrigerant in the tail coil | |
| 11 | 1166 | C | If the drill point lips are of unequal length, the drill will wobble and _____. | cut a continuous chip | jam in the hole and break | cut an oversized hole | overheat rapidly from rubbing | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1173 | B | If you are cutting off a piece of stock in a lathe and the work piece tends to climb over the top of the cutoff tool, you should _____. | increase the lathe spindle speed | increase the height of the tool cutting edge | stop the lathe and tighten the chuck | stop the lathe and lubricate the dead center | |
| 11 | 1174 | A | The refrigerant gas returning to the compressor should be _____. | superheated | saturated | dense | flooded | |
| 11 | 1175 | B | The distillate produced by a flash evaporator has a salinity of 0.21 grains per gallon, with a feed water temperature entering the first-stage of the evaporator at 170° F. Under these conditions the three-way solenoid valve will _____. | direct distillate to the bilge | direct distillate to the freshwater tanks | recirculate distillate to the first-stage feed inlet | recirculate distillate to the distiller saltwater heater | |
| 11 | 1176 | B | On a multistage flash-type evaporator, the flash chamber is _____. | combined as part of the salt water feed heater | the open area above the brine levels in the first and second stages | combined as part of the distillate cooler | another term used to describe the vapor feed heater | |
| 11 | 1177 | B | The heated feed water entering any flash chamber of a flash-type evaporator will _____. | vaporize, with the unflashed water remaining at the temperature at which it entered the flash chamber | vaporize, with the unflashed water equalizing to the saturation conditions existing in the flash chamber | vaporize, with the remaining water at a temperature greater than it entered the flash chamber | boil, allowing steam bubbles to rise through the brine at the bottom of the flash chamber | |
| 11 | 1178 | C | If the device shown in the illustration is used to control the output of a variable displacement pump, and part "A" is displaced 50% from 'zero' stroke, which of the following statements will be correct? | Pump discharge will be 100% until the effects of lost motion in the associated linkages is eliminated. | Once the pump achieved a corresponding output of 50%, the pump would automatically return to neutral stroke. | The pump would develop a 50% discharge rate and remain at that condition until the control handle position is changed. | The system unloading valve will open to guarantee a pump discharge of no more than 50%. | GS-0039 |
| 11 | 1179 | D | Coast Guard Regulations (46 CFR) require tank sounding tubes terminating above the weather deck of a cargo vessel to be fitted with a _____. | globe valve | stop-check valve | gate valve | screw cap or plug | |
| 11 | 1180 | B | According to Coast Guard Regulations (46 CFR Part 58), a power driven auxiliary steering gear for a vessel capable of a 12 knot service speed, must be able to meet the rudder movement requirements at which of the minimum vessel speeds listed below? | 6 knots | 7 knots | 9 knots | 12 knots | |
| 11 | 1181 | B | If the electric motor driving an air compressor fails to start, the cause may be a _____. | leaking unloader | tripped circuit breaker | control line leak | defective pop valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1182 | C | If you determine that a steam reciprocating pump is operating with too long of a stroke, causing the piston nut to strike the cylinder head, you should _____. | completely open the steam cushioning valves | install a smaller nut on the piston rod | adjust the valve gear to manufacturer's specified measurements | install a shorter piston rod | |
| 11 | 1183 | B | When steel, cast iron, or other metals with surface scale are being turned, the first roughing cut should be taken _____. | slowly to prevent tool chatter | deep enough to get under the scale | lightly to avoid dulling the tool | rapidly in a continuous chip | |
| 11 | 1184 | A | The low pressure side of a refrigeration system is considered to exist from the _____. | expansion valve to the compressor | receiver to the expansion coil | expansion valve to the evaporator | condenser to the expansion valve | |
| 11 | 1185 | C | In the event of a power failure to the salinity panel on a flash-type evaporator, the three-way solenoid valve will _____. | be frozen in its last position | direct distillate to the fresh water tank | dump distillate to the bilge | dump distillate to the makeup feed tank | |
| 11 | 1186 | B | Positive displacement, helical gear pumps are well suited for pumping oil because _____. | stuffing boxes eliminate the leakage problems usually associated with other gear pumps | helical gear pumps are essentially self-priming and produce high suction lift | closely maintained design clearances in this pump is not necessary | helical gear pumps are designed with extreme tooth angles | |
| 11 | 1187 | B | Scale formation in a flash-type evaporator is usually found in the _____. | flash chamber walls | tubes of the salt water feed heater | tubes of the air ejector condenser | tubes of the distiller condenser | |
| 11 | 1188 | B | If the device shown in the illustration is being used to control the output of an axial piston pump, when part "A" is moved to the right, then part "B" _____. | will move to the right, and "C" will move to the left, but lagging behind "B" | will move to the left, and "C" will move to the right, but will lag behind the movement of "A" | will move to the right, as will "C" | will move to the left, as will "C" | GS-0039 |
| 11 | 1190 | A | Coast Guard Regulations (46 CFR) require hydraulic steering gear systems to be equipped with a means of steadying the rudder in an emergency. This may be accomplished with _____. | a suitable arrangement of stop valves in the main piping | a positive arrangement for stopping the rudder before the rudder stops are reached | a suitable arrangement of block and tackle powered by winches | buffer arrangements to relieve the gear from shocks to the rudder | |
| 11 | 1191 | B | After disassembly, the safest way to remove carbon deposits from air compressor inlet and discharge valves is to use _____. | ammonia | diesel oil | gasoline | naphtha | |
| 11 | 1192 | C | In a water cooled stern tube, a slight leakage of water across the packing gland is provided to _____. | flush all dirt and grit from the gland | flush all dirt and grit from the bearing staves | keep the gland packing cool | keep the stern tube fair water cool | |
| 11 | 1193 | A | If the distances "A" and/or "B" as shown in the illustration are excessively increased, the tool will _____. | chatter | take a shallow cut | slip in the tool post | take a deeper cut in the work | GS-0085 |
| 11 | 1194 | D | The component of a refrigerating system in which the refrigerant vaporizes and absorbs heat is known as the _____. | condenser | vapor generator | accumulator | evaporator | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1195 | D | In which of the areas listed would you expect to find the highest salt concentration in a flash evaporator? | Distiller air ejector cooling medium | Saltwater heater discharge | First-stage internal feed box | Second-stage internal feed box | |
| 11 | 1196 | D | Item "F" shown in the illustration represents two hydraulic pumps that are _____. | motor operated with one pump located on the engine room side and the other on the shaft alley side of the water tight door | motor operated with one pump located in the engine room at the shaft alley door and the other in a common passage way | manually operated with one pump located at the shaft alley door and the other in a common passage way | manually operated with one located in the engine room and the other in the shaft alley of the water tight door | GS-0103 |
| 11 | 1197 | B | The flash chamber of a solo shell evaporator is typically an external chamber used for the combining of the distillate produced at two different absolute pressures. On a multistage flash-type evaporator, the flash chamber is _____. | combined as part of the salt water feed heater | the open area above the brine levels in the first and second stages | combined as part of the distillate cooler | another term used to describe the vapor feed heater | |
| 11 | 1199 | B | Coast Guard regulations (46 CFR) require the upper ends of sounding tubes, terminating at the weather deck, to be closed by a _____. | quick-closing valve | screwed cap | globe valve | self-closing gate valve | |
| 11 | 1201 | B | The main bearings of a reciprocating air compressor are tapered roller bearings. When mounted, these bearings are given a 'cold' end clearance to _____. | allow for crank web deflection | allow for longitudinal expansion of the crankshaft as the unit warms up | prevent longitudinal thrust in the crankshaft | reduce torsional vibration in the crankshaft | |
| 11 | 1202 | C | Generally speaking, when using a twist drill to bore a hole in metal, the harder the metal, the greater should be the drill's _____. | diameter | lip clearance | included point angle | cutting speed | |
| 11 | 1203 | C | To operate a centrifugal fire pump at reduced capacity, you should _____. | readjust the relief valve | throttle the suction line | throttle the discharge valve | open the priming line | |
| 11 | 1205 | B | Steam supply for the operation of the low pressure evaporators may be obtained directly from the _____. | main steam line | turbine extraction line | turbo-generator steam supply line | air ejector exhaust line | |
| 11 | 1207 | D | The brine level in the second-stage of a flash-type evaporator is determined in part by the feed rate, the rate of evaporation in both stages, and the _____. | steam flow rate to the air ejectors | float controlled level of the feed heater | capacity of the distillate pump | throughput of the brine overboard pump | |
| 11 | 1209 | D | Coast Guard Regulations (46 CFR) require that tank sounding pipes terminating below the freeboard deck of a cargo vessel must be fitted with a _____. | globe valve | stop-check valve | check valve | gate valve | |
| 11 | 1210 | A | Any restriction in the instrument air piping of a pneumatic control system will _____. | delay transmission of the air signal | increase the transmitted air signal intensity | reduce the transmitted air signal value | accelerate transmission of the air signal | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1211 | B | If one drive belt on an air compressor is found to be worn you should _____. | replace that belt only | replace all of the belts | dress the worn belt | adjust belt tension | |
| 11 | 1212 | A | The discharge rate or capacity of a centrifugal pump will vary directly as the _____. | change in the impeller diameter | square of the impeller radius | cube of the impeller diameter | impeller efficiency for large changes in its size | |
| 11 | 1213 | B | If you are machining work held between lathe centers, and the lathe centers begin to squeal, you should first _____. | lubricate the centers | stop the lathe | change the cutting bit | run the lathe at a slower speed | |
| 11 | 1214 | B | The term 'oil foaming' in refrigeration practice, is used to describe the _____. | release of dissolved lubricant from the refrigerant in the crankcase | release of miscible refrigerant from the lubricant in the crankcase | sudden evaporation of entrapped air from the refrigerant liquid | sudden evaporation of entrapped moisture from the crankcase lubricant | |
| 11 | 1215 | B | Where auxiliary steam supply is not used in the process of maintaining vacuum in a distilling unit, the vacuum is usually attained by _____. | air operated air ejectors | eductor pumps | increasing the rate of condensation in the distiller condensers | a separate suction connection to the brine overboard pump | |
| 11 | 1216 | B | When operating with a negative suction head, which of the following types of pumps will require priming? | Reciprocating | Centrifugal | Rotary | Gear | |
| 11 | 1218 | B | Which of the listed pressure-control valves is used in a hydraulic system to prevent the stray movements of a vertical load until required? | Pressure reducing valve | Counterbalance valve | Unloading valve | Sequence valve | |
| 11 | 1219 | B | A saltwater leak shorts out your switchboard causing a fire which does $(USA)27,500 damage to the electrical equipment. This must be reported to the _____. | insurance underwriter | U.S. Coast Guard | harbormaster | port engineer | |
| 11 | 1220 | A | A Bourdon tube pressure gage is protected from the effects of the steam entering the pressure element by a/an _____. | exposed, uninsulated coil in the line leading to the gage | impulse-type steam trap in the gage line | leather or neoprene diaphragm in the gage line | spring loaded bellows in the gage line | |
| 11 | 1221 | B | If the drive belts on an air compressor were squealing, you should fix them by _____. | spraying oil on the belts | tightening the belts | loosening the belts | installing wider belts | |
| 11 | 1223 | A | One method of accurately checking the alignment of lathe centers is by moving a dial indicator, securely mounted on compound rest, between the two positions indicated on the test bar. If the dial indicator reading on the tailstock end of the test bar shows a higher(+) reading than the dial indicator reading at the headstock end, you should move the tailstock _____. | away from you to correct alignment | toward you to correct alignment | closer to the headstock to reduce offset | away from the headstock to decrease misalignment | GS-0141 |
| 11 | 1224 | D | The refrigerant leaves the evaporator of a refrigeration system as a low pressure _____. | subcooled liquid | high temperature liquid | oil saturated liquid | superheated vapor | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1225 | A | The purpose of a three-way, solenoid, dump valve on an evaporator is to _____. | prevent excessively saline distillate from entering the freshwater system | drain the evaporator first-effect only | drain the evaporator second-effect only | allow the evaporator's first- and second-effects to be drained with one valve | |
| 11 | 1226 | A | Reduced capacity, accompanied by vibration and noise at the suction of a centrifugal pump is a result of _____. | cavitation | water hammer | fluid friction | steam knock | |
| 11 | 1227 | D | The size of the loop seal orifice for a flash-type evaporator is important for maintaining the control of _____. | the vacuum differential developed between both stages | the absolute pressure differential developed between both stages | the absolute pressure developed in the salt water feed heater shell | maintaining distillate flow between the first and second stage in order to avoid dry seal operation of the loop | |
| 11 | 1229 | C | A measurement of .625 inches is equal to _____. | 15/32 inches | 9/16 inches | 5/8 inches | 35/64 inches | |
| 11 | 1230 | C | In order to accurately measure very low positive pressures, which of the instruments listed should be used? | Compound gage | Bourdon tube | Manometer | Deadweight gage | |
| 11 | 1231 | C | Which of the following components listed is shown in the illustration? | Heat exchanger | Variable displacement pump | Filter | All of the above | GS-0041 |
| 11 | 1232 | C | During operating periods of a multi-box refrigeration system using a capacity controlled compressor, when all of the boxes are actively being cooled, the compressor lube oil pressure at point "P-1" should be _____. | the lowest | at its mid-range | the highest | of no consequence as the lube oil is not used in the operation of the unloader | RA-0013 |
| 11 | 1233 | A | A work piece has been mounted between centers and a test cut machined at each end to check alignment of the lathe centers. If the test cut on the tailstock end is deeper than the test cut on the headstock end, the tailstock must be moved _____. | away from you to correct alignment | toward you to correct alignment | closer to the headstock to reduce the amount of offset | away from the headstock to decrease the misalignment | |
| 11 | 1234 | D | The low pressure side of the refrigeration system, shown in the illustration, is located between components _____. | G and J | D and K | D and 1 | 6 and G | RA-0012 |
| 11 | 1235 | A | A solenoid-operated distillate three-way valve is installed in the discharge line between the distilling plant and the potable water tanks. This valve will trip and dump the distillate discharge if the _____. | distillate salinity is excessive | distillate temperature is excessive | potable water tank has been filled with raw water | potable water tank has become contaminated | |
| 11 | 1236 | C | If a centrifugal bilge pump were continually operated with the discharge valve closed the _____. | motor overload would open | relief valve would open | pump would overheat | motor would overheat | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1238 | D | Which of the listed pressure control valves would be used to establish the maximum operating pressure of a hydraulic system? | Pressure-reducing valve | Unloading valve | Counterbalance valve | Pressure-relief valve | |
| 11 | 1239 | B | Coast Guard Regulations (46 CFR) define several acceptable means of closure for ballast and fuel oil tank vents. One of the acceptable means is by the use of a/an _____. | manually operated ball check valve | automatically operated hinged closure | permanently installed canvas hood | corrosion resistant wire screen | |
| 11 | 1240 | B | The device shown in the illustration is an example of a simple _____. | Bourdon tube gauge | U-tube manometer | bridge gauge | hydrometer | GS-0115 |
| 11 | 1241 | D | Before disconnecting a joint in a pipeline, you should _____. | determine the size of the gasket | hang a bucket under the joint | have a first aid kit on hand | be sure no pressure exists in the line | |
| 11 | 1242 | C | The neutralization number of lube oil used in the machinery has exceeded its permissible range, therefore, it will be necessary to _____. | centrifuge the oil | add makeup oil | renew the entire oil supply | operate the machinery at reduced power | |
| 11 | 1243 | B | For proper support when turning a long thin piece of work between lathe centers, you should use a _____. | faceplate | steady rest | draw-in collet chuck | compound rest | |
| 11 | 1246 | B | A centrifugal pump operating against a closed discharge valve has a/an _____. | capacity of 100% | efficiency of 0% | internal slippage of 0% | shut off horsepower rating of 100% | |
| 11 | 1247 | A | While in operation, the function of the orifice in the flash evaporator loop seal is to _____. | maintain the absolute pressure difference between the first and second stages | allow vacuum to be drawn from the first stage shell to the second stage shell | allow vacuum to be drawn from the second stage shell to the first stage shell | aid in maintaining the difference in absolute pressure between the second stage shell and the salt water feed heater | |
| 11 | 1249 | C | A water line ruptures under pressure and floods the engine room causing $(USA)30,000 damage to the machinery. By law, this must be reported to the _____. | engine manufacturer | owner or his agent | U.S. Coast Guard | insurance underwriter | |
| 11 | 1250 | B | Which of the gage types listed is shown in the illustration? | Duplex Bourdon tube type | Simplex Bourdon tube type | Duplex differential pressure type | Duplex compound type | GS-0114 |
| 11 | 1251 | A | Joints in pipelines must be properly aligned before they are connected because _____. | excessive strain on the joints will result if they are misaligned | misalignment permits excessive expansion | the pipe will be completely blocked by even the slightest amount of misalignment | condensate accumulates rapidly when flanges are not properly aligned | |
| 11 | 1253 | B | The lathe steady rest is normally used for supporting one end of a _____. | short heavy casting held in a three jaw chuck | long work piece for facing, drilling, and boring | short work piece being machined to an internal taper | tubular work piece being parted between centers | |
| 11 | 1254 | A | In a typical refrigeration system, the temperature of the refrigerant gas is the highest _____. | at the compressor discharge | at the compressor suction | in the expansion valve | in the receiver | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1255 | D | Condensate formed within the tubes of the first-effect submerged tube nest of a double-effect, low pressure evaporator, is removed by a _____. | series of baffles | crossover pipe | condensate separator | drain pump | |
| 11 | 1256 | A | A centrifugal pump attempting to develop flow against a closed discharge valve has a/an _____. | capacity of 0% | efficiency of 100% | internal slippage of 0% | shut off horsepower rating of 100% | |
| 11 | 1257 | B | The function of the loop seal, as typically provided on a flash type evaporator, is to _____. | aid in establishing a vacuum in the first stage via the second stage | transfer the distillate produced in the first stage to the second stage | aid in establishing a vacuum in the second stage via the first stage | aid in developing a vacuum in the shell of the salt water feed heater | |
| 11 | 1259 | A | A fuel oil settler is 35 feet 4 inches long, 25 feet 10 inches wide, and 19 feet deep. The noon sounding showed a level of 15 feet 2 inches. The oil meter reads 6517 at that time and 8911 at 1600. How many barrels of fuel oil remained in the settler a | 2,408.69 bbls | 3,031.88 bbls | 3,235.79 bbls | 3,763.12 bbls | |
| 11 | 1260 | C | A compound gage is used to measure _____. | temperature and pressure | humidity and temperature | pressure and vacuum | pressure and humidity | |
| 11 | 1261 | A | Before making up a flanged joint, you should _____. | be certain that the flanges line up squarely | cut grooves in the flange face with a chisel | heat the pipeline to expand the bolt holes | have a second spare gasket on hand | |
| 11 | 1262 | D | Coast Guard Regulations (46 CFR Part 56) require that screw joints shall not be used in piping systems where severe erosion, crevice corrosion, shock, or vibration is expected to occur, nor at temperatures over _____. | 450° F | 650° F | 825° F | 925° F | |
| 11 | 1263 | C | If you are taking a roughing cut on a steel work piece in a lathe and see blue chips coming off that work piece, you should _____. | decrease the flow of lubricating oil to the tool | reduce the cutting tool height above center | reduce the tool feed or depth of cut | decrease the cross compound speed | |
| 11 | 1264 | C | Which of the listed components is considered to separate the high pressure side of a refrigeration cycle from the low pressure side of the cycle? | The condenser and the expansion valve | The king valve and the solenoid valve | The compressor and the expansion valve | The condenser and the solenoid valve | |
| 11 | 1265 | D | Fluctuations in the pressure and temperature of the steam supplied to the first-effect of a low pressure distilling plant will cause _____. | increased heat levels throughout the entire unit | decreased priming and lower distillate salinity | first effect scale formation to be lessened | pressure and temperature fluctuations in the entire unit | |
| 11 | 1266 | A | If a centrifugal pump operating with a positive suction head becomes air bound, your FIRST response should be to _____. | vent the casing | close the discharge | tighten the packing | reprime the pump | |
| 11 | 1267 | B | If 'wet' steam is supplied to the air ejectors of a low pressure evaporator, the passage of the mixture through the nozzles will _____. | improve overall vacuum | cause the potential level of kinetic energy to be partially converted to thermal energy | cause the existing level of thermal energy to be totally converted to kinetic energy | cause the level of thermal energy to be converted to potential energy | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1271 | D | When assembling a run of liquid service piping, which of the following factors should be considered? | How the type of fittings used will affect the flow. | What type of gasket material should be used. | What radius should be used for each bend in the run. | All of the above. | |
| 11 | 1273 | D | When knurling a piece of work on a lathe, it is important to _____. | operate the lathe at the slowest speed | use plenty of oil | mount the knurling tool securely in the tool post | all of the above | |
| 11 | 1274 | D | Which of the listed refrigeration system components keeps the refrigerant circulating through the system? | Expansion valve | Condenser | Evaporator | Compressor | |
| 11 | 1276 | C | If a horizontal centrifugal pump becomes air bound, the pump should be vented at the _____. | suction line | discharge flange | top of the volute | bottom of the casing | |
| 11 | 1277 | B | Item "E" shown in the illustration is used in the hydraulic circuit as _____. | one of two motor driven remotely operated pumps to open and close the water tight door | the manually operated pump located in a common passage way to close the water tight door in an emergency | motor driven pump used to close the water tight door from the navigation bridge in an emergency | the manually operated pump used to open or close the water tight door from the engine room side | GS-0103 |
| 11 | 1278 | B | Which of the valves listed is NOT considered to be a hydraulic system directional control valve? | Spring-centered valve | Unloading valve | Three-position valve | Two-position valve | |
| 11 | 1279 | D | A fuel oil settler is 35 feet 4 inches (10.7696 m) long, 25 feet 10 inches ( 7.8740 m) wide, and 19 feet (5.7912 m) deep. The noon sounding indicated a level of 15 feet 2 inches (4.6228 m). The fuel oil meter read 6517 (24669) at that time and 8911 (33732) at 1600. How many barrels / cubic meters of fuel oil remained in the settler at 1600? | 127,338.99 bbls (20245.24 cubic meters) | 101,164.79 bbls (16083.87 cubic meters) | 3,031.99 bbls (482.05 cubic meters) | 2,408.69 bbls (382.95 cubic meters) | |
| 11 | 1280 | B | A compound Bourdon tube gage is capable of measuring pressure and _____. | humidity | vacuum | temperature | density | |
| 11 | 1281 | A | One function of the vapor feed heater in a double-effect submerged tube distilling unit is to _____. | condense part of the vapor given off in the first-effect | preheat distillate circulating to the second-effect tube nest | cool the incoming first-effect evaporator feed | condense all the distillate in the second-effect tube nest | |
| 11 | 1282 | D | Antifriction bearings should not be excessively lubricated because _____. | the bearings will require immediate flushing | dirt will accumulate inside the bearings | excess lubrication will result in slippage | the bearing will overheat | |
| 11 | 1284 | A | Excessive oil foaming in the crankcase of a refrigeration compressor at start up can cause _____. | compressor damage from improper lubrication | refrigerant absorption by the lubricant | increased viscosity in the lubricant | carbon deposit on the compressor suction valves | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1287 | D | For optimum non-condensable gas removal from a low pressure evaporator, the air ejector suction is usually taken directly from _____. | the salt water feed heater shell | anywhere on the second stage shell of the evaporator | the shell of the first stage distilling condenser | the shell of the second stage distilling condenser | |
| 11 | 1288 | A | Which of the valves listed is NOT considered to be a hydraulic system directional control valve? | Sequencing valve | Two-position valve | Three-position valve | Spring-centered valve | |
| 11 | 1289 | D | An air tank rusts out, explodes, and causes in excess of $(USA)24,000 damage to the engine room. By law, this accident must be reported to the _____. | owner or his agent | insurance underwriter | air tank underwriter | U.S. Coast Guard | |
| 11 | 1290 | A | A compound gage is typically installed on the _____. | suction side of a bilge pump | exhaust manifold of an auxiliary diesel | discharge line from an air compressor | chemical feed tank of an evaporator | |
| 11 | 1291 | B | From where does the air ejector take its suction on a Soloshell double effect distilling unit? | First Effect vapor feed heater | Second Effect distilling condenser | Vapor separator | Flash chamber | |
| 11 | 1293 | B | Work that cannot readily be mounted between lathe centers is usually held in a _____. | crotch center | chuck | lathe dog | spindle | |
| 11 | 1294 | A | The refrigeration system shown in the illustration uses which of the components listed to separate the 'high' side from the 'low' side? | G and K | G and H | H and K | K and L | RA-0012 |
| 11 | 1295 | C | In a double-effect distilling unit, the brine in the second-effect is additionally heated by _____. | auxiliary steam | air ejector steam | distillate/vapor from the first effect | flash chamber leak off | |
| 11 | 1296 | C | When securing a distillate pump on a low pressure fresh water evaporator, which of the listed steps should be carried out FIRST? | Stop the pump. | Close the pressure gage valves. | Trip the three-way solenoid dump valve. | Close the sealing line valves to the pump. | |
| 11 | 1297 | D | A vacuum is initially established in the first and second stages of a low pressure evaporator by the use of _____. | vacuum drag from the auxiliary condensate system | individual vacuum pumps | a single non-condensing air ejector | a two stage air ejector | |
| 11 | 1299 | A | The disc of a relief valve has an area of 0.85 square inches when seated, lifts at a set point pressure of 250 psi. When the valve lifts, the area of the disc exposed to pressure increases by 20%. At what pressure does the valve reseat? | 208 psi | 227 psi | 231 psi | 250 psi | |
| 11 | 1300 | C | The gage most commonly used aboard ship to measure high pressures is the _____. | volatile liquid-type | diaphragm actuated-type | Bourdon tube-type | resistance-temperature-type | |
| 11 | 1302 | A | The delivery rate of an axial piston hydraulic pump is controlled by varying the position of the _____. | tilting box | slide block | pintle | reaction ring | |
| 11 | 1303 | D | For boring holes in mild steel and general work, the correct included angle of a drill point is _____. | 29° | 45° | 90° | 118° | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1305 | D | The vapor separators installed in some distilling plants consist of several rows of vertical hooked vanes which remove entrained moisture from the vapor by _____. | directing the vapor through a fine metallic mesh | condensing water droplets on the metal vanes | trapping water droplets in the metallic mesh | abruptly changing the direction of vapor flow | |
| 11 | 1307 | C | Steam passing through the control orifice installed in the live steam supply to a low pressure evaporator will develop significant superheat as a result of _____. | attemporating conditioning | ebullient conditioning | adiabatic conditioning | effervescent conditioning | |
| 11 | 1309 | A | Coast Guard Regulations (46 CFR) specifically prohibit seats or disks in pressure vessel relief valves to be made of _____. | cast iron | bronze | brass | stainless steel | |
| 11 | 1310 | C | The type of gage most commonly used to measure pressure is the _____. | bimetallic type | diaphragm type | bourdon tube type | resistance-temperature type | |
| 11 | 1312 | A | In the illustration, control over the direction and quantity of fluid flow is attained by _____. | changing the eccentricity between the reaction ring and the cylinder block | moving the cylinder block off center from the reaction (floating) ring | varying the direction of rotation and speed of the prime mover | varying the prime mover direction of rotation and throttling pump output | GS-0059 |
| 11 | 1313 | C | A depth of cut of 0.26 inch reduces the diameter on a work piece in a lathe by _____. | 0.13 inch | 0.26 inch | 0.52 inch | 0.63 inch | |
| 11 | 1314 | B | If condensation collects and drips off an evaporator coil, the temperature of the coil is _____. | a maximum of 21° F | above 32° F, but below the dew point | 21° F but, above the dew point | below 32° F and below the dew point | |
| 11 | 1315 | A | In which of the listed types of evaporators is brine density control most important? | Soloshell low pressure | Flash type low pressure | Multiple effect flash type | Basket type evaporator | |
| 11 | 1320 | A | A dial indicator is used to measure _____. | shaft eccentricity | positive readings only | scribed layout lines on vertical surfaces | torque of a shaft | |
| 11 | 1321 | C | Why is a self-sealing pump generally not satisfactory for service as a brine overboard pump? | Hot brine tends to form scale on the impeller peripheral edge. | Brine density at 1.5/32 cannot by maintained. | Hot concentrated brine tends to clog the sealing lines and gland seal rings. | Hot brine tends to clog the brine pump suction line strainer. | |
| 11 | 1323 | A | Two separate work pieces are to have a taper cut with the same taper per inch, using the offset tailstock method. After the first piece is completed, the tailstock offset must be changed if there is a change in the _____. | length of the work piece | diameter of the work piece | angle of the cutting tool | none of the above | |
| 11 | 1324 | A | Refrigerant is circulated through a refrigeration system by the _____. | compressor | condenser | expansion valve | evaporator | |
| 11 | 1325 | B | For efficient and proper operation, the brine density in a submerged tube evaporator should be maintained at _____. | 3.5 pounds of salt per 32 pounds of water | 1.5 pounds of salt per 32 pounds of water | 1 pound of salt per 32 pounds of water to prevent excessive heat loss | 1 pound of salt per 32 pounds of water to minimize excessive scale formation | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1327 | B | Regarding the low pressure evaporator steam control orifice in the live steam supply line, the steam at the outlet of the orifice if not properly conditioned will be developed as _____. | desuperheated steam | superheated steam | saturated steam | poor quality steam | |
| 11 | 1330 | C | A pyrometer is generally used to measure _____. | grains of moisture per cubic foot of air | salinity concentration of condensate | stack temperature | level of a fluid in a tank | |
| 11 | 1331 | A | The distillate pump for a 12,000 GPD evaporator, should be rated at a minimum of _____. | 8.3 gpm | 200 gpm | 300 gpm | 500 gpm | |
| 11 | 1332 | A | A stopper is inserted into the spout of a closed container in which water has been heated to a temperature of 212° F. If additional thermal energy is imparted, what changes will occur to the pressure and temperature inside the container? | both pressure and temperature will rise | pressure alone will rise | temperature alone will rise | only a change of state will occur | |
| 11 | 1333 | B | A tailstock 'dead center' has been given that name because it _____. | is dead centered on the tailstock spindle | does not revolve | must be removed by clamping in the chuck | fits into the dead center of the work piece | |
| 11 | 1334 | A | The temperature of the refrigerant in the evaporator coil depends mostly upon the _____. | refrigerant pressure in the evaporator | cooling water temperature to the condenser | heat load in the refrigerator compartment | solenoid valve in the liquid line | |
| 11 | 1335 | C | Which of the following types of hydraulic pumps would be used in a steering system? | Lobe | Screw | Radial piston | Volute | |
| 11 | 1336 | D | The amount of the cushioning effect developed within a hydraulic cylinder is determined by the _____. | position of the directional port in the cushion cavity | adjustment of the cushion cavity check valve | design shape of the cylinder ends | setting of the cushioning adjustment needle valve | |
| 11 | 1337 | A | Which of the listed modes of controls will identify the device shown in the illustration? | Proportional-plus-reset control | Two position differential gap control | Single speed floating control | Derivative control | GS-0148 |
| 11 | 1338 | C | The device shown in the illustration is known as a/an _____. | offset directional control valve | three-position pressure reducing valve | spring centered directional control valve | throttle valve | GS-0032 |
| 11 | 1339 | C | According to U.S. Coast Guard Regulations (46 CFR Part 32), when reach rods to tank valves pass through the deck, the stuffing box at this joint must be _____. | grounded with bonding straps | water tight | gas tight | made of nylon or other nonmetallic material | |
| 11 | 1341 | C | A 12" X 8" X 8" simplex double-acting pump makes 100 strokes per minute. If the slip is 6%, the discharge rate is _____. | 62.54 gpm | 81.81 gpm | 163.63 gpm | 245.44 gpm | |
| 11 | 1342 | C | An unsteady vacuum in a submerged tube evaporator may be caused by _____. | air leaks in the tube nests | improper venting of the tube nests | inadequate steam quality to the air ejector nozzles | high water level in the shell | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1344 | B | An increase in the heat load to a refrigeration system will cause _____. | the compressor suction pressure to decrease | the compressor suction temperature to increase | increased ice formation on the evaporator coil | excessive short cycling of the compressor | |
| 11 | 1346 | B | Generally, centrifugal pumps operating without a positive suction head must be primed before they will move liquid on their own. The priming is usually accomplished with a _____. | regenerative pump | rotating liquid piston pump | jet pump | turbine pump | |
| 11 | 1347 | B | The process control mode shown in the illustration is an example of which of the listed modes of control? | Proportional control | Integral control | Derivative control | On-off control | GS-0147 |
| 11 | 1348 | B | A hydraulic system directional control valve fitted with 'detent' will _____. | have an infinite number of valve positions | usually be shifted into three specific positions | be able to be varied through out the travel of the valve spool | have an offset, directional control only | |
| 11 | 1349 | C | Which of the following is true concerning the issuance and use of Coast Guard form 948 'Permit to Proceed to Another Port for Repairs'? | The permit can only be issued if the vessel currently has a valid unexpired Coast Guard Certificate of Inspection. | No freight or passengers are allowed to be carried when the vessel is issued the permit. | The permit can only be issued upon written application by the master, owner, or agent of the vessel. | All of the above. | |
| 11 | 1350 | D | According to Coast Guard Regulations, flexible hoses used as supply and return lines to hydraulic system components, must have _____. | the working pressure of the system stamped on one of the end fittings | the working pressure of the system stamped on both of the end fittings | an inner tube constructed of seamless reinforced polyester braid | a designed bursting pressure of at least four times the maximum working pressure of the system | |
| 11 | 1351 | B | Which of the listed values represents the temperature of saturated vapor for water at a pressure of 14.7 psia? | 198° F (92° C) | 212° F (100° C) | 335° F (168° C) | 414° F (212° C) | |
| 11 | 1353 | B | The discharge head of a centrifugal pump will vary directly with the _____. | change in impeller diameter | square of the impeller diameter | cube of the impeller diameter | impeller efficiency for large changes in the size of the impeller | |
| 11 | 1354 | B | The boiling point of water in an open container at sea level is 212° F. If the pressure on the open container is decreased, the boiling point will _____. | increase | decrease | increase and then decrease | decrease and then increase | |
| 11 | 1355 | C | A vacuum differential is maintained in the distillate circuit between any two stages of a multiple stage distilling plant by the use of a/an _____. | steam trap | butterfly valve | loop seal | adjustable controller | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1357 | A | A fixed orifice plate is generally installed in the live steam supply to a flash evaporator. One of the functions of this orifice is to control the quantity of the supplied steam. A second function is to _____. | reduce pressure fluctuations of the steam supply in the salt water feed heater | produce more useful desuperheated supply steam | guarantee that the steam supply will remain saturated | produce a low salt water feed heater shell absolute pressure | |
| 11 | 1359 | B | The hydraulic system of a deck winch has been drained, flushed, and refilled with hydraulic fluid. An erratic knocking noise from the hydraulic motor when the winch is started would indicate _____. | the fluid level in the reservoir is too high | air trapped in the system | clogged suction line fluid filters | abrasive matter circulating in the oil | |
| 11 | 1361 | B | Which of the following terms would best describe the temperature at which a liquid boils at a given pressure? | Degree of saturation | Saturation temperature | Superheated temperature | Degree of superheat | |
| 11 | 1362 | A | In the illustration, the best way to make the pieces a locational interference fit is to _____. | turn down the shaft in figure "B", four to five thousandths of an inch | drill the hole eleven thousandths of an inch larger | do nothing, with a large enough hammer this will be a locational interference fit | heat the shaft until the nominal diameter is two hundred and fifty thousandths of an inch | GS-0019 |
| 11 | 1363 | C | When drilling a hole in a piece of work chucked in a lathe, you should mount the drill chuck in the _____. | compound rest | cross feed | tailstock | headstock | |
| 11 | 1364 | A | A refrigerant with oil in solution has a _____. | higher boiling temperature for a given pressure than does a pure refrigerant | lower boiling temperature for a given pressure than does a pure refrigerant | boiling pressure equal to that of a pure refrigerant at a given pressure | boiling point will not be affected by entrained oil | |
| 11 | 1365 | C | Where a two-stage air ejector set is used in a two-stage flash evaporator, the first-stage air ejector takes suction from the second stage of the evaporator, and the second stage air ejector _____. | takes suction from the first stage of the evaporator | takes suction from the second stage of the evaporator as well | takes suction from the first stage ejector discharge | is normally idle and used mainly as a standby unit | |
| 11 | 1367 | A | As shown in the illustration, the pneumatic force balance unit could be used for a _____. | water level alarm actuator | proportional action steam pressure transmitter | feedwater regulating value positioner | fuel oil heater temperature regulator | GS-0145 |
| 11 | 1368 | A | The device shown in the illustration is typically called a/an _____. | offset, directional control valve | three-position, directional control valve | variable-position, directional control valve | infinite-position, directional control valve | GS-0024 |
| 11 | 1369 | C | A centrifugal ballast pump has a capacity of 200 gpm. If suction is taken on a ballast tank containing 200 long tons of seawater, how much water will be remain in the tank after discharging for one hour? | 45.83 long tons | 101.63 long tons | 154.16 long tons | 199.87 long tons | |
| 11 | 1370 | B | The rudder shown in the illustration is correctly termed a/an _____. | balanced rudder | unbalanced rudder | semi-balanced rudder | contra-guide rudder | GS-0101 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1371 | A | A vapor under pressure stays in contact with, and at the same temperature as the liquid from which it was generated. The vapor and liquid in this situation are, therefore, said to be in a/an _____. | equilibrium contact | latent contact | critical state | superheated state | |
| 11 | 1372 | C | In a flash type distilling plant, a screen is fitted over the suction connection to the brine overboard pump in order to prevent _____. | the pump from cavitating | excessively large salt crystals from damaging the pump | scale from passing into the brine pump and clogging impeller passages | electrolysis from occurring in the pump | |
| 11 | 1373 | D | In order to convert taper per inch to taper per foot, you should _____. | subtract 12 | add 12 | divide by 12 | multiply by 12 | |
| 11 | 1374 | C | Assume the normal refrigerant pressure is 14 psig in the evaporator of the refrigeration system shown in the illustration. If this pressure is increased, the _____. | chill box temperature will decrease | receiver temperature will increase | refrigerant boiling temperature will increase | evaporator temperature will decrease | RA-0005 |
| 11 | 1375 | B | Packing extremely soft grease into a roller bearing will cause _____. | excessive channeling of the grease | high temperatures to develop as result of churning | emulsification of the thickener additive | gelling of the base oil | |
| 11 | 1376 | A | Centrifugal pumps, used to handle hot liquids, must have a minimum flow through them under all operating conditions. This flow serves to _____. | prevent overheating and vapor bound conditions | maintain the net positive suction head of the pump | maintain hydraulic differential in the pump impeller passages | keep the shaft glands cool | |
| 11 | 1377 | B | Over tightening of the valve stem packing to a pneumatically controlled final control element, shown in the illustration, will cause _____. | valve stem breakage | erratic operation | reduced controlled offset | overheating of the diaphragm | GS-0051 |
| 11 | 1378 | B | Hydraulic system reservoirs are often fitted with a combined filler/breather cap. If the breather element becomes fouled, the _____. | reservoir will become pressurized | reservoir will be subjected to a partial vacuum | flow through the return lines will be stopped | actuator response time will be halved | |
| 11 | 1379 | D | Coast Guard Regulations (46 CFR) concerning shutoff valves located inside fuel oil tanks, state that the valves _____. | shall be arranged for local control | must be made of steel | must be power operated | may be made of cast iron | |
| 11 | 1380 | C | A pneumercator is useful in measuring _____. | relative humidity | air pressure | liquid levels in tanks | fluid pneumercations | |
| 11 | 1381 | D | Machinery operating features are designed to help conserve energy. Which of the following results will not contribute to energy conservation? | Reduction of friction. | Insulation of hot surfaces. | Lubrication of moving parts. | Elevation of heat exchanger overboard outlet temperatures. | |
| 11 | 1382 | A | On which of the following heated surfaces of a flash type evaporator would you be more likely to find soft scale formation? | Feedwater heater internal tube surfaces. | Internal distillate cooler tubes. | Flash chamber vertical surfaces. | Distilling condenser tubes. | |
| 11 | 1386 | A | The total static head of a system resisting the operation of a centrifugal pump is the difference in elevation between the _____. | discharge liquid level and the suction liquid level | discharge liquid level and the pump centerline | suction liquid level and the pump centerline | suction submergence level and the pump discharge | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1389 | D | The Certificate of Inspection for your vessel was issued in January. In March of the same year you need to replace a cooling water pump for the refrigeration system. What action would be appropriate? | Inform the nearest Officer in Charge, Marine Inspection of the pump replacement. | Defer informing the Coast Guard of the pump's replacement until the mid-period inspection. | Inform the Coast Guard if the replacement will involve welding or burning. | Replace the pump, as the Coast Guard need not be informed of the pump replacement. | |
| 11 | 1391 | D | If 1 Horsepower equals 42.45 BTU's per minute, then the energy required to lift a 1 pound (.454 kg) weight, 778 feet (.24 km), against the force of gravity, would be the same as the number of BTU's required to raise the temperature of _____. | 1 ounce (28.3 g) of water 1° F (.55° C) | 1 quart (.95 l) of water 1° F (.55° C) | 1 gallon (3.78 l) of water 1° F (.55° C) | 1 pound (.454 kg) of water 1° F (.55° C) | |
| 11 | 1392 | C | Which of the following statements concerning the operation of a single-acting hydraulic ram is correct? | Hydraulic force is applied simultaneously in two directions against the ram by directional ports. | The single-acting ram is both extended and retracted by means of hydraulic force. | The single-acting ram is not retracted by means of hydraulic force. | Hydraulic force applied to a single-acting ram results in a pulling motion. | |
| 11 | 1393 | C | Coast Guard Regulations (46 CFR) require a single tail shaft with water lubricated tail shaft bearings, stress-relieved keyway, and fabricated from materials resistant to corrosion by sea water, to be drawn and examined once in every _____. | 2 years | 3 years | 5 years | 8 years | |
| 11 | 1394 | D | Excessive oil foaming in the crankcase of a refrigeration compressor is most likely to occur when the compressor _____. | has run continuously for a long period | suction pressure is below normal | oil level is below normal | starts after a long idle period | |
| 11 | 1395 | B | The purpose of the instrument illustrated is to _____. | gage resistors | measure wire diameter | measure insulation thickness | strip insulation from wire | GS-0079 |
| 11 | 1396 | D | Which of the following statements is correct with regards to the operation of a centrifugal cargo pump? | Oil is discharged from the center of the impeller through the outlet. | Gravity causes the oil to flow toward the discharge. | The self-priming feature of the centrifugal pump enables it to draw its own suction as it starts. | The discharge capacity varies directly with the speed of the impeller. | |
| 11 | 1398 | B | Some fluid filters used in hydraulic systems are designed to cope with increasing pressure differentials by _____. | diverting the flow automatically to the standby filter of the duplex unit | automatically bypassing the fluid via an internal valve arrangement | automatically securing the system | diverting the pump discharge directly back to the suction | |
| 11 | 1399 | D | A ballast pump, with a capacity of 200 gpm, takes suction on a tank containing 300 long tons of sea water ballast. How much ballast will remain in the tank after pumping for one hour? | 45.83 long tons | 91.66 long tons | 183.32 long tons | 254.17 long tons | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1400 | A | Your vessel is departing at 1800 hours on a voyage of more than 48 hours duration. Coast Guard Regulations (46 CFR) require that the steering gear be examined and tested no earlier than _____. | 0600 hours | 0900 hours | 1200 hours | 1500 hours | |
| 11 | 1401 | A | The equation 'energy in = energy out' is a simple way of stating the principle of the _____. | conservation of energy | conservation of matter | conversion of matter to energy | conversion of energy to matter | |
| 11 | 1402 | A | With oil bath lubrication of ball bearings in a cargo pump, the oil level should _____. | never be higher than the center of the lowest ball in the bearing housing | cover the bottom of the pump shaft | cover the top ball in the bearing housing | be kept at the top of the oil reservoir | |
| 11 | 1403 | D | The vessel has its propulsion machinery located amidships, using a water lubricated stern tube bearing, to carry a tail shaft of a 15 inch (38.1 cm) diameter. During the inspection the wear between the stern tube and the bearing surface was measured as 1/4 "( 0.635cm). Which of the following actions should be carried out as a result of this measurement? | Pull tail shaft and replace the bronze liner. | Pull tail shaft and replace the lignum vitae. | Pull tail shaft and buildup the bronze liner. | Nothing, as the reading is within the allowable limits. | |
| 11 | 1404 | C | In a compression refrigeration cycle, the temperature of the liquid refrigerant experiences its greatest decrease in the _____. | evaporator | compressor | expansion valve | condenser | |
| 11 | 1405 | B | Which of the instruments listed is used to measure the gauge of a piece of sheet metal? | Gauge calibrator | Wire gauge | Inside micrometer | Circular mil | |
| 11 | 1406 | C | A recirculating, or bleed off line is installed on a centrifugal pump in order to _____. | establish a back pressure at the labyrinth seal to eliminate leakage | equalize pressure on both sides of the suction valve disc | prevent the pump from overheating when operating at shutoff head | decrease the net positive suction head | |
| 11 | 1408 | A | An improperly maintained filter used in a hydraulic system can _____. | reduce or stop the output action of the actuator | cause leaking of the flexible line connections | rupture the pump discharge piping | all of the above | |
| 11 | 1409 | D | Which of the following would require the Officer in Charge, Marine Inspection be notified? | The renewal of a superheater safety valve with one of the same kind that was certified by a Coast Guard inspector at the place of manufacture. | A vessel being placed in dry-dock for the purpose of repainting the underwater portion of the hull. | A hydrostatic proof test at design pressure, conducted by the ship's force, in which the safety valves were gagged to test a tube plugging repair. | All of the above. | |
| 11 | 1410 | B | A pneumercator is used to indicate fuel oil _____. | pressure | level | temperature | flow | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1411 | C | Which of the following statements concerning energy is correct? | Energy can be created or destroyed. | Energy may not be transformed. | The total quantity of energy in the universe is always the same. | None of the above. | |
| 11 | 1412 | A | By which of the following means is force efficiently provided to vary the pitch of the blades on a modern controllable pitch propeller? | Hydraulic | Mechanical | Pneumatic | Electrical | |
| 11 | 1414 | B | Which of the listed statements is correct concerning refrigeration systems? | Dehydrators must be used continuously in a refrigeration system. | A 25 ton refrigeration system has the same cooling effect as melting 25 tons of ice in 24 hours. | A thermostatic expansion valve is used to control refrigerated space temperature. | The liquid receiver functions to collect and remove noncondensable gases. | |
| 11 | 1417 | B | When the vessel's steering wheel on the navigation bridge is turned, the difference existing between the position of the wheel and that of the rudder is known as _____. | proportional band | the error signal | the reset signal | feedback | |
| 11 | 1419 | A | A ballast pump with a capacity of 200 gpm (757 lpm) is used to fill a ballast tank with seawater. If the pump discharges seawater into the tank for one hour, how many tons of saltwater ballast have been taken onboard? | 45.85 (46.5 t metric) | 48.53 (49.32 t metric) | 51.58 (52.43 t metric) | 54.38 (55.3 t metric) | |
| 11 | 1420 | A | Double seated, pneumatically controlled, regulating valves exhibit good balancing characteristics essential for low-sensitivity applications because _____. | high pressure enters between the seats and creates equal, but opposing forces | they employ a specially fabricated diaphragm | the feedback control signals balance the opposing forces acting on the diaphragm | the special diaphragm motor spring resists pressure changes | |
| 11 | 1421 | C | The quantity of heat required to raise the temperature of a unit mass of a substance 1° is known as _____. | latent heat | sensible heat | specific heat capacity | variable heat | |
| 11 | 1422 | A | After cutting a piece of tubing to be flared, you should _____. | remove inside burrs with a reamer | rough up the outside surface of the tube end with a file | flare the tube before removing the burrs | crimp the tube end in order to slip on the fitting | |
| 11 | 1425 | B | To measure the circumference of a piece of pipe, you should use a _____. | machinist's steel rule | flexible steel rule | hook rule | folding rule | |
| 11 | 1426 | B | When a centrifugal pump is operating with a positive suction head, the inner end of the stuffing box is _____. | under a vacuum and air tends to leak into the pump through the shaft stuffing box | under a pressure and fluid may tend to leak out from the pump along the shaft through the stuffing box | sealed by a vacuum and no leakage will occur | sealed by the seal cage or pump lantern ring | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1427 | B | Which of the following control actions, when combined with proportional-position action, will eliminate manual repositioning of the set point for each load change to produce an automatic reset action? | Neutral band | Floating action | Reciprocal action | Rate action | |
| 11 | 1428 | C | A reservoir, as used in hydraulic systems aboard ship, is used to store hydraulic oil. Another function is to _____. | act as a shock absorber | maintain the stored oil under pressure | act as a base or foundation for the power unit | eliminate pressure surges in the system | |
| 11 | 1429 | C | According to U.S. Coast Guard Regulations (46 CFR Part 92), how many means of escape must be provided in spaces where the crew may be quartered or employed? | Two, both of which must be through watertight doors. | Two, both of which are located as close together as possible to centralize escape routes. | Two, at least one of which shall be independent of watertight doors. | Two, both of which must be vertical ladders terminating in locked watertight scuttles. | |
| 11 | 1431 | B | Which of the following terms is used to indicate that the addition of heat will result in a temperature change? | Latent heat | Sensible heat | Sublimation heat | Critical point heat | |
| 11 | 1432 | A | One turn of the micrometer barrel will linearly move the spindle _____. | 0.025 inch | 0.205 inch | 0.250 inch | 0.110 inch | |
| 11 | 1433 | B | What is the maximum tail shaft to stern tube bearing clearance (at the after end of the stern tube) for a vessel in ocean service, with an aft machinery space, a 14" diameter tail shaft, and a water lubricated stern tube bearing constructed of material other than rubber? | .2500 | .3125 | .3740 | .4375 | |
| 11 | 1434 | C | Frost appearing on one set of evaporator coils of a multi-box, direct expansion type refrigeration system _____. | increase the value of superheat to the fluid leaving the coils | will assist in increasing the refrigeration effect | can be removed by passing hot vapors through the coils | can be quickly removed by simply shutting off fluid flow to the coils | |
| 11 | 1435 | C | To set the dividers to the proper radius, you should use a _____. | micrometer | scribing circle | steel rule | calipers | |
| 11 | 1436 | B | Theoretically, a double suction impeller is in hydraulic axial balance. In actuality this balance is rarely achieved due to _____. | an unbalanced force exerted from the direction of the impeller nearest the driving motor | unequal or non-uniform flow to the suction eyes of the impeller housing | excessive sealing water flow to the stuffing box | flexible shaft design which causes rapid wear of the outboard shaft bearing | |
| 11 | 1437 | B | Which of the following statements expresses the function of proportional-plus-reset action? | The action measures the rate of time of the final control element. | The action gives control without offset under all load conditions. | The action combines proportional-position action and rate action. | The action is very unstable for anything but constant load conditions. | |
| 11 | 1438 | D | One function provided by a hydraulic accumulator is to _____. | provide an area where air can separate from the oil | provide an area to separate solid contaminants from the oil | act as an oil and water separator | absorb shocks occurring in the system | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1439 | B | In accordance with Coast Guard Regulations (46 CFR), it is the duty of the Chief Engineer to acquire and seal a sample of fuel oil received whenever fuel oil bunkers are taken. This sample must be preserved until _____. | the voyage is completed | that particular supply of oil is exhausted | it can be sent ashore to the proper oil company personnel for testing and the results entered in the Oil Record Book, CG-480 | return to the first U.S. port where upon it must be sent ashore for chemical analysis and the findings submitted to the nearest Officer in Charge, Marine Inspection | |
| 11 | 1440 | C | The device shown in the illustration is used to determine the _____. | flash point of oil | pour point of oil | viscosity of oil | lubricating qualities and film strength of oil | GS-0069 |
| 11 | 1442 | A | If a micrometer were opened to a distance of 0.0001 inch, you would say the reading is _____. | one ten thousandth of an inch | ten one thousandths of an inch | one millionth of an inch | ten millionths of an inch | |
| 11 | 1445 | C | The best method of determining the number of threads per inch of a bolt or screw would be through the use of a _____. | thread tool gage | machinist's scale | screw pitch gage | screw thread micrometer | |
| 11 | 1446 | C | Shim stock thickness is measured by a/an _____. | shim gage | feeler gage | outside micrometer | inside micrometer | |
| 11 | 1447 | A | A controller with floating action has a controlled variable where the range of values produces no motion of the final control element. This range of values is called the _____. | neutral zone | set point | control point | offset | |
| 11 | 1448 | B | When the illustrated device is in the process of opening the associated valve, the motor will be secured by the action of the _____. | torque switch | limit switch | manual stop only | disengaging of the splined dog clutch | GS-0027 |
| 11 | 1449 | C | Your vessel has taken on 25,000 gallons of fuel with an API gravity of 30.4 at 60° F. Using the table shown in the illustration, how many long tons of fuel have you taken onboard? | 63.57 long tons | 72.48 long tons | 81.22 long tons | 90.97 long tons | GS-0149 |
| 11 | 1450 | C | An arrow superimposed on a hydraulic graphic symbol at approximately 45°, as shown in the illustrated figures A, B, and C, indicates the component _____. | is pilot controlled | is pressure compensated | can be adjusted or varied | allows flow in one direction only | GS-0068 |
| 11 | 1452 | B | To check the thickness of a piece of thin shim stock before using it to make a bearing shim, you should use a _____. | feeler gage | micrometer | machinist's rule | depth gage | |
| 11 | 1453 | A | When the tail shaft is drawn from a vessel in dry-dock, which of the following inspections is required to be carried out? | The propeller hub taper and shaft keyway should be inspected for cracks or corrosion. | The stern bearing alignment with the stern frame should be checked. | The interior of the stern tube should be inspected for leaks. | The shaft liner should be removed and inspected for cracks. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1454 | B | If the evaporator coil of a single box, air cooled refrigerator accumulates frost, the compressor will most likely _____. | run continuously | short cycle on low pressure cutout | short cycle on high pressure cutout | fail to start | |
| 11 | 1455 | C | The best tool to use to measure the number of threads per inch on a bolt is a _____. | micrometer | tap | screw pitch gauge | pair of outside calipers | |
| 11 | 1456 | B | Compared to globe and angle valves, gate valves _____. | are more suitable for throttling | operate with little or no pressure drop when fully opened | are more easily repaired | cannot be used for service requiring infrequent operation | |
| 11 | 1457 | D | One disadvantage of proportional-position action is that _____. | corrective action is only proportional to offset | exact correction can be made only when there is no change in load | the controlled variable is stabilized | the corrective action is only proportional to the deviation | |
| 11 | 1459 | D | Which of the following conditions require the Coast Guard Officer in Charge of Marine Inspection be notified? | Replacement in kind of ship's service 265 psi air receiver. | Breaking of a safety valve seal. | Vessel to undergo an unscheduled dry-docking solely for the purpose of painting the underwater portion of the hull. | All of the above. | |
| 11 | 1460 | B | In the design of hydraulic piping and equipment consideration is given to minimize turbulence in the hydraulic fluid, as this will cause _____. | molecular fluid vibration | energy losses | wide pressure variations | mechanical damage to control valves | |
| 11 | 1461 | A | The quantity of heating steam supplied to the feed water heater of a two-stage flash type distilling plant is held relatively constant by a/an _____. | orifice plate | attemporator | back pressure regulator | first-stage bypass valve | |
| 11 | 1462 | C | To measure the diameter of a piece of round stock, you should use a _____. | dial indicator | wire gauge | micrometer | circular slide rule | |
| 11 | 1463 | C | When using the circular magnetic particle method to nondestructively test a weldment, the best results are obtained when the _____. | current is flowing at right angles to the discontinuity | magnetic field is parallel to the discontinuity | magnetic field is at right angles to the discontinuity | defect is located outside the parallel flux path of the prods | |
| 11 | 1464 | D | If a refrigeration compressor is running continuously without lowering the temperature in the refrigerated space, the trouble may be _____. | a shortage of compressor oil | warm food in the refrigerator | excessive condenser cooling water | a shortage of refrigerant | |
| 11 | 1465 | D | The temper is likely to be drawn out from a chisel edge when you _____. | hold it next to a wet grinding wheel | soak it in hot oil for lengthy periods | grind the cutting angle too small | grind it for long periods of time with excessive pressure | |
| 11 | 1466 | A | Which of the valves listed should be used either in the fully opened or the fully closed position? | a gate valve | a globe valve | any check valve | any needle valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1467 | A | A two-position single-point action controller has been adjusted to minimize cycling and would only be suitable for _____. | constant load conditions | intermittent load conditions | wide temperature fluctuations | rate action only | |
| 11 | 1469 | B | If a lifeboat winch allows a lifeboat to descend to the water at an excessive speed, you should _____. | remove unnecessary weight from the boat | adjust the centrifugal brake mechanism | adjust the davit mounted limit switches | engage the motor friction clutch bands | |
| 11 | 1470 | B | The rudder torque capacity of the four ram steering gear illustrated, is rated at 44,210,000 inch-pounds with one power unit in operation. If the four ram system was able to be operated as a two ram system with both power units on line, what would be the available torque? | 11,052,500 inch pounds | 22,105,000 inch pounds | 44,210,000 inch pounds | 88,420,000 inch pounds | GS-0067 |
| 11 | 1471 | A | Which of the following modes of heat transfer does NOT require any physical contact between a warmer and a cooler substance? | Radiation | Conduction | Natural convection | All of the above | |
| 11 | 1472 | C | To get an accurate inside measurement of the diameter of a 1/2 inch hole, you should use a/an _____. | depth micrometer | inside micrometer | small hole gauge | inside spring caliper | |
| 11 | 1474 | A | During tests to discover why a refrigeration compressor is running excessively, it is determined that the refrigerated space temperature is nearly normal, the suction pressure is slightly above normal, and the head pressure is low. In this situation, you should check for? | leaking door gaskets | high cooling water temperature | air in the system | a shortage of refrigerant | |
| 11 | 1475 | B | A chisel with a mushroom head should not be used because _____. | the chisel cannot be struck squarely | pieces may fly off the chisel and injure your eyes | the hammer head may be chipped | it must be held firmly by the head to strike it | |
| 11 | 1476 | A | A gate valve installed in a pipeline should be _____. | used in either the fully closed or fully opened position | installed with the stem down | used for steam service only | used to throttle or regulate the flow of liquid | |
| 11 | 1477 | B | When a controller is provided with reset rate adjustment, a change in this adjustment results in a change of the _____. | desired value of the proportionally controlled variable | floating rate of the proportional-speed floating component | value representing the readjusted controlled variable | desired prepositioned value of the controlled medium | |
| 11 | 1478 | A | When a non-butterfly valve is closed, the motor of the device illustrated will be secured by a _____. | torque switch | limit switch | two-position, micro switch | manual, push button only | GS-0027 |
| 11 | 1479 | B | Your vessel has taken on 25,000 gallons of fuel with an API gravity of 35.1 at 60° F. Using the table shown in the illustration, how many long tons of fuel has been actually taken on board? | 69.74 long tons | 78.92 long tons | 81.22 long tons | 88.40 long tons | GS-0149 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1480 | C | Energy losses occurring in a hydraulic system are ultimately absorbed by the _____. | reservoir expansion chamber | hydraulic piping flexibility | atmosphere as heat | fluid as friction | |
| 11 | 1482 | B | Air compressor cylinder unloaders enable the compressor to _____. | vary their speed according to temperature and load | start and come up to speed before air compression begins | change speed according to overload demands | reduce compressed air charge density | |
| 11 | 1484 | B | Which of the conditions listed will cause a refrigeration compressor to run constantly without simultaneously decreasing the temperature in the refrigerated space? | Shortage of refrigerant oil. | Slight shortage of refrigerant. | Excessive condenser cooling water flow. | Faulty expansion valve. | |
| 11 | 1485 | A | What precautions should be followed when using a chisel having a mushroomed head? | Remove the ragged edges by grinding. | Do not strike the mushroomed portion. | Use only light hammer blows with the chisel. | Knock off the ragged edges with a hammer. | |
| 11 | 1486 | A | A gate valve installed in a piping system should be used _____. | in either fully closed or fully opened positions | only with the stem facing down | only for lube oil service | to throttle the flow of liquid | |
| 11 | 1488 | B | The device shown in the illustration is used to open and close a butterfly valve. The motor will be typically secured during the closing phase by the use of the _____. | torque switch | limit switch | two-position, micro switch | manual, push button only | GS-0027 |
| 11 | 1489 | C | When pressure is applied to a Bourdon tube-type pressure gage, it will begin to unbend. The reason for this action is that the _____. | pressure is the greatest on the arc AB | pressure is the greatest on the arc DC | force is the greatest on the arc AB | force is the greatest on the arc DC | GS-0114 |
| 11 | 1491 | B | Which of the listed methods of heat transfer takes place when two substances of different temperatures are in physical contact with each other? | Radiation | Conduction | Convection | Each of the above | |
| 11 | 1492 | C | The unloading system on an air compressor will _____. | increase compressor discharge pressure on demand | increase compressor operating speed as necessary | allow the motor to turn the compressor opposed only by friction | reduce the compressor frictional load when starting | |
| 11 | 1494 | B | A warmer than normal compressor suction line might be caused by _____. | insufficient lubrication | insufficient refrigerant | excess refrigerant | excessive opening of the expansion valve | |
| 11 | 1495 | B | Solder used for joining metal surfaces should have a _____. | fusing point much higher than that of the metals being joined | melting point lower than that of the metals being joined | coating of Borax flux to raise the melting point | composition of lead and tin if the solder is the 'hard' type | |
| 11 | 1496 | D | The proper use of a flat chisel is for cutting _____. | inside corners | slots or keyways | half-round grooves | flat stock | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1497 | C | The amount of change of a controlled variable that is necessary to cause a specific change in the position of the final control element depends upon the _____. | differential gap adjustment | range of valve opening | proportional band adjustment of the controller | form of the controlled medium | |
| 11 | 1498 | D | The device depicted in the illustration is used to _____. | jack over the main engine | power an elevator car | power a centrifuge | remotely open piping system valves | GS-0026 |
| 11 | 1499 | D | Which problems can occur if the brake band lining of a wildcat brake becomes excessively worn? | The driving engine will overspeed. | The anchor will immediately drop. | The clutch will overheat. | The brake's effectiveness will be reduced. | |
| 11 | 1501 | C | Which of the following conditions must exist for heat to flow from one object to another? | The two objects must be in physical contact. | The two objects must be the same size. | There must be an existing temperature differential. | There must be an existing weight differential. | |
| 11 | 1502 | A | The function of an unloader on a two-cylinder, two-stage medium pressure, air compressor is to _____. | remove all but the friction load on the compressor motor when starting | prevent water accumulation in air lines | reduce motor starting voltage | vary compressor speed | |
| 11 | 1503 | A | How can the chance of contaminating hydraulic fluid be decreased when working on hydraulic systems? | Clean the fittings before they are disconnected. | Place drip pans under leaky fittings. | Seal any cracks in lines with Permatex. | Coat all threads with graphite oil. | |
| 11 | 1504 | D | In the refrigeration system, a shortage of refrigerant is indicated by _____. | the compressor short cycling on high pressure cut out switch | high suction pressure | high head pressure | bubbles in the sight glass | |
| 11 | 1505 | B | The overboard discharge valves in the bilge system illustrated are _____. | gate valves | stop-check valves | gate valves operated from above the bulkhead deck | swing check valves operated from above the bulkhead deck | GS-0042 |
| 11 | 1506 | B | The illustrated device operates on the principle that the height of the liquid in gage "C" is _____. | directly equal to the height of the liquid in the tank | proportional to the height of the liquid, H | equal to the fluid pressure supplied at D after a small portion of the fluid from the tank forced into column C | proportional to the pressure of the cube root of the height of liquid H, times .491 | GS-0066 |
| 11 | 1507 | B | The response line installed in a pneumatic proportional action controller functions to _____. | monitor the accuracy of the measuring element | provide a feedback signal for accurate final element positioning | regulate the air supply in the line to the nozzle | readjust the total spring force in the air control relay | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1508 | B | A non-rising stem gate valve should _____. | be completely opened with the handwheel locked hard at the end of the last opening turn | be opened to the end of the last opening turn, then rotate the handwheel in the closing direction by approximately 1/4 of a turn | be opened by 1/2 of the total number of turns available from full closed to full open | be opened as much as needed, regardless of how little the gate has been moved from its seat | |
| 11 | 1509 | B | Your vessel has just taken aboard 1200 barrels of fuel with an API gravity of 30.9 at 60° F. Referring to the table shown in the illustration, how many long tons of fuel have you taken aboard? | 155.88 long tons | 163.23 long tons | 171.48 long tons | 182.82 long tons | GS-0149 |
| 11 | 1510 | B | An electric power failure occurring in a electro-hydraulic steering gear would cause the rudder to _____. | automatically swing 35° right or left | remain locked in its last position | automatically shift to the midship position | jam against the rudder emergency stops | |
| 11 | 1511 | B | In a reciprocating pump, the position of the pilot valve is controlled by the position of the _____. | main steam piston valve | piston in the steam cylinder | cushioning valve | governor valve spindle | |
| 11 | 1513 | C | Condensate must be drained from the intercooler and aftercoolers of an air compressor because _____. | the cooling effect of the condensate reduces the compressor's efficiency | a danger of explosion exists whenever water is present in a compressor | water contamination causes erratic operation of pneumatic components | the volumetric capacity of the first stage is reduced if water remains | |
| 11 | 1514 | A | If a refrigeration system were short of refrigerant, the condition would result in _____. | continuous running of the compressor | high suction pressure | high discharge pressure | short cycling of the compressor on the water failure switch | |
| 11 | 1515 | B | The bilge pump suction manifold, shown in the illustration, is provided with _____. | four stop valves | four stop-check valves | three normally opened valves and one normally closed valve | three normally closed valves and one normally opened valve | GS-0042 |
| 11 | 1516 | D | Tinning a soldering iron will _____. | prevent the tip from overheating | protect the tip from scratches | add extra weight to the tip | prevent tip oxidation when heated | |
| 11 | 1517 | C | When a controller with proportional position action is used to control a process, a load change will cause the controlled variable to stabilize at some value other than the set point value. The new point at which the controlled variable stabilizes is called _____. | offset | deviation | control point | load point | |
| 11 | 1518 | D | The handle of a butterfly valve must be _____. | parallel to the axis of flow when the valve is closed | forty-five degrees to the axis of flow when the valve is fully open | either at 0° or 90° but never at any other angle regardless of flow rate | parallel to the flow when in the fully open position | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1519 | D | The purpose in constructing a pipe tunnel aboard a vessel is to _____. | insulate piping from ambient temperatures | provide convenient grouping of all piping leading fore and aft from the machinery space for easy access and control | enclose all pipes leading to a single forward compartment in their own enclosure | segregate a pipe from the compartment through which it passes | |
| 11 | 1520 | A | When air becomes trapped in the hydraulic fluid of a steering system, the _____. | rudder will respond sluggishly | hydraulic rams will overspeed | sight glass will show bubbles | ram relief valves will lift | |
| 11 | 1521 | B | Before starting a reciprocating, steam-driven pump that has been idle for a period of time, you should _____. | open the steam line root valve | drain the steam cylinder | close the steam cylinder drains | open the liquid cylinder drains | |
| 11 | 1523 | C | The air charge leaving an intercooler, or aftercooler of an air compressor can be expected to be _____. | superheated | supercooled | at or below the dew point | all of the above | |
| 11 | 1524 | D | Noise in a refrigeration compressor can be caused by _____. | worn bearings and piston pins | slugging due to flooding back | too much oil in circulation | all of the above | |
| 11 | 1525 | A | Thermal energy is commonly referred to as _____. | heat | power | horsepower | foot-pound | |
| 11 | 1526 | C | Soldering flux aids the soldering process by _____. | softening the metals | fusing the metals | removing oxides | hardening the metals | |
| 11 | 1527 | A | The cylinder unloading mechanism used on low pressure air compressors is an example of which mode of control? | Two position | Derivative | Integral | Single speed floating | |
| 11 | 1528 | C | Valves used in the machinery space piping systems, and constructed with threaded valve stems, must be _____. | right-hand opening (clockwise) | left-hand closing (counterclockwise) | right-hand closing (clockwise) | direction of opening and closing is unimportant | |
| 11 | 1529 | A | A compressor used in a multi-box refrigeration system, has six of its eight cylinders controlled for variable loads. If only one of five reefer boxes is active what percentage of the controlled cylinders will be unloaded? | 100% | 66% | 33% | 0% | RA-0013 |
| 11 | 1530 | D | Air trapped in the hydraulic fluid of a steering system would be indicated by _____. | an improper rudder response | hammering noises in the equipment or transmission lines | popping or sputtering noises | all the above | |
| 11 | 1531 | C | Which of the chisels listed should be used for cutting oil grooves? | Diamond point | Flat cold | Round nose | Square nose | |
| 11 | 1532 | C | To determine the diameter of a small hole, which of the listed tools must be used with inside calipers to get an accurate reading? | A Center gage | Wire gage | Micrometer | None of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1534 | B | 'Flooding back' is a condition where the liquid refrigerant _____. | vaporizes in the condenser | reaches the compressor through the suction line | flashes in the liquid line | condenses in the receiver | |
| 11 | 1535 | D | The energy associated with molecules is known as _____. | kinetic energy | potential energy | mechanical energy | thermal energy | |
| 11 | 1536 | D | Flux is used when soldering, in order to _____. | decrease the melting point of the solder | make the solder 'flow' | ensure proper tinning | clean the joint area | |
| 11 | 1537 | B | Which of the following proportional band values most closely approaches 'ON-OFF' control? | -10% | 2% | 100% | 500% | |
| 11 | 1538 | D | Steam traps should be installed at the lowest outlet point of the heat exchanger in a horizontal run of pipe. Which of the following installation considerations should also be maintained? | They should be installed with their main axis horizontal. | They should be installed unpainted and wrapped in an insulation blanket. | A bypass around the trap is unnecessary if the steam input pressure never exceeds 10 psig. | They should remain uninsulated and unpainted. | |
| 11 | 1539 | B | Over greasing of ball bearings installed on pumps will result in _____. | smoother pump operation | overheating of the bearing | reduced corrosion in the bearing | increased pump capacity | |
| 11 | 1540 | B | Air trapped in the hydraulic fluid of a steering system should be indicated by _____. | the pump overspeeding | an improper rudder response | bubbles in the sight glass | ram relief valves lifting | |
| 11 | 1541 | C | On small passenger vessels of less than 100 gross tons, watertight doors and watertight hatches are _____. | not required to be marked | required to be marked, but on only one side | require to be marked on both sides in clearly legible letters at least 25 millimeters ( 1 inch) high | none of the above | |
| 11 | 1542 | A | The illustrated valve is recommended for use _____. | as either fully opened or fully closed | in throttling fluid flow | in allowing flow in one direction only | in lube oil systems exclusively | GS-0047 |
| 11 | 1544 | A | While troubleshooting a refrigeration system for low head pressure, liquid refrigerant flooding back from the evaporator is determined to be the cause. It may be necessary to _____. | change the expansion valve adjustment | readjust the water regulating valve to increase the flow of water | purge air from the condenser | clean the waterside of the condenser | |
| 11 | 1545 | C | A machine capable of producing 1650 foot-pounds of work per second is considered to produce how much horsepower? | 1 hp | 2 hp | 3 hp | 4 hp | |
| 11 | 1546 | B | Soft solders have relatively low melting points and consist mainly of _____. | silver base alloys | lead base alloys | copper base alloys | nickel base alloys | |
| 11 | 1547 | C | Increasing the 'reset rate' of a proportional-plus-reset controller _____. | narrows the proportional band | widens the proportional band | repeats the proportional action more frequently | increase the stability of the controller | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1548 | C | The quantity of condensate passing through the illustrated steam trap will be reduced as the _____. | amount of vapor contained in "A" decreases | amount of liquid contained in "A" increases | amount of vapor contained in "A" increases | vapor pressure of the liquid contained in "A" decreases | GS-0005 |
| 11 | 1549 | D | Ball bearings may become overheated if they are _____. | packed with too much grease | mounted on a misaligned shaft | not lubricated | all of the above | |
| 11 | 1550 | A | If a severe leak develops in the electro-hydraulic steering gear, which of the listed conditions could result? | Loss of vessel steering | Overheating of the gyrocompass | Jamming of the six-way valve | Jamming of the follow-up device | |
| 11 | 1551 | D | The best type of chisel to use for cutting a keyway is the _____. | round nose chisel | flat cold chisel | diamond point chisel | cape chisel | |
| 11 | 1553 | A | On small, low pressure, air compressors, the cylinders are usually lubricated by the _____. | splash method | mechanical force feed lubricators | detached sump method | internal cooling passages in the crankshafts and connecting rods | |
| 11 | 1554 | D | To correct the condition of slugging and flooding back in a refrigeration system, it may be necessary to _____. | re-adjust the discharge pressure | clean the expansion valve screen | add refrigerant | adjust the expansion valve | |
| 11 | 1555 | A | In a double-effect distilling plant, liquid moisture remaining entrained in the first-effect vapor, is removed by _____. | baffles and vanes | a flash chamber | the second effect separator | the vapor feed heater | |
| 11 | 1556 | A | Power is defined as the _____. | rate of doing work | amount of force needed to overcome friction | amount of work accomplished | distance through which an object is moved | |
| 11 | 1557 | B | When 'reset' action is added to proportional action, the proportional action _____. | aids the reset action during decreasing error transients | aids the reset action during increasing error transients | opposes the reset action during increasing error transients | and reset action are completely independent of one another in the controller operation | |
| 11 | 1558 | B | In the operation of the illustrated steam trap, condensate will continue to pass through the outlet as long as _____. | steam occupies the area labeled "I" | the drop in pressure at "B" does not lower the pressure of the condensate below its current saturation pressure | the drop in pressure at "B" lowers the vapor pressure of the condensate below its current saturation pressure | the pressure in area "H" is at least 85% of the pressure in area "I" | GS-0002 |
| 11 | 1559 | D | If a ball bearing for a centrifugal pump is completely packed with grease, _____. | the bearing may heat up | grease may flow out of the seals | early failure may result | all of the above | |
| 11 | 1560 | A | Which of the listed devices would be installed at a control system air pressure reducing station? | Moisture separator | Vacuum breaker | Lubricator | Non-return valve | |
| 11 | 1561 | A | Solder is an alloy of _____. | tin and lead | beryllium and antimony | copper and lead | silicon and selenium | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1562 | A | In the figure shown in the illustration, the standard blueprint symbols above the letters "A", "B", and "C" indicate _____. | the use of internal threads | hole tolerance | finished diameter | interference fit | GS-0036 |
| 11 | 1563 | B | Air line lubricators are used in compressed air systems to lubricate _____. | the suction and discharge valves | tools and equipment served by compressed air | air line reducing valves | all of the above | |
| 11 | 1564 | C | If a liquid line strainer, such as the one shown in the illustration, becomes clogged to the extent that it should be cleaned, this will be indicated by _____. | slightly warm strainer body | clicking in the solenoid valve | loss of refrigeration effect in the space being cooled | high suction pressure at the condenser | RA-0010 |
| 11 | 1565 | B | In a double-effect distilling plant, the brine particles remaining entrained with the vapor produced in the evaporator first effect, are separated by _____. | a flash chamber | baffles and vanes | the vapor feed heater | a brine pump | |
| 11 | 1566 | D | How much work would be accomplished if a 15 pound box were raised to the top of a 25 foot platform? | 15 ft-lb | 25 ft-lb | 40 ft-lb | 375 ft-lb | |
| 11 | 1567 | A | When 'reset' action is added to proportional action _____. | the proportional action opposes the reset action during decreasing error transients | the proportional action opposes the reset action during increasing error transients | the proportional action assists the reset action during decreasing error transients | the proportional action and the reset action are completely independent of one another in the controller operation | |
| 11 | 1568 | B | The basic function of a steam trap is to _____. | regulate the flow of steam leaving a heater | limit the flow of steam leaving a heater until it has given up its latent heat of condensation | limit the flow of steam leaving a heater until it has given up its latent heat of fusion | eliminate steam-pipe water hammer | |
| 11 | 1569 | B | In most pumps and pump motors, over packing the ball bearings full of grease will result in _____. | moisture emulsification of the bearing grease | insufficient circulation and overheating of the bearing | proper grease circulation to cool the bearing | sliding friction between balls and races | |
| 11 | 1570 | B | The function of port "D" shown in the illustration is to _____. | provide pressure sensing from the compressor crankcase/ suction line | prevent pressure from developing within the bellows that would adversely affect the operation of the unloader control | act as a pressure sensing line from the compressor lube system to unload all cylinders if a lube oil failure occurred | provide a remote control pneumatic signal for changing the control point operation setting | RA-0013 |
| 11 | 1571 | A | When a vessel is in dry-dock, the vessel's engineers should _____. | examine the condition of the propeller | chip and paint all hull protection zincs | install new docking plugs in all cofferdams | inspect the hull for hogging or sagging | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1572 | D | If you change from a low pour point lubricant to a high pour point lubricant in a refrigeration system, _____. | compressor lubrication will be improved | oil will not leave the crankcase | compressor valves will be damaged | oil may congeal in the evaporator | |
| 11 | 1573 | B | Which of the following statements is correct when comparing the cylinder diameters of a two-stage reciprocating air compressor? | The low pressure cylinder will be smaller than the high pressure cylinder. | The high pressure cylinder will be smaller than the low pressure cylinder. | The high and low pressure cylinders will be of equal size. | The low pressure cylinder will be smaller than the high pressure cylinder but the piston stroke will be greater. | |
| 11 | 1574 | D | Water flow occurs through the unit shown in the illustration when _____. | "A" is tilted off of its seat | "C" lifts due to the decrease in pressure on top of the diaphragm | "E" is moved from the position shown | all of the above | GS-0155 |
| 11 | 1575 | D | The demisters installed in a flash-type evaporator serve to _____. | deaerate the first effect distillate | filter the condensed flash vapors | deaerate the first and second effect distillate | remove small water droplets entrained in the flashed vapor | |
| 11 | 1576 | B | Mechanical energy in transition is referred to as _____. | horsepower | work | heat | velocity | |
| 11 | 1577 | D | The effect of 'reset', when added to a proportional controller is to _____. | make the controller correction proportional to the rate at which the input change takes place | accelerate the corrective action so as to minimize the possibility of hunting | make the corrective action of the controller proportional to the deviation of the controlled variable from the set point | repeat the proportional action until the controlled variable returns to the set point | |
| 11 | 1578 | A | The basic function of a steam trap includes which of the following processes? | Regulate the flow of condensate from a heater. | Regulate the flow of steam from a heater. | Regulate the flow of steam to a heater. | Regulate the flow of condensate to a heater. | |
| 11 | 1579 | A | A ball bearing will overheat if _____. | completely packed full of grease | filled with grease to 65% of the total open spaces within the bearing | in use for a long time | operated at designed high speed | |
| 11 | 1580 | A | The two most common gases used in pneumatic systems are _____. | compressed air and nitrogen | helium and nitrogen | oxygen and hydrogen | oxygen and acetylene | |
| 11 | 1582 | A | The letters 'NPT' used in the notation 1/8-27 NPT as shown in the illustration, indicates the _____. | thread series | thread profile | class of finish | class of fit | GS-0010 |
| 11 | 1583 | A | Intake valves installed on most reciprocating low pressure air compressors are actuated by the pressure differential between the air in the cylinder and the pressure _____. | of the air on the external side of the valve | of the push rod and rocker arm assembly | sensed by the receiver low pressure limit switch | sensed by the intercooler diaphragm valve | |
| 11 | 1584 | C | Badly leaking refrigeration compressor discharge valves will cause _____. | overfeeding of the expansion valve | damage to the condenser | constant running of the compressor | flooding of the receiver | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1585 | A | In a two-stage flash-type distilling plant, the mesh-type vapor separators function to _____. | improve distillate purity | vent noncondensable gases | recycle evaporator flash steam | direct flash steam into the cooler | |
| 11 | 1586 | C | What is the gain in potential energy of an object weighing 10 pounds when it is raised to a height of 10 feet? | 10 ft-lb | 20 ft-lb | 100 ft-lb | 1000 ft-lb | |
| 11 | 1587 | A | The device shown in the illustration is an example of which of the listed modes of control? | Proportional control | Integral control | Derivative control | On-off control | GS-0146 |
| 11 | 1589 | A | If a ball bearing installed on a pump is completely packed full of grease, this can result in _____. | bearing failure | smoother pump operation | reduced corrosion in the bearing | increased pump capacity | |
| 11 | 1590 | C | Separators are installed ahead of air line lubricators for the primary purpose of removing _____. | the heat of compression | air supply pressure pulses | moisture in the air supply | turbulence in the air supply | |
| 11 | 1591 | C | In an oxy-acetylene welding outfit, each cylinder has a regulator and two pressure gages. One pressure gage indicates cylinder pressure and the other gage is used to indicate _____. | tip pressure | upstream pressure | hose pressure | arc pressure | |
| 11 | 1592 | C | In the thread notation shown in the illustration, the "1" preceding '8NC-LH' represents _____. | a single thread | the thread pitch | the outside diameter | the length of the threaded section | GS-0038 |
| 11 | 1593 | A | The outlet steam pressure operating range of the regulator shown in the illustration is manually adjusted by the part labeled '_____.' | L | B | D | G | GS-0045 |
| 11 | 1594 | D | In a refrigeration system equipped with a reciprocating compressor and a water cooled condensing unit, leaking compressor discharge valves will result in _____. | refrigerant flooding of the compressor | low suction pressure | noisy compressor operation | low head pressure | |
| 11 | 1595 | D | The mesh type steam separators located in a two-stage flash distilling plant, function to _____. | vent noncondensable gases | recycle evaporator flash steam | reheat the flash steam | improve distillate purity | |
| 11 | 1596 | C | Which unit of measurement is used to measure mechanical potential energy? | British thermal units | Horsepower | Foot-pounds | Calories | |
| 11 | 1597 | C | The control mode that is generally not used by itself is _____. | reset control | integral control | derivative control | two position differential gap control | |
| 11 | 1599 | D | During the operation of a variable capacity refrigeration compressor, the lube oil pressure is observed to be maximum normal, with the suction pressure just above the cut out point of the low pressure cut out switch, Under this operating condition, "F" can be rotated _____. | counter clockwise to reduce compressor capacity and thereby increase suction pressure | clockwise to increase compressor capacity and thereby increase suction pressure | counter clockwise to increase compressor capacity and thereby reduce suction pressure | clockwise to reduce compressor capacity and thereby raise suction pressure | RA-0013 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1600 | A | A flash type evaporator is designed to operate in 75° F sea water, if operated in 50° F sea water, _____. | the absolute pressures will be slightly below the predicted design absolute pressures | absolute pressure in the evaporator stages will be higher | the unit will operate at reduced capacity | thermal efficiency will decrease, but brine density will increase | |
| 11 | 1601 | D | The delivery rate of an axial-piston hydraulic pump is controlled by varying the position of the _____. | sliding block | pintle | reaction ring | tilting box or swash plate | |
| 11 | 1602 | B | The drawing labeled "A" in the illustration represents a/an _____. | interference fit | running fit | basic shaft fit | force fit | GS-0019 |
| 11 | 1603 | B | When welding with an oxyacetylene outfit, _____. | open the acetylene valve until the hose pressure is 26 PSIG | open the acetylene cylinder valve only 1/4 to 1/2 turn and leave the wrench on the valve stem | a leaking hose must be repaired by binding with tape | a flashback of flame into the hose is normal | |
| 11 | 1604 | A | A reciprocating refrigeration compressor may be tested for leaking discharge valves by stopping the compressor, turning the discharge service valve all the way in, and then turning the compressor over by hand. If the discharge valves are leaking, the compound gage will show pressures _____. | rising and falling with each stroke | increasing with each stroke | decreasing with each stroke | decreasing to a vacuum | |
| 11 | 1605 | B | Small droplets of water entrained in the flashed vapor produced in a flash-type evaporator, are removed by the _____. | spray pipes | demisters | condensers | splash baffles | |
| 11 | 1606 | D | Which of the following terms could be applied to the simple definition 'the energy of motion'? | Electrical energy | Thermal energy | Potential energy | Kinetic energy | |
| 11 | 1607 | B | Reset control is also referred to as _____. | derivative control | integral control | rate control | proportional control | |
| 11 | 1608 | A | The device shown in the illustration is typically designed to operate in conjunction with a pneumatically controlled valve in order to maintain _____. | relatively constant liquid tank levels | steam flow rates | flow rates as a square root extractor | constant pump-head pressures | GS-0052 |
| 11 | 1609 | D | During the operation of a variable capacity refrigeration compressor, the lube oil pressure is observed to be at its nearly normal minimum pressure, with the suction pressure indicated at 8 psi. Under this operating condition, "F" should be rotated _____. | counter clockwise to increase compressor capacity and thereby reduce the suction pressure | clockwise to increase compressor capacity and thereby reduce the suction pressure | counter clockwise to decrease the compressor capacity and thereby reduce suction pressure | clockwise to decrease compressor capacity and thereby raise the suction pressure | RA-0013 |
| 11 | 1611 | A | The discharge capacity of the axial piston hydraulic pump, shown in the illustration, is _____. | fixed by the pump housing angle | increased by adding a longer cylinder block | decreased by adding a longer cylinder block | increased by adding a shorter cylinder block | GS-0058 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1613 | D | In order to assure an output near the end of its compression stroke, the pressure developed in the high pressure cylinder of a reciprocating air compressor is _____. | the same as the line discharge pressure | below the line discharge pressure | constant throughout the discharge period | above the line discharge pressure | |
| 11 | 1614 | A | If the discharge valves on a refrigeration compressor are leaking badly, the compressor should _____. | run continuously | not start | have high discharge pressure | short cycle on the high pressure switch | |
| 11 | 1615 | B | Referring to Coast Guard Regulations (46 CFR), the emergency bilge system _____. | has no independent primary pump | is independent of the main bilge system | has a cross connection to the ballast system | is part of the independent bilge system | |
| 11 | 1616 | B | In order to prevent salt water contamination of the distillate in a flash-type evaporator, it is important to provide a positive seal around the _____. | spray caps | demisters | saltwater heater vents | steam supply orifice plate | |
| 11 | 1617 | A | Reset control is also referred to as _____. | proportional speed floating control | derivative control | rate control | proportional control | |
| 11 | 1619 | D | Increasing the speed of a centrifugal pump will result in an increase in its capacity. Another means of increasing the capacity of a centrifugal pump is to increase the _____. | diameter of the discharge piping, with all other factors remaining the same | diameter of the suction piping, with all other factors remaining the same | width of the impeller only | diameter of the impeller | |
| 11 | 1620 | C | The purging of air from an electro-hydraulic steering gear unit is necessary when _____. | changing over to hand pump operation | engaging the trick wheel | the system has been filled with new oil | the rudder angle indicator does not match the helm position | |
| 11 | 1623 | A | The piston displacement rate of a reciprocating air compressor can be modified by changing the _____. | piston speed | compressor capacity | volumetric efficiency | total pressure | |
| 11 | 1624 | C | If a refrigeration system, equipped with a reciprocating compressor, has a solenoid valve that is leaking during the 'off' cycle, this could cause _____. | low suction pressure | high superheat in the outlet coil | noisy compressor operation upon starting | refrigerant slugs in the receiver | |
| 11 | 1625 | A | Coast Guard Regulations (46 CFR) require the emergency bilge system to _____. | be independent of the main bilge system | be a part of the independent bilge system | have an independent priming pump | have a cross connection to the ballast system | |
| 11 | 1626 | A | Excessive air leakage into the suction side of a centrifugal pump would be indicated by which of the following operational problems? | The pump delivers full capacity when started, but gradually slackens off to an abnormally low flow. | The pump packing gland overheats after short operating periods. | The motor over current protective device continually shuts the pump down. | Pounding noises can be heard at the pump suction chest. | |
| 11 | 1627 | D | A mode of control, whereby the position of the final control element is linearly proportional to the rate of change of the controlled variable, is called _____. | reset control | integral control | two position control | derivative control | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1628 | A | Referring to the device shown in the illustration, if a reversed output were desired from a comparable unit as the system pressure increased, the necessary physical changes to the unit would be _____. | the offsetting of the power head, or motor, and the use of a reversing lever | the sensing or feedback connection made from below the power head or motor | the offsetting of the power head or motor, and the use of a reversing diaphragm | the exchange of the pilot valve with one that would be downward seating | GS-0050 |
| 11 | 1629 | D | A dented race in an antifriction bearing could be caused by _____. | water in the bearing | abrasives in the lubricant | dirt in the bearing | vibration while the bearing is not in operation | |
| 11 | 1630 | B | While inspecting the steering system at sea, you should check for _____. | air bubbles in the sight glass | any leaks in the system | over travel in the rudder angle indicator | lost motion in the rams | |
| 11 | 1632 | A | How does the viscosity of a fluid being pumped affect the operation of a spur gear pump? | The viscosity of the fluid is relatively unimportant in the pump operation. | The pump can only be used for fluids of high viscosity. | The pump can only be used for light oils. | The pump cannot handle fluids more viscous than lubricating oil. | |
| 11 | 1634 | C | If one box in a multiple box, direct expansion type refrigeration system was experiencing an excessively low temperature, this could be a result of _____. | liquid refrigerant returning to the compressor | excessive frost on the cooling coils | a leaking hand expansion valve | an oversized expansion valve | |
| 11 | 1635 | D | When securing an oxyacetylene cutting outfit for an extended period, you should close the _____. | hand valves on the torch only | cylinder valves only | cylinder valves and close torch valves with 4 to 5 pounds of pressure in the hoses | cylinder valves and close torch valves when pressure in hoses and regulators is zero | |
| 11 | 1636 | B | Pump efficiency may be lost as a result of _____. | air entering the pump through a pin hole leak in the discharge manifold | a leak in a gasket on the suction side of the pump | the suction valve in the wide open position | the pump being installed too close to the suction tank | |
| 11 | 1637 | D | A mode of control, whereby the speed of motion of the final control element is linearly proportional to the deviation of the controlled variable from set point, is called _____. | rate control | derivative control | two position control | integral control | |
| 11 | 1638 | C | A solenoid, direct-acting, three-position, spring-centered, directional control valve is used in a hydraulic system to control a linear actuator. With the actuator under load there is no movement. However, when the load is removed the actuator can be cycled in both directions, although slower than normal. Which of the listed statements is the probable cause? | One or both of the centering springs has broken and the spool has jammed in the valve body. | One or both of the solenoid coils has sustained an open. | The pump coupling is damaged and the pump is unable to attain its rated speed of rotation. | The pump coupling has sheared and the motor is overspeeding. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1639 | A | The capacity of a centrifugal pump can be increased by the installation of a larger diameter impeller. Another means of increasing the pump capacity is to _____. | increase speed | increase the size of the cardent assembly | reduce wearing ring clearances | change the pump to a 'close coupled' arrangement | |
| 11 | 1640 | A | While inspecting the steering gear at sea, you should check for _____. | any leaks in the system | accuracy of the rudder angle indicator | movement of the trick wheel | position of the six-way valve | |
| 11 | 1641 | C | In the illustration, the best way to make the pieces labeled "B" a locational interference fit is to _____. | Do nothing, this is already a locational interference fit | drill the hole 0.010 inches larger to .260 inches | turn the shaft down .004 to .005 inches | heat the shaft until the nominal diameter is .250 inches | GS-0019 |
| 11 | 1642 | C | A spur gear pump should be operated with the discharge valves _____. | slightly opened | throttled | fully opened | halfway opened | |
| 11 | 1644 | A | Leaking suction valves in a refrigeration compressor are indicated by _____. | higher than normal suction pressure | lower than normal suction pressure | lower than normal evaporator temperature | noticeable increase in compressor noise | |
| 11 | 1645 | B | In an oxygen acetylene welding outfit, the torch tip orifice size _____. | depends on the hose length | determines the amount of acetylene and oxygen fed to the flames | can be varied by rotating the tip | depends on the regulator flow rate | |
| 11 | 1646 | B | Which of the following conditions would be hazardous if you were using two centrifugal pumps to discharge a flammable liquid? | Both pumps operating at the same speed and discharging into a common line. | Each pump operating at a different speed and discharging into a common line. | Both pumps operating at the same speed taking suction from a common line. | Each pump operating at a different speed and taking suction from a common line. | |
| 11 | 1647 | B | Greases are generally produced by _____. | reducing the temperature of an oil below its cloud point to create the gelatinous texture | saponifying a metal base, to which oil is then added and mixed under controlled temperature | reducing tallow 50° F below its pour point then mixing a base metal, such as barium, into solution | saponifying an aluminum base, to which tallow and oil are mixed into solution under a controlled temperature | |
| 11 | 1648 | D | In order to change the set point of the system using the illustrated device, you must _____. | rotate part "I" counterclockwise | change the compression of the spring located below part "H" | rotate part "E" until the operating pressure has changed by 5 psi | rotate part "D" in the direction necessary to produce the desired output pressure change in the system | GS-0050 |
| 11 | 1649 | C | The oil in a cargo winch gear box should be sampled periodically to _____. | prevent the gear box from leaking | prevent the oil from becoming inflammable | make sure it has not become contaminated | make sure the motor bearings are lubricated | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1650 | C | When the steering gear is in operation, you should _____. | check hydraulic oil levels every hour | check the rams for overheating | check for excessive oil leakage from rams | drain water from telemotor cylinders each watch | |
| 11 | 1651 | D | What class of screw thread is indicated with a machine screw described as 1/2-13 NC-2? | 1/2 | 13 | NC | 2 | |
| 11 | 1652 | D | The capacity of a rotary pump, delivering a constant viscosity fluid, will decrease when the discharge pressure is increased, due to _____. | decreased suction pressure | increased suction pressure | reduced slippage | increased slippage | |
| 11 | 1653 | B | Which of the following forms of energy is usually associated with the motion of large bodies or objects? | Chemical energy | Kinetic energy | Thermal energy | Electrical energy | |
| 11 | 1654 | D | A refrigeration system is equipped with a reciprocating compressor and a water cooled condensing unit. If the system is overcharged, the resulting high head pressure will be caused by _____. | the expansion valve overfeeding the evaporator | a leaking compressor suction valve | an incorrectly adjusted high pressure cutout | refrigerant flooding the condenser | |
| 11 | 1656 | D | If it were necessary for you to frequently replace the packing on the main condensate pump, the trouble could be the result of _____. | running at low speed for a long time | excessive condensate recirculation | defective casing gasket | worn bearings | |
| 11 | 1657 | C | Which indicator is used to determine the hardness of a grease? | Pour point | Drop point | Penetration number | Stability-consistency number | |
| 11 | 1659 | D | Winch gears must be maintained in proper alignment to prevent _____. | overheating of the lube oil | overspeeding of the motor | wear on the braking system | damage to the teeth | |
| 11 | 1660 | A | If a hydraulic pump is producing a noisy whine when in operation, the cause may be _____. | an air leak in the pump suction line above the oil level in the reservoir | low viscosity in the hydraulic fluid | an oil leak across the pump shaft packing | due to the wrong direction of rotation of the hydraulic motor | |
| 11 | 1661 | A | When using a deflecting beam torque wrench, the torque is _____. | read on a scale mounted on the handle of the wrench | read on a dial mounted on the handle of the wrench | indicated by an audible click | indicated by a release or break of the handle | |
| 11 | 1662 | D | The capacity of a gear type rotary pump, when operated at a constant speed, will decrease with an increase in the pump _____. | discharge volume | suction pressure | torque rating | rotor clearances | |
| 11 | 1664 | C | An excessive charge of refrigerant in an air-cooled refrigeration system can cause _____. | oil foaming in the compressor | higher than normal suction and discharge pressures with a higher box temperature | higher than normal discharge pressure with a normal box temperature | the compressor to run continuously | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1665 | D | With reference to the oxyacetylene welding of high carbon steels, hard-facing, and the welding of nonferrous alloys, such as Monel, the best flame to use is termed a/an _____. | oxidizing flame | neutral flame | nitriding fusion | carburizing flame | |
| 11 | 1666 | B | Excessive wear on a centrifugal pump shaft sleeve will _____. | cause severe vibration when the pump is operating | cause excessive leakage past the packing gland | cause damage in the stuffing box | allow interstage leakage in the pump casing glands | |
| 11 | 1669 | B | Who is responsible for completing the Muster List ("Station Bill") or muster list and posting it in a visible area aboard the vessel? | Chief Engineer | Master | U. S. Coast Guard | None of the above | |
| 11 | 1670 | A | Inspection of a low pressure gear pump for cavitation will usually be indicated by a wear pattern _____. | along the inlet side of the housing | along the discharge side of the housing | at the extreme upper and lower peripheries of the housing | even throughout the entire periphery of the housing when matched machined gear sets are used | |
| 11 | 1671 | D | When renewing sections of pipe in a hydraulic system, the nominal pipe size of the piping always indicates the _____. | actual inside diameter | actual outside diameter | wall thickness | size for threaded connections | |
| 11 | 1672 | B | The output volume of a positive fixed displacement pump can be changed only by _____. | changing the angle of the tilting plate | changing the speed of the pump | moving the slide block and rotor | moving the shaft trunnion block | |
| 11 | 1674 | A | Which of the conditions listed may be an indication of an excessive amount of refrigerant circulating through the system? | Sweating of the compressor crankcase | Colder than normal solenoid valve | Frosting of the evaporator | Weeping of the purge valve | |
| 11 | 1676 | A | Excessive wear on a centrifugal pump shaft sleeve will _____. | cause new packing to be torn and scored | cause severe pump vibration at operating speed | damage the packing gland stuffing box | damage the pump casing interstage seals | |
| 11 | 1677 | A | The mode of control employed by a typical bilge alarm circuit is a _____. | two position control | single speed floating control | proportional speed floating control | reset control | |
| 11 | 1678 | C | If a leak occurs between the areas labeled "B" and "J" of the control valve shown in the illustration, which of the following problems is most likely to occur? | The valve will open with a decrease in temperature below the set point of the liquid being heated. | The valve will close with a decrease in temperature below the set point of the liquid being cooled. | The valve will open with an increase in temperature above the set point of the liquid being heated. | The valve will close with an increase in temperature above the set point of the liquid being cooled. | GS-0043 |
| 11 | 1679 | D | If you are given the job of adding hydraulic fluid to a mooring winch, and are not certain as to the type of fluid to use, you should _____. | add fluid that is the same color as the fluid in the reservoir | add turbine oil because it is always a good substitute | add any oil that has the same viscosity as the hydraulic fluid | check the winch manufacturer's instruction book | |
| 11 | 1680 | D | A gradual decrease in the discharge pressure of an operating hydraulic pump can be caused by _____. | the four-way control valve failing to shift | the bleeder valve sticking in the open position | cold hydraulic fluid | a clogged air vent filter on the oil reservoir | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1682 | D | The Bourdon tube-type pressure gage will begin to straighten out when pressure is applied due to the _____. | applied pressure being the greatest on the outer circumference | applied pressure being the greatest on the inner circumference | total force being the greatest on the inner circumference | total force being the greatest on the outer circumference | GS-0114 |
| 11 | 1683 | B | The rate of heat transfer from a hot region to a cold region is affected most by the _____. | size of the heat sink | temperature difference between the regions | size of the heat source | total heat of the system | |
| 11 | 1684 | C | Which of the conditions listed is one indication of an excessive amount of refrigerant in the system? | Safety valve lifting | Prolonged running | Short cycling | Oil absorbed in the crankcase | |
| 11 | 1685 | D | When replacing a steam pressure reducing valve, what information is required for the selection? | Maximum and minimum inlet pressures | Reduced pressure or pressure range | Maximum and minimum continuous flow rates (lbs./hr.) | All of the above | |
| 11 | 1686 | D | According to Coast Guard Regulations (46 CFR), a welded repair to be made to a ships service air receiver, other than an emergency repair at sea, must be _____. | inspected and tested by the chief engineer before it may be returned to service | completed and then tested at least twice prior to notifying the Coast Guard to ask for a marine inspector | made with a backing strip to ensure full penetration | made only with the prior approval of the local Officer in Charge, Marine Inspection (OCMI) | |
| 11 | 1687 | A | The meat box temperature control circuit, as used in the ship service refrigeration system, is an example of _____. | two position control | single speed floating control | proportional control | reset control | |
| 11 | 1689 | B | Who is responsible for ensuring that someone is assigned to close the watertight doors in an emergency? | Coast Guard | Master of the vessel | Chief Engineer | Chief Mate | |
| 11 | 1690 | B | If the pump in a hydraulic system produces a low rumbling noise while in operation, this is a probable indication of _____. | internal system fluid leakage | air passing through the pump | strained hydraulic fluid | excess internal slippage | |
| 11 | 1691 | C | A three-way solenoid operated dump valve installed on a flash-type evaporator unit, will divert impure distillate to the bilge _____. | only if the cell selector switch is positioned to monitor the first stage distillate outlet | only if the cell selector switch is positioned to monitor the final stage distillate outlet | regardless of the cell selector switch position | only if power to the salinity panel is interrupted | |
| 11 | 1693 | C | Which of the following statements is correct concerning heat transfer? | Heat is given off from a high temperature region known as a heat sink. | Heat transfer rate is affected most by the size of the heat sink involved. | Heat transfer rate is affected most by the temperature difference between the heat source and the heat sink. | Heat transfer by radiation will occur only by mass motion of a fluid substance. | |
| 11 | 1695 | A | On tank vessels equipped with power operated cargo tank valves, the type of power actuator most commonly used is _____. | hydraulic | electric | steam | diesel | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1696 | A | Excessive wear on the packing rings nearest the pump packing gland, while the rings nearest the impeller remain in good condition, is caused by _____. | failure to insert and individually seat the rings, one ring at a time | insufficient tightening of the packing gland | failure to tighten the packing gland in a single adjustment | cutting the rings nearest the gland too short | |
| 11 | 1697 | D | Which of the following elements is common to all indicating instruments? | An electrical input | A bourdon tube | A reset button | A calibrated scale | |
| 11 | 1698 | D | With regards to the device shown in the illustration, the parts labeled "D" and "I" function together to _____. | lift the valve disk as the controlled temperature increases | lower the valve disk as the controlled temperature decreases | act as an accumulator for the steam if a sudden increase in steam supply is required | balance the steam supply pressure and cancel its affect on the valve disk | GS-0043 |
| 11 | 1700 | B | Leakage of hydraulic fluid from around the shaft of a hydraulic motor may be caused by _____. | permanent loss of pump suction | worn shaft seals | high level in the oil sump | low motor RPM | |
| 11 | 1701 | D | In a flash-type evaporator, an electrical salinity cell would be installed in the _____. | distillate outlet from the distillate cooler | distillate inlet to the distillate cooler | condensate drains from the distiller feedwater heater | all of the above | |
| 11 | 1702 | B | If the viscosity of the liquid being transferred remains constant as the discharge pressure increases, the rotary pump _____. | capacity will increase | capacity will decrease | suction pressure will increase | suction pressure will decrease | |
| 11 | 1703 | C | When metal is tempered, it becomes _____. | harder | corrosion resistant | less brittle | more brittle | |
| 11 | 1704 | C | If the suction pressure at the refrigeration compressor is below normal, the cause can be _____. | refrigerant overcharge | overfeeding by the expansion valve | a restricted suction strainer | due to short cycling of the compressor | |
| 11 | 1706 | D | Coast Guard Regulations (46 CFR) prohibit air compressors from being located in _____. | a space within three meters of a cargo valve | a space in which cargo hose is stowed | an enclosed space containing cargo piping | all of the above | |
| 11 | 1707 | B | 'Offset' is an inherent characteristic of which of the following types of control modes? | Two position | Proportional | Reset | Rate | |
| 11 | 1708 | B | In order to increase the set point of the control valve as illustrated, used to regulate the output temperature of a hot water heater, the part labeled _____. | "K" must be rotated clockwise | "A" must be rotated counterclockwise | "A" must be rotated clockwise | "K" must be rotated counterclockwise | GS-0043 |
| 11 | 1710 | D | If dirt is allowed to contaminate the sump of a hydraulic deck crane, which of the following problems will occur? | All the seals in the hydraulic lines will immediately blow out. | The lifting capacity of the crane will be immediately reduced by 70%. | The sheathing on the hydraulic lines will fracture. | The internal parts of the pump and hydraulic motor will wear excessively. | |
| 11 | 1711 | D | Where would a salinity cell be installed in a double-effect distilling plant? | Distillate pump discharge | Tube nest drain pump discharge | Air ejector condensate drain | All of the above | |
| 11 | 1712 | A | Which of the listed conditions will occur if the discharge pressure of a rotary pump is increased from the designed 50 psi to 300 psi, while maintaining the same RPM? | The pump capacity will be decreased. | The pump capacity will be increased. | Pump efficiency will be increased. | Internal liquid slippage will be reduced. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1713 | D | Reheating a hardened component to a temperature lower than the hardening temperature and then cooling it is known as _____. | low temperature hardening | case hardening | annealing | tempering | |
| 11 | 1714 | C | If the suction pressure for an operating refrigeration compressor is below normal, the cause may be _____. | an excess of liquid refrigerant | the expansion valve overfeeding | a fouled compressor suction strainer | the compressor short cycling | |
| 11 | 1716 | C | One of the many problems occurring with centrifugal pump shaft packing is the excessive wear on the rings nearest the packing gland. If the rings nearest the impeller remain in good condition during the same operating period, the wear is most likely caused by _____. | insufficient lubrication of the lantern ring | packing rings rotating in the stuffing box | over tightening the packing in one adjustment | some rings being cut too short | |
| 11 | 1717 | D | Which of the following definitions can be used to define the term 'offset' as a characteristic of controller action? | The period of time in which the set point and the control point coincide. | The periodic change between the set point and the control point. | The variable difference between the set point and the control point. | The constant difference between the set point and the control point. | |
| 11 | 1718 | B | The illustrated control valve would be more suitable for _____. | steam flow control to the air ejectors | temperature control of a fluid being heated | temperature control of a fluid being cooled | steam flow to the turbine driving a pump | GS-0043 |
| 11 | 1719 | A | When a new section of shell plating is being installed, the proper weld sequence must be followed to _____. | minimize shrinkage stresses and harmful distortion | ensure that all weldments are down hand | provide the greatest restraint in the weld | ensure all horizontal weldments are completed first | |
| 11 | 1721 | C | In the illustration, the welded neck flange is attached to the pipe by a _____. | double fillet weld only | plug and slot weld | V-weld over a backing ring | U-weld over a backing ring | GS-0078 |
| 11 | 1722 | B | A salinity indicator is used to determine the _____. | cause of salt contamination | location of salt water contamination | chemical makeup of feedwater | level of alkalinity in condensate | |
| 11 | 1723 | D | In order to tighten the bolts of a crankpin bearing to the exact tension specified by the engine manufacturer, you should use a/an _____. | hook spanner | dial wrench | offset box end | torque wrench | |
| 11 | 1724 | B | Which of the conditions listed could cause excessively low refrigerant pressure at the compressor suction? | Insufficient flow of condenser cooling water. | The system is low on refrigerant. | The solenoid valve to the chill box is 'frozen' in the open position. | The high pressure cutout switch is inoperative. | |
| 11 | 1725 | B | Oil sprays on to a hot piece of machinery, catches fire and causes $35,000 damage to your vessel. By law this must be reported to the _____. | nearest Coast Guard unit | Officer in Charge, Marine Inspection at the first port of arrival | principal surveyor of the American Bureau of Shipping at the next U.S. port | U.S. Salvage Association Survey at the next U.S. port | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1726 | B | Coast Guard Regulations (46 CFR) require safety and relief valves for air service to be provided with a substantial lifting device, capable of lifting the disk from its seat when the pressure in the vessel is _____. | 50% of that at which the valve is set to blow | 75% of that at which the valve is set to blow | 110% of that at which the valve is set to blow | 125% of that at which the valve is set to blow | |
| 11 | 1727 | A | Which of the following definitions best describes sensitivity as a characteristic of controller action? | The ratio of the output in response to a specified change to the input which caused it. | The steady state difference between the control point and the value of the controlled variable corresponding to the set point. | The variation of the manipulated variable produced by the mode of control. | The time difference between the input change and the output change of the controller. | |
| 11 | 1728 | B | With regards to process control, the operation of the device shown in the illustration can be characterized by the term _____. | proportional control only | proportional plus reset control | reset control only | on-off control only | GS-0045 |
| 11 | 1729 | D | Sounding tubes and access openings for fuel oil tanks on MODUs are permitted by Coast Guard Regulations (46 CFR) to be located in which of the listed spaces? | Washrooms | Laundries | crew lounge | none of the above | |
| 11 | 1730 | C | If the relief valve on the discharge side of a hydraulic pump lifts, the cause could be _____. | a low load on the unit | a clogged pump suction strainer | a blockage in the line between the pump and hydraulic motor | the hydraulic motor turning too fast | |
| 11 | 1731 | D | A welding electrode is marked E-6010, this designation means that _____. | the electrode may be used in the flat position only | the minimum tensile strength of the weld metal will be 70,000 psi | either insulated or uninsulated electrode holders may be used | the electrode is to be used for shielded metal arc welding | |
| 11 | 1732 | C | Before power to a lathe is turned on, it is a good shop practice to first hand feed the carriage to ensure _____. | the carriage is lubricated | the lathe is level | all locking devices have been released | the work piece is secure in the lathe | |
| 11 | 1733 | D | Which of the tools listed should be used with the set screw shown as figure "F" in the illustration? | Phillips head screwdriver | Spanner wrench | Crescent wrench | Allen wrench | GS-0080 |
| 11 | 1734 | D | In an operating, water-cooled, multi-box refrigeration system, both low discharge and high suction pressures are being simultaneously experienced. The probable cause for this condition is a/an _____. | overcharge of refrigerant in the system | fouled shell-and-tube condenser | improper superheat adjustment on the low side | discharge relief valve leaking back to the suction side | |
| 11 | 1735 | B | Dimension "X" indicated on the architects scale, shown in the illustration, will be equal to _____. | 5 feet 3/4 inch | 5 feet 4 inches | 83 feet | 93 1/4 feet | GS-0023 |
| 11 | 1736 | C | Charring or glazing of the inner circumference of the packing rings in a centrifugal pump, is caused by _____. | under tightening the packing | failure to seat the packing rings | insufficient lubrication of the packing | packing ring rotation | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1737 | A | A mandatory characteristic of a pure amplifier is that _____. | the form of the input and output energies must be the same | the ratio of the output to the input must always be greater than the numerical value of 'one' | the form of the input and output energies must be different | the action must be either integral or derivative | |
| 11 | 1738 | C | A grease drop point is _____. | how far a standard metal cone will penetrate into the sample in five seconds when dropped | how uniform and thick the spread of an ounce of grease is when dropped from a height of five feet | the temperature that a sample of grease begins to liquefy | the length of time a 50 gram sphere will be held in place from the underside of a surface coated with 25 millimeters of the grease sample | |
| 11 | 1739 | D | A drill that wobbles while the drill press is in operation may _____. | be bent | have a severely worn shank | have been placed in the chuck off center | all the above | |
| 11 | 1740 | B | Setting the relief valve opening pressure in a hydraulic system lower than the required operating pressure will result in _____. | accelerated action of the system components | overheating of the system | overspeeding of the hydraulic pump | extended system life | |
| 11 | 1741 | D | The high strength structural steel, such as Grade DH 32, when used as part of the main deck plating, is noted on the vessel's Certificate of Inspection. The information is important because _____. | the properties of DH 32 steel may interfere with the operation of some cathodic protection systems | the properties of DH 32 steel will affect the ability to properly ground electrical apparatus in the immediate area | any electrical equipment mounted on DH 32 steel plating is required to be insulated from the plating and internally grounded instead | the welding of any DH 32 steel requires special welding procedures | |
| 11 | 1742 | A | Which of the devices shown in the illustration should be used with a bridge gage? | A | B | C | D | GS-0073 |
| 11 | 1743 | A | Large size pipe can be easily rotated with a _____. | chain pipe wrench | monkey wrench | basin wrench | strong back | |
| 11 | 1744 | D | If a refrigeration compressor had developed a high suction pressure, the problem could be a result of _____. | a minor accumulation of air or noncondensable gases in the system | a leaking king valve | a clogged subcooler | liquid refrigerant flooding back from the cooling coil | |
| 11 | 1745 | C | If you have to completely grind a new point on a high speed drill, which of the following could happen if it is cooled in cold water immediately after grinding? | The edges will be dulled. | The 59° angle will be lost due to metal contraction. | Cracks may appear in the metal. | The cutting surface will become annealed by the cold water. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1746 | B | According to Coast Guard Regulations, if a pressure vessel, such as a ships service air tank, has defects which may impair its safety, the tank shall be _____. | hydrostatically tested at a pressure equal to the design pressure of the tank | hydrostatically tested at a pressure equal to 1 1/2 times the maximum allowable working pressure of the tank | pneumatically tested at a pressure equal to the working pressure of the tank | pneumatically tested at a pressure equal to 1 1/2 times the design pressure of the tank | |
| 11 | 1747 | C | A pure transducer utilizes _____. | integral action | rate action | proportional action | derivative action | |
| 11 | 1749 | A | Steam tables can be used to obtain the _____. | values for properties of water and steam vapor at various conditions | specific fuel consumption under steady steaming conditions | steam generating capacity of a vessel's boilers | mechanical efficiency of the main unit | |
| 11 | 1750 | D | The rate of heat transfer between the hot and cold fluids passing through a shell-and-tube type heat exchanger will _____. | remain constant along the tube's length | be greatest in a single pass counter flow heat exchanger | remain constant throughout the heat exchanger | vary from section to section throughout the heat exchanger | |
| 11 | 1751 | B | Which illustration correctly depicts a double bevel groove weld? | 4A | 3B | 4B | 6B | GS-0077 |
| 11 | 1752 | B | A tool used for measuring, or laying out angles is called a _____. | trammel | protractor | micrometer | caliper rule | |
| 11 | 1753 | B | A coolant is usually used when cutting metal in a power hacksaw to prevent the _____. | heat of friction | blade from overheating | blade from bending | cut from clogging | |
| 11 | 1754 | C | If a refrigeration compressor had a higher than normal suction pressure, the problem could be a result of _____. | a minor accumulation of air or noncondensable gases in the system | a constant loss of refrigerant | leaking compressor suction valves | a slightly higher than normal liquid level in the receiver | |
| 11 | 1755 | A | A pneumatic pressure tank is installed in a sanitary system to _____. | reduce excessive cycling of the sanitary pump | prevent the sanitary pump from losing suction | provide a higher pressure in the system then the pump can deliver | increase water flow through the system | |
| 11 | 1756 | D | One of the many troubles occurring with centrifugal pump shaft packing is the excessive wear on the rings nearest the packing gland, while the rings nearest the impeller remain in good condition. This wear may be caused by _____. | air entrained in the fluid pumped | packing rings rotating in the stuffing box | some packing rings being cut too short | improper adjustment of the gland nuts | |
| 11 | 1757 | B | While calibrating a bourdon tube pressure gage, all readings are found to be 10 pounds higher throughout its entire range. An adjustment should be made by _____. | increasing the sector to pivot point length | resetting the pointer on its shaft | decreasing the sector to pivot point length | increase the set screw length | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1758 | A | Return lines to hydraulic systems reservoirs should _____. | end the return line as far as practicable from the pump suction | end the return line as close to the pump suction as possible | provide a "P" or "S" trap in the return line as close to the reservoir as possible to trap sediment from entering the tank | connect the return lines directly to the cleanout and inspection plates to limit the number of openings on the reservoir | |
| 11 | 1759 | C | How often must a U.S. Coast Guard engineering license be renewed? | Annually | Every 3 years | Every 5 years | Every 10 years | |
| 11 | 1760 | C | The temperature differential occurring between the inlet temperature of the fluid to be cooled and the outlet temperature of the cooling medium in a shell-and-tube heat exchanger is greatest in which of the flow designs listed? | Cross | Counter | Parallel | Circular | |
| 11 | 1761 | C | The designation E7028-A1 is typically located on an arc welding electrode. Which of the listed letters and/or digits correctly identifies the welding position for which the electrode is recommended? | E | 70 | 2 | A1 | |
| 11 | 1762 | C | The center head of a combination square set is used to _____. | check degrees of angle | find right angles | locate the center on round stock | check the angle of thread cutting tools | |
| 11 | 1763 | B | A pipe or Stillson wrench should only be used on _____. | hexagonal objects | round objects | square objects | flat objects | |
| 11 | 1764 | B | High suction pressure to a refrigeration system compressor is caused by _____. | the expansion valve is insufficiently opened | the expansion valve being open too wide | the king valve is insufficiently open | a dirty dehydrator | |
| 11 | 1765 | A | Which material can be drilled at the highest speed? | Aluminum | Medium cast iron | Copper | High carbon steel | |
| 11 | 1766 | C | Which of the pressure vessels listed is required under Coast Guard Regulations (46 CFR) to be hydrostatically tested once every three year period? | Tubular heat exchangers | Hydraulic accumulators | Air receivers with no manholes or other inspection openings | Bulk storage tanks for refrigerated liquefied CO2 | |
| 11 | 1770 | C | The general purpose of a heat exchanger is to _____. | eliminate hot air from the condenser | maintain steady pressure in a system | heat, or cool one fluid by means of another fluid | reduce the engine room temperature in tropical climates | |
| 11 | 1771 | C | To ensure a good weld, post heating is required whenever an arc weld repair is made _____. | with a straight polarity rod | with a reverse polarity rod | to a cast component (casting) | to a part of the ship's main structure | |
| 11 | 1772 | A | To get an accurate measurement using a 12 inch machinist's steel rule, you should measure _____. | from the one inch graduation mark | from the zero end on the scale | on the narrow edge of the rule | on the unmarked edge of the rule | |
| 11 | 1773 | A | A pipe, or Stillson wrench functions best when _____. | the bite is taken midway up the jaw teeth | the wrench jaws are at the widest open setting | a maximum pull is exerted with one hand | an extension is placed on the wrench handle | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1774 | D | Which of the following problems could cause the high pressure cutout switch to shut down the compressor in a refrigeration system? | A shortage of liquid refrigerant. | Excessive frost on the evaporator. | Excessive condenser cooling water. | Insufficient condenser cooling water flow. | |
| 11 | 1775 | D | Which of the following procedures is used to bring a hole to finished size with high accuracy? | Coring | Boring | Broaching | Reaming | |
| 11 | 1776 | C | A crackling noise coming from a centrifugal pump casing is an indication of _____. | insufficient packing | an oversized lantern ring | excessive suction lift | reversed pump rotation | |
| 11 | 1777 | A | When a bourdon tube pressure gage is tested and found to be inaccurate, adjustment must be made to obtain the correct readings. The distance between the pointer spindle and the link connection to the sector gear will be changed when the _____. | pointer does not travel the correct distance as test weight is added | proportional amount of pointer travel for each weight added is correct, but the total reading is wrong | reading is correct only at the working pressure | readings are correct only at the minimum and maximum ends of the scale | |
| 11 | 1778 | A | A simple hydraulic system is made up of a pump, relief-valve, manual-control valve, and a linear actuator. If the piping connected to the actuator 'cap end' is accidentally crushed to one half of its diameter, this will result in _____. | slower actuator retraction speed | faster actuator retraction speed | faster actuator extension speed | all of the above | GS-0107 |
| 11 | 1779 | A | The heat required to raise the temperature of a unit mass of a substance one degree is called its _____. | specific heat capacity | latent heat | entropy | adiabatic heat | |
| 11 | 1780 | D | Which of the following statements represents a disadvantage associated with a spool-type, solenoid direct operating, directional control valves? | Back pressure on the outlet line must be steady to drain the lower spool chamber. | The valve sealing surface is often damaged through excessive throttling action. | The spool does not have hydro cushion capabilities to handle shock. | Close fitting spools occasionally stick due to the accumulation of hydraulic oil residues. | |
| 11 | 1781 | A | The welding symbol reference line using the inverted "V", indicates _____. | a "V" groove weld is to be made | the arrow side of the weld is to be surface finished | the opposite side of the weld is to be surface finished | the first pass of the weld is to be back gouged | GS-0076 |
| 11 | 1782 | A | The tool shown in the illustration is called a _____. | center gage | thread gage | crotch center | drill gage | GS-0072 |
| 11 | 1783 | B | Needle nosed pliers are best used to _____. | strip insulation from electric wire or cable | grasp items positioned in tight places | cut recessed cotter pins | tighten electrical wire clamps | |
| 11 | 1784 | D | If the water failure switch should fail to shut down the refrigeration compressor, the refrigerant pressure will build up in the high pressure side of the system to the point where the _____. | compressor discharge valves would be damaged | condenser tubes would rupture | system relief valve would open | high pressure cutout switch would function | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1785 | C | Which of the following surfaces will not develop a hydrodynamic film where motion is accompanied by any appreciable loading? | Curved surfaces | Flat nonparallel surfaces | Flat inflexible parallel surfaces | All of the above surfaces will sustain a hydrodynamic film while in motion under a load | |
| 11 | 1786 | B | If you heard a 'crackling' noise in a centrifugal pump, the most probable cause of the problem would be _____. | insufficient speed | cavitation | excess discharge pressure | excessive net positive suction head | |
| 11 | 1787 | A | A proportional band, or range adjustment of a bourdon tube pressure gage is accomplished by _____. | adjusting the effective moment arm length between the bourdon tube and the quadrant gear fulcrum | adjusting the pointer position relative to the shaft on which it is mounted | changing out the pointer pinion | flattening the cross-section of the bourdon tube | |
| 11 | 1788 | B | An electric motor driven (torque producing) remotely controlled, valve actuator is installed on the high sea suction with the 'red' indicator light illuminated. When the 'open' push button is depressed, the 'green' indicator light comes on momentarily and then goes out, without any appreciable movement of the valve. Which of the following actions should be carried out? | Alternately depress the 'close' and 'open' buttons to get the valve open. | Manually engage the actuator handwheel and 'break' the valve disk from its seat, then push the 'open' button. | Secure power, tag out system and make repairs because the valve stem has sheared. | Secure the breaker to this device, then switch the motor leads and push the 'open' button. | |
| 11 | 1789 | B | The unlicensed crew requirements listed on the Certificate of Inspection reads as follows: 3 firemen/watertenders; 3 oilers. The vessel is about to depart on a foreign voyage, and has in the crew: 3 firemen/watertenders, 2 oilers, and one man, whose | call the port captain and request another oiler | sail because your crew requirements are filled | request a waiver from the Coast Guard | check if any of the firemen have enough time for an oiler's endorsement | |
| 11 | 1790 | B | Which of the following problems will occur if the internal drain at either end of a hydraulic, two-way, spool-type directional control valve cylinder were to become plugged? | The reservoir would become vapor bound. | The valve would be placed in hydraulic lock. | The spring loaded relief ports would open. | The buffering chambers would be unable to function. | |
| 11 | 1792 | B | Which of the devices listed can be used to measure any angle on a blueprint or drawing? | Vernier | Protractor | Planimeter | Compass | |
| 11 | 1794 | B | An increasing head pressure in a refrigeration system, without any corresponding change in the cooling water inlet temperature, would probably be caused by _____. | restriction in refrigerant piping | air and noncondensable gases in the condenser | water in the refrigerant | flooding back of liquid refrigerant from the evaporator | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1795 | A | In the illustration shown, the operating piston "H" in the valve has a larger surface area than the main valve disc to allow _____. | control action to be accomplished with a relatively small amount of high pressure steam | control action to be accomplished by a relatively small amount of downstream low pressure steam | complete closing of the main valve when pressure adjustments are made | free movement of the auxiliary valve "B" during a change in operating pressure | GS-0044 |
| 11 | 1797 | B | The zero set point adjustment of a bourdon tube pressure gage is accomplished by _____. | adjusting the effective moment arm length between the bourdon tube and the quadrant gear fulcrum | adjusting the pointer position relative to the shaft on which it is mounted | adjusting the pointer position by bending the free end of the pointer | flattening the cross section of the bourdon tube | |
| 11 | 1798 | B | Which of the conditions listed will cause the hydraulic pump relief valve to remain open during the operation of the system? | Bleeding the gas charge from the accumulator. | Reducing the relief valve spring compression. | Removing the restrictor valve check-valve spring. | Opening the restrictor valve variable orifice by one third of a turn. | GS-0106 |
| 11 | 1799 | C | How many BTU's must be added to one pound of water at 32° F to raise the temperature to 212° F? | 16 BTU's | 144 BTU's | 180 BTU's | 970 BTU's | |
| 11 | 1802 | B | When the axis of the pinion gear is parallel to the center of the bevel gear, similar to right angle drive gear shown in the illustration the drive is identified as _____. | hypoid type | spiral bevel type | zerol type | straight-tooth bevel type | GS-0128 |
| 11 | 1803 | B | If you were uncertain as to what type of gasket material to install in a pipeline, you should _____. | turn the old gasket over and install it again | check the ship's plans or manufacturer's instructions | leave the old gasket in and cover it with Permatex | make up the joint without a gasket until you can check with the chief | |
| 11 | 1804 | A | If the refrigeration compressor was developing higher than normal discharge pressure, this could be a result of _____. | air or noncondensable gases in the system | leaking discharge valves | leaking suction valves | liquid refrigerant flooding back from the cooling coil | |
| 11 | 1805 | C | The tail shaft of an ocean going vessel is usually supported by the _____. | spring bearings | tail bearings | stern tube bearings | propeller bearings | |
| 11 | 1806 | D | Frequent bearing replacement in a centrifugal pump, due to rapid bearing wear, can be a result of _____. | leakage through the pump stuffing box gland | high net positive suction head | long periods of cavitation | misalignment | |
| 11 | 1807 | D | Which of the following control modes is generally not used by itself? | Two position action | Proportional action | Integral action | Derivative action | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1808 | D | During the repair and overhaul of the pump relief valve, used in a hydraulic system, the set point was reduced by 100 psi. Which of the following statements describes the result of the set point being lowered? | The pump discharge pressure will remain at the same pressure prior to the relief valve being repaired. | The solenoid controlled, three-position, spring centered control valve response will be quicker. | The fluid viscosity will increase during operation. | The movement of any system actuator will now be slower. | |
| 11 | 1809 | D | A drop test is carried out on a sample of grease by _____. | allowing a suspended cone to drop into a sample of grease for five seconds and determining the depth of penetration | dropping a one ounce grease sample from one meter, and observing the resulting spread pattern, uniformity of thickness, and consistency of texture | allowing a sample of grease to drop into a cup at ambient temperature and determining the time necessary for this to occur | determining the temperature at which a grease sample liquefies when heated and drops from a cup through a bottom orifice | |
| 11 | 1810 | D | Cavitation in a hydraulic pump is indicated by noisy pump operation and can be caused by a/an _____. | high fluid level in the reservoir | hydraulic fluid low floc point | excessive discharge pressure from the pump | clogged suction strainer in the reservoir | |
| 11 | 1811 | D | When welding mild steel with a shielded metal-arc electrode, and getting only shallow penetration, you should _____. | use a lower current | speed up your electrode travel | use larger electrodes | increase the amperage | |
| 11 | 1812 | C | The three basic parts of any eductor are the nozzle, the suction chamber, and the _____. | injector | compressor | diffuser | siphon | |
| 11 | 1813 | A | Which of the following statements is true concerning the hydrodynamic wedge developed by lubricating oil? | The wedge-shaped oil film's load carrying capacity is determined by its length and thickness. | The load carrying capacity is inversely proportional to the velocity of the fluid. | Pressures throughout the oil wedge are uniform. | The load carrying capacity is directly proportional to the thickness of the oil film. | |
| 11 | 1814 | C | If the head pressure of a reciprocating refrigeration compressor is excessive, _____. | the relief valve should open before the high pressure cutout | the relief valve should open and allow the excess refrigerant to flow to the receiver | the high pressure cutout switch should operate before the relief valve opens | you should close in on the suction valve | |
| 11 | 1816 | A | Pitting in the suction areas of a centrifugal pump bronze impeller is usually caused by _____. | cavitation | electrolysis | abrasion | corrosion | |
| 11 | 1817 | D | The control mode in which the final control element is moved from one of two fixed positions to the other is known as _____. | dead band action | neutral zone action | range | on-off action | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1818 | C | Radial thrust developed in high pressure centrifugal pumps can be eliminated by the use of _____. | single volutes | a single diffusion nozzle | a diffusion ring | a modified Kingsbury thrust bearing | |
| 11 | 1819 | D | A 'Report of Marine Accident, Injury or Death', Coast Guard form 2692, must be filed with the Officer in Charge, Marine Inspection when a shipboard casualty results in _____. | the incapacitation of an injured crewman | the death of a yard or harbor worker in the engine room | the incapacitation of a yard worker due to a boiler flareback | All of the above. | |
| 11 | 1821 | C | The welding process using an electric arc developed between a flux covered electrode and the metal being welded is known as _____. | flux cored arc welding | resistance spot welding | shielded metal arc welding | submerged arc welding | |
| 11 | 1822 | B | Devices which utilize the rapid flow of a fluid to entrain another fluid and thereby move it from one place to another are called _____. | mixed flow pumps | jet pumps | volute pumps | centrifugal pumps | |
| 11 | 1823 | D | Which of the following statements indicates compliance with Coast Guard Regulations (46 CFR Part 56) concerning a vessel's bilge system? | All bilge manifold suctions shall be capable of being locally controlled from above the floor plates. | The system must be capable of operation under all practicable conditions after a casualty, whether the vessel is upright or listed. | Peak tanks, chain lockers, and decks over peak tanks may be drained by eductors, ejectors, or hand pumps. | All of the above. | |
| 11 | 1824 | A | One cause of high head pressure occurring in a refrigeration system can be _____. | insufficient cooling water flow to the condenser | a low refrigerant charge in the system | the liquid valve is open too much | high evaporator superheat | |
| 11 | 1825 | B | In the illustration, line "J" is used to depict a _____? | hidden line | cutting plane line | outline | centerline | GS-0006 |
| 11 | 1826 | A | The usual symptoms of cavitation in a centrifugal pump is _____. | crackling noise and vibration | an increase in discharge pressure | an increase in suction pressure | lifting of the relief valve | |
| 11 | 1827 | C | A control action which produces a corrective signal relative to the speed at which the controlled variable is changing is known as _____. | reset action | integral action | derivative action | proportional action | |
| 11 | 1828 | D | The diffusion ring installed in many high pressure centrifugal pumps, such as feed pumps, _____. | eliminates axial thrust | imparts kinetic energy to the water passing through the pump | alleviates the need for a double suction impeller | eliminates radial thrust to the impeller | |
| 11 | 1830 | C | Air trapped in the hydraulic fluid of a steering system may be indicated by _____. | the steering pumps overspeeding | a jammed open relief valve | a constantly occurring improper rudder response | excessive ram pressure | |
| 11 | 1831 | A | Setting up a welding job, where the work is the positive pole and the electrode is the negative pole for the arc, is known as a/an _____. | straight polarity welding circuit | inert-arc welding circuit | shielded-arc welding circuit | reverse polarity welding circuit | |
| 11 | 1832 | A | The steam supplied to operate a steam driven reciprocating pump is usually obtained from the _____. | desuperheated steam line via a reducing station | auxiliary exhaust line | main steam line via a reducing station | contaminated steam generator | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1833 | C | Which of the following statements concerning the operation of steam pressure reducing valves is correct? | Reducing station relief valves must be lifted by hand at least once a watch. | The cut out valve at the outlet of the reducing valve should be throttled when in operation. | Reducing valves should be warmed-up and drained before they are adjusted. | Reducing valves are absolutely reliable and require no routine maintenance. | |
| 11 | 1834 | C | Which of the problems listed would cause the discharge temperature of an R-12 refrigeration compressor to increase? | Thermal expansion valve frozen open. | Suction gas heat exchanger bypassed. | Condenser clogged or fouled. | High pressure cutout switch inoperative. | |
| 11 | 1836 | A | If it were necessary for you to frequently replace the bearings of the condensate pump, the trouble could be the result of _____. | misalignment | a plugged water seal line | salt water contamination of the condensate | worn wearing rings | |
| 11 | 1837 | A | A control action which produces a corrective signal relative to the length of time the controlled variable has been away from the set point, is known as _____. | integral action | proportional action | rate action | derivative action | |
| 11 | 1838 | D | With regards to pilot controlled pneumatic regulating valves, the spring force of the regulating valve should be adjusted to _____. | maintain the required system set point | maintain the value of the manipulated variable | maintain the output steam pressure of the system | the operating range of the pilot output loading pressure | GS-0051 |
| 11 | 1839 | A | When renewing only a portion of an entire hull plate with an insert plate, which of the listed guidelines should be followed? | The insert plate should cover at least one full frame space. | The lines of new welding should, where possible, lie in existing lines of welding. | The corners of the insert plate should be square. | The insert plate should be at least 9/16 thick. | |
| 11 | 1840 | A | An O-ring seal in a hydraulic system will begin to leak when it has lost its interference fit due to _____. | compression set or wear | low fluid pressure | high fluid flow | low fluid temperature | |
| 11 | 1841 | C | When arc welding, the flux that covers the electrode is used to _____. | control penetration | reduce metal fatigue and warpage | reduce oxidation | increase heat transfer | |
| 11 | 1842 | D | Some heavy duty screwdrivers are made with a square shank to _____. | allow it to be used as a pry bar | prevent the shank from bending | permit striking with a hammer | allow turning with a wrench | |
| 11 | 1843 | B | When drilling holes in metal, which of the materials listed does not have to be lubricated? | Tool steel | Cast iron | Mild steel | Cast steel | |
| 11 | 1844 | B | Low compressor head pressure in a refrigeration system can be caused by _____. | insufficient condenser cooling water | excessive condenser cooling water | air in the refrigeration system | excessive refrigerant in the system | |
| 11 | 1845 | C | The device used to retain the packing, that keeps water from entering the ship through the opening where the propeller shaft passes through the hull, is called a _____. | packing nut | hawsepipe | stuffing box | seal cage | |
| 11 | 1847 | B | The control mode where the position of the final control element has a linear relationship with the position or value of the controlled variable, is known as _____. | two position control | proportion control | reset control | rate control | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 1848 | B | One function of a replenishing pump installed in many pressure-closed hydraulic systems, is to supply fluid flow to _____. | the reservoir | a servo control circuit | position a manually controlled valve | the main system accumulators under all operating conditions | |
| 11 | 1849 | C | The duties of a chief engineer upon taking charge of the department include _____. | preparing a list of engine department personnel for the Master's signature | taking a complete personal inventory of all engine room spare parts | determining if any vital engine room equipment is inoperative | obtaining a valid Certification of Inspection from the Coast Guard | |
| 11 | 1850 | D | What type of pump is shown in the illustration? | Double screw rotary pump with suction at the center for hydraulic balance | Triple screw rotary pump with suction at the center for hydraulic balance | Double screw rotary pump with end suction | Triple screw rotary pump with end suction | GS-0144 |
| 11 | 1851 | A | Coast Guard regulations for small passenger vessels of less than 100 gross tons require dry-docking or hauling out at intervals not to exceed 18 months if operated in _____. | saltwater a total of more than 9 months in the 18 month period since it was last dry-docked or hauled out | fresh water a total of more than 9 months in the 18 month period since it was last dry-docked or hauled out | saltwater a total of more than 6 months in the 18 month period since it was last dry-docked or hauled out | saltwater continuously for 18 months | |
| 11 | 1852 | D | The illustrated system is used as a/an _____. | bilge water conditioner | sludge processor | oily-water conditioner | oily-water separator | GS-0113 |
| 11 | 1853 | B | Small passenger vessels of less than 100 gross tons shall be dry-docked or hauled out at intervals not to exceed 60 months if it operates _____. | 6 months in fresh water and 6 months in salt water | exclusively in fresh water | in saltwater a total of 9 months in the 18 months since last dry-dock period | in saltwater 6 months or less within each 12 months period since dry-docking | |
| 11 | 1854 | C | A low refrigeration compressor discharge pressure can be caused by _____. | warm food in the refrigerator | wasted zinc plates in the condenser | leaky compressor discharge valves | faulty door gaskets on the refrigerator | |
| 11 | 1855 | D | An offset screwdriver is best used for _____. | tightening Allen head screws only | tightening or loosening 'offset type' machine screws | driving self-tapping screws only | screws you cannot reach with a straight shaft screwdriver | |
| 11 | 1856 | A | If the shaft packing for a centrifugal pump requires replacement more frequently than normal, a possible cause may be _____. | worn bearings | worn mechanical seals | a flooded pump suction | wrong direction of pump rotation | |
| 11 | 1857 | C | The ratio of output response to a specified change in the input is known as _____. | primary feedback | deviation | sensitivity | dead band | |
| 11 | 1858 | D | To prevent air pockets from forming in a centrifugal pump suction line installed angled from normal, any gate valve should be installed with the _____. | bonnet above suction pipe centerline | centerline above the suction pipe centerline | stem pointing upward at right angles to the pipe | stem horizontal or pointing downward below the pipe | |
| 11 | 1859 | D | The bleeder plug, or docking plug located on a motor vessel double bottom tank is used to _____. | indicate when the tank is pressed up | provide a secondary means of tank sounding | vent air from the tank when bunkering | empty the tank when in dry-dock | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1860 | D | The blade for a power hacksaw should be installed with the teeth _____. | pointing either toward or away from the motor end of the machine | pointing away from the motor end of the machine | pointing toward the motor if using a 4 or 6 tooth blade and away from the motor if using a 10 or 14 tooth blade | pointing toward the motor end of the machine | |
| 11 | 1861 | A | Which of the following statements is correct concerning welding sequences? | First, weld the joints that will tend to contract the most. | First, weld attachments which will restrain points of maximum contraction. | Make a weld across an unwelded plate joint in adjoining members. | Each successive welded part should be restrained to lock in stresses and avoid cracking. | |
| 11 | 1862 | D | Which of the listed types of steam end piston rod packing should be used in a steam reciprocating pump? | Reinforced rubber packing | Wire impregnated high temperature packing | Low pressure braided asbestos packing | High pressure graphite packing | |
| 11 | 1863 | A | When drilling holes larger than 1/2 inch, drilling a smaller hole first is a good practice. This is called a pilot hole, and the pilot drill should have a diameter _____. | slightly larger than the web thickness of the larger drill | equal to at least 1/2 the diameter of the larger drill | smaller than the dead center of chisel edge of the larger drill | small enough to ensure the maximum cut by the larger drill | |
| 11 | 1864 | C | A pressure drop through the refrigerant liquid line may cause _____. | solenoid valve to seize | compressor to hunt | formation of flash gas in the liquid line | expansion valve to freeze open | |
| 11 | 1866 | C | Heavy wear in a particular area of the inner circumference of a packing ring may be caused by _____. | a high suction head | rotating rings | badly worn bearings | a loose stuffing box gland | |
| 11 | 1867 | D | The steady state difference between the control point and the value of the controlled variable, corresponding with the set point, is known as _____. | dead band | control point | deviation | offset | |
| 11 | 1868 | D | With regards to the viscosity of lube oil in an operating system under normal load, the highest viscosity should occur _____. | just prior to entering the lube oil cooler | at the lube oil cooler outlet | at the main lube oil pump discharge | at the narrowest point of the hydrodynamic wedge | |
| 11 | 1869 | D | A Coast Guard issued engineer's license may be suspended or revoked for _____. | the violation of a narcotic drug law | the commission of an act of misconduct | the violation of federal water pollution law | all of the above | |
| 11 | 1871 | D | Which of the factors listed governs the intensity of heat required for any given welding job? | The strength of the bond only. | The strength of the bond and the welding process being used. | The type of metal being joined only. | The type of metal being joined and the welding process being used. | |
| 11 | 1872 | A | Which of the listed pumps is NOT a positive displacement pump? | Centrifugal | Reciprocating | Gear | Rotary | |
| 11 | 1873 | C | In the illustration, the reference to 3/4"R indicates that the _____. | hole has a 3/4" depth | hole has a 3/4" diameter | hole has a 3/4" radius | notch has a 3/4" width | GS-0021 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1874 | D | If the thermal bulb of an expansion valve is incorrectly placed at the center of the coil instead of the end, it will _____. | increase the capacity of the coil | increase the superheat at the bulb | deliver more refrigerant to the coil | decrease the capacity of the coil | |
| 11 | 1875 | B | A grinding wheel is trued with a _____. | lathe tool | dressing tool | garnet stone | round file | |
| 11 | 1876 | A | When performing a hydrostatic test on a low pressure evaporator to determine the source of suspected air leaks you should use _____. | fresh water at or above the ambient temperature | circulated cold fresh water, while maintaining all normal unit operating pressures | air and a soap solution to test all joints | phosphorescent hydrazine bisodium solution visible under a black light source | |
| 11 | 1877 | A | The quantity or condition which is measured and controlled is known as the _____. | controlled variable | manipulated variable | set point | control point | |
| 11 | 1878 | A | While operating a two-stage flash-type evaporator, designed to operate in sea water of 70° F, the current seawater temperature is 50° F, while the salt water feed temperature is maintained at 170° F. The three-way solenoid valve trips, directing the distillate pump discharge to the bilge. Which of the following conditions is the probable cause for this occurrence? | Excessive and violent flashing in each stage. | Insufficient vacuum developed as a result of the sea temperature. | Excessive amount of feedwater being supplied to the first stage. | Insufficient brine density being maintained in the second stage. | |
| 11 | 1879 | D | What is the purpose of heat treating steel? | Develop ductility | Improve machining qualities | Relieve stresses | All of the above | |
| 11 | 1880 | D | The major source of chemical contaminants in hydraulic fluid is _____. | microscopic steel shavings | abrasive waste | anti-oxidant compounds | oxidation by-products | |
| 11 | 1881 | D | Traps in plumbing drains are designed to help prevent _____. | drain noises in the living quarters | drains clogging at the toilets | air pockets in the sewer lines | escape of odors into the living quarters | |
| 11 | 1882 | A | The purpose of the crescent found in the illustrated internal gear pump is to _____. | cause liquid to be trapped in between the gear spaces as the gear passes the crescent | maintain tolerances between the drive and internal gears | remove entrained air | prevent flow pulsations on the discharge side | GS-0127 |
| 11 | 1883 | B | The amount of fluid friction or internal friction inherent in a mineral lubricating oil is reflected as a measure of its _____. | specific gravity | viscosity | S.E. number | hydrolytic stability | |
| 11 | 1884 | C | Thermostatic expansion valves can be adjusted for _____. | suction pressure only | head pressure only | superheat only | suction pressure and box temperature | |
| 11 | 1885 | A | A grease gun is generally used to lubricate a _____. | condensate pump ball bearing | generator crosshead bearing | main turbine bearing | diesel engine wrist pin bearing | |
| 11 | 1886 | C | An internal bypass is provided on some hydraulic system suction strainers to help reduce the possibility of _____. | aeration of the oil | contamination of the oil | pump cavitation | spongy actuator movements | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1887 | D | The range of values through which the input can be varied without initiating an output response is known as _____. | deviation | offset | sensitivity | dead band | |
| 11 | 1888 | B | Coast Guard Regulations (46 CFR) require fresh water tank vents which are open to the machinery space to terminate above the deep load waterline, unless the _____. | vents are fitted with suitable mechanical closures | tanks have no boundaries in common with the hull | vents are fitted with ball float check valves or an equivalent automatic closure device | tanks are fitted with suitable pressure-vacuum relief valves | |
| 11 | 1889 | B | If an anchor windlass has been idle for some time, you should _____. | repack all valve stems | lubricate it prior to use | replace the foundation bolts | balance the warping heads | |
| 11 | 1890 | A | Water allowed to accumulate in the hydraulic system oil will cause an oxidation process producing by-products which are normally _____. | gums, acids, and varnishes | removed by cellulose type filters | neutralized by oil additives | not removed by absorbent filters | |
| 11 | 1891 | C | It is possible to mount a double suction centrifugal pump impeller with the vanes facing in the wrong direction. This would cause the pump _____. | head capacity to improve | discharge to be reversed | efficiency to decrease | slippage to decrease | |
| 11 | 1892 | C | The purpose of chill shocking an evaporator is to _____. | prepare for a hydrostatic test | stress relieve the tubes | break loose scale deposits formed on the tubes | test for leaks in the tubes | |
| 11 | 1893 | C | If the speed of a drill is too great, the drill will _____. | cut faster | cut slower | rapidly dull | not cut | |
| 11 | 1894 | B | A thermostatic expansion valve is properly controlling evaporator superheat. Adjusting this valve to lower the superheat will result in a/an _____. | evaporator pressure decrease | evaporator coil over-feed | evaporator capacity increase | expansion valve diaphragm rupture | |
| 11 | 1895 | B | Insulation on deck steam piping must be installed securely because _____. | loose insulation contributes to steam leaks | deck steam lines are subject to vibration from water hammer | steam driven machinery cannot run with loose insulation | loose insulation prevents normal pipe expansion | |
| 11 | 1897 | B | The value of the controlled variable, which under any fixed set of conditions the automatic controller operates to maintain, is known as _____. | set point | control point | deviation | offset | |
| 11 | 1898 | D | Air compressor receivers should be 'blown down' at least _____. | yearly | quarterly | monthly | daily | |
| 11 | 1900 | A | Hydraulic machinery failures are commonly caused by misalignment of the system components and by _____. | hydraulic fluid contamination | excessive fluid friction | turbulent fluid flow | fluid pressure surges | |
| 11 | 1901 | B | Which of the problems listed could happen if you attempted to force open a valve 'frozen' in position by using a wrench on the hand wheel? | Over compression of the packing | Bending of the valve stem | Rapid corrosion of the valve disc | Cracking of gaskets upstream of the valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1902 | D | A double suction centrifugal pump impeller has been installed in the reverse direction, and will _____. | have a greater head capacity | operate with increased impeller efficiency | discharge through the suction side of the pump casing | require more power to turn the shaft | |
| 11 | 1903 | B | If a centrifugal pump were continually operated with the discharge valve closed, the _____. | motor controller overload would open | pump would eventually overheat | relief valve would continuously cycle open | motor would overheat | |
| 11 | 1904 | C | When you adjust a thermostatic expansion valve _____. | refrigerant must be bled off the sensing line before adjustments are made | all refrigerant must be pumped into the receiver before adjustments are made | time must be allowed for conditions to stabilize in the evaporator before further adjustments are made | all refrigerant must be routed through the dehydrator while changing the superheat setting | |
| 11 | 1905 | C | If water were a semisolid, the linear distance a propeller would advance in one revolution is the _____. | blade thickness fraction | mean width ratio | pitch | skew back factor | |
| 11 | 1906 | B | To ensure adequate lubrication and to prevent a high operating temperature, the recommended amount of grease injected into a ball or roller bearing is approximately _____. | 10-25% of the original void space in the bearing | 25-50% of the original void space in the bearing | 50-75% of the original void space in the bearing | 75-95% of the original void space in the bearing | |
| 11 | 1907 | A | When the pressure applied to a Bourdon tube-type pressure gage is reduced to atmospheric pressure, the tube will begin to 'bend' towards the center of arc. Small variations develop preventing the tube from returning to its exact original shape due to the | hysteresis | compression | homiostatious deformation | gas eddys | |
| 11 | 1908 | A | The shaft sleeves have recently been replaced on a centrifugal salt water service pump. The packing gland is now drawn tightly up against the casing. Despite the use of standard procedures to tighten the packing gland, water continues to pour out along the shaft. The probable cause for this situation is that the _____. | the shaft sleeve "O" ring seals were not installed | suction head pressure has become excessive | the sealing water flow to the stuffing box is blocked | only two sections of the lantern ring were installed | |
| 11 | 1909 | A | Your Coast Guard engineer's license _____. | can be suspended or revoked upon satisfactory proof of negligence | must be renewed every 2 years | serves in lieu of a U. S. Passport | entitles you to be master of uninspected motor vessels under 100 tons | |
| 11 | 1910 | C | Hydraulic machinery failures are commonly caused by contamination of the hydraulic fluid and _____. | fluid friction | fluid turbulence | component misalignment | pressure surges | |
| 11 | 1911 | D | A weld with triangular cross sections is used to join two surfaces at right angles to each other, and is called a _____. | seam weld | plug weld | tack weld | fillet weld | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1913 | B | Before drilling a hole in a piece of metal, the location of the hole center should be _____. | marked with chalk | center punched | scribed | blued | |
| 11 | 1914 | C | The refrigeration system low pressure cutout switch is actuated by _____. | condenser pressure | a sensing bulb at the tail coil of the evaporator | pressure changes in the suction line | failure of the king solenoid valve | |
| 11 | 1915 | A | The movement of steam piping, as a result of changes in temperature, is compensated for by the use of _____. | expansion joints | flexitallic gaskets | rigid brackets | union rings | |
| 11 | 1916 | B | Traps at plumbing drain connections prevent _____. | system clogging | escape of odors | air pockets | drain noises | |
| 11 | 1917 | B | Devices, such as a pressure gage, that are subject to continuous expansion and contraction are affected by hysteresis. This is a natural process that _____. | allows a material to return to its exact original shape | permits a resilient material to return to its almost original shape | allows a resilient material to resist permanent deformation | is directly related to a material's elastic limit | |
| 11 | 1918 | C | In an automated control system, which of the following statements would apply to any type of closed loop system? | The manipulated variables are adjusted only from the input demand signals without monitoring the outlet conditions or variables. | Another term commonly used in conjunction with this type of system is 'feed forward.' | The controlled variable must always deviate from its set point before any corrective action is initiated by the controller. | In order for a system to fall under the category of closed loop control, there should be no adjustments required to be made manually by the operator. | |
| 11 | 1919 | D | A knocking sound emitted from an unloaded air compressor is probably caused by _____. | damaged intake valves | excessively tight mounting bolts | insufficient cylinder lubrication | a loose piston | |
| 11 | 1920 | A | Which of the following statements is true concerning low pressure distilling units? | High conductivity of the distillate indicates distillate salinity is excessive. | Increasing the absolute pressure of the shell will increase the distiller's capacity. | Mesh separators are used in evaporators to filter the distillate. | Reducing the brine density will reduce the heat lost overboard. | |
| 11 | 1921 | B | If the high pressure port became plugged in the spring-loaded, internal pilot, self-operated, steam pressure reducing valve illustrated, which of the following problems would probably occur? | The main valve would open wide and deliver high pressure steam. | The opening of the auxiliary valve "D" would have no effect on the positioning of the piston 'H.' | Main valve "B" would be opened by spring 'A.' | Spring "F" would open valve "D" causing spring "A" to compress. | GS-0044 |
| 11 | 1923 | D | A piece missing from one blade of a four-bladed propeller could result in _____. | accelerated stern bearing wear | excessive shaft vibrations | unusual noises | all of the above | |
| 11 | 1924 | C | The sensing line for the low pressure cutout switch to a refrigeration system is located _____. | in the chill box | before the receiver | on the suction side of the compressor | on the discharge side of the compressor | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1925 | A | A taper tap is correctly used for _____. | starting threads in a hole | producing tapered threads in a hole | deepening the extent of existing threads in a hole | finishing the threading operation in a blind hole | |
| 11 | 1926 | A | How many hidden lines are shown in the right side (end) view of the drawing illustrated? | None | Two | Four | Six | GS-0021 |
| 11 | 1927 | D | Which type of screwdriver listed would have a 'Keystone' type vertical cross-sectional tip? | Torx | Phillips | Allen | Standard | |
| 11 | 1930 | D | In the production of freshwater from seawater through a process of heating and cooling, the cooling phase of production is usually called _____. | evaporation | distillation | dehydration | condensation | |
| 11 | 1931 | B | Which of the listed metals can usually be drilled without lubrication? | Steel | Brass | Monel | Tungsten | |
| 11 | 1933 | C | All straight shanked twist drills must be mounted or held in a _____. | drill socket | tapered sleeve | drill chuck | morse sleeve | |
| 11 | 1934 | A | The low pressure cutout switch used on a refrigeration system compressor is set to cut in at approximately 5 psig and cutout at _____. | 0.5 psig | 5 psig | 15 psig | 20 psig | |
| 11 | 1935 | C | Excessive propeller vibration may occur as a result of _____. | operating at low speed | high water pressure under the hull | cavitation | operating in deep river channels | |
| 11 | 1936 | D | Which of the problems listed will occur if diaphragm "E", in the illustration shown, develops a significantly large hole? | The auxiliary valve will open wider due to the action of spring 'F.' | The main valve "B" will open wider compressing the main valve spring 'A.' | Downstream pressure will be greater than the desired setting. | All of the above. | GS-0044 |
| 11 | 1937 | D | Small passenger vessel of less than 100 gross tons shall be dry-docked or hauled out at intervals not to exceed 36 months if it is operated in saltwater a total of_____. | more than 9 months in the last 18 month period | less than 9 months in each of the last 12 months | 30 months in the last 36 months since dry-docking or haul out | 6 months or less in each 12 month period since it was last dry-docked or hauled out | |
| 11 | 1938 | B | Information from a data-logger can be helpful in determining the long term probability of machinery failure if you _____. | evaluate only the latest logged data as this is the best indication of plant status | evaluate a series of readings to obtain operating trends | monitor off limit conditions only when announced by an audible and visual signal | secure the machine under relatively steady state conditions | |
| 11 | 1939 | C | A Coast Guard engineer's license can be suspended or revoked for _____. | failure to attend safety meetings | having your wages garnished | being responsible for an oil spill ashore | conviction of any misdemeanor ashore | |
| 11 | 1940 | C | The process of boiling seawater in order to separate it into freshwater vapor and brine is usually defined as _____. | dehydration | condensation | evaporation | dissolution | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1941 | D | Which of the following statements is true concerning the shaft seal shown in the illustration? | The splash guard remains stationary in relation to the rotating shaft. | The face, seat, and sealing strip may be repaired or replaced in an emergency situation without drawing the shaft or dry-docking. | The entire assembly is of the split-type construction. | All of the above. | GS-0135 |
| 11 | 1943 | B | If the cutting edges of a drill are ground at different angles, the _____. | drill will not cut | hole will be oversized | hole will be undersized | drill will seize immediately | |
| 11 | 1944 | C | The purpose of the low pressure cutout switch is to _____. | maintain liquid refrigerant at the suction of the compressor | maintain a preset suction pressure to the compressor | start and stop the compressor at preset operating pressures | operate at minimum efficiency | |
| 11 | 1946 | B | Failure of the steam pressure reducing valve to deliver proper steam pressure could be caused by _____. | frictional losses downstream of the valve | low pressure in the steam supply to the valve | reduced steam pressure acting on the underside of the valve diaphragm | high pressure steam acting upon the auxiliary valve | GS-0044 |
| 11 | 1947 | A | Partially clogged or scored nozzles in a two stage air ejector unit of a flash distilling plant could result in a _____. | fluctuating vacuum in the flash chamber | flooded seawater feed heater shell | high water level in the air ejector after condenser | malfunctioning check valve in the air ejector discharge | |
| 11 | 1948 | D | In modern ship construction, high tensile steel (HTS) may be permitted in _____. | the sheer strake | the keel strake | the margin strake | all of the above | |
| 11 | 1949 | D | A check run on a hydraulic anchor windlass during long periods of inactivity should be carried out to _____. | prevent chemical breakdown of hydraulic fluid | remove condensation from the fluid reservoir | prevent the anchor from seizing in the hawsepipe | renew the internal coating of lubrication | |
| 11 | 1952 | C | If two centrifugal pumps, driven by two independent electric motors, operating at unequal speeds are discharging an inflammable liquid through a common discharge line, the higher speed pump may cause the slower pump to _____. | stop | turn backward | overheat | overspeed the driving end | |
| 11 | 1953 | B | The dimension of the thinnest hydrodynamic film developed within a full journal bearing, when all other factors remain constant, depends upon the _____. | pour point of the lubricant | fluidity of the lubricant | dielectric strength of the lubricant | interfacial tension of the lubricant | |
| 11 | 1954 | C | The purpose of the refrigeration system low pressure cutout switch is to _____. | protect the compressor from liquid flood back | protect the compressor from low discharge pressure | start and stop the compressor upon system demand | start the compressor after a drop in the evaporator pressure | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1955 | B | Mechanical shaft seals used on water service pumps require lubrication of the seal faces to minimize deposits of foreign matter on those surfaces. Which of the following pressures and lubricants are required? | Water under negative pressure. | Water under positive pressure. | Oil under positive pressure. | Oil under negative pressure. | |
| 11 | 1956 | B | Which of the following conditions can develop if a valve with a badly scored valve stem is repacked? | The valve disk will crack. | Leaking and premature failure of the packing. | The valve disk will become eroded. | The valve seat will sustain damage due to fretting. | |
| 11 | 1957 | C | Which of the following statements best describes a 'Keystone' shaped tip on a standard screwdriver? | A straight shank that does not widen at the top of the blade. | A four way tip cut at right angles. | A blade whose width is approximately that of the shank diameter with flattened tapered sides. | A four way tip with 30° flukes. | |
| 11 | 1958 | B | Which of the following statements correctly describes the construction of the close coupled sanitary pump shown in the illustration? | The pump suction and discharge connections are made with screwed pipe fittings. | The pump and motor have a common shaft. | The pump impeller is classified as double suction. | The pump housing and motor frame provide for radial adjustment of the shaft coupling. | GS-0070 |
| 11 | 1959 | B | In the diagram illustrated, item "4" represents a _____. | check valve | globe valve | relief valve | motor operated valve | GS-0125 |
| 11 | 1960 | C | Overheating of a hydraulic system may be a result of _____. | changing pump discharge pressure in response to normal load variations | a high oil level | incorrect fluid viscosity | continued slow recirculation of the oil | |
| 11 | 1961 | C | Condensate must be drained periodically from the air compressor receivers to prevent _____. | second stage cylinder lockup | oil sump contamination | faulty operation of pneumatic valves | corrosion of air receiver baffles | |
| 11 | 1962 | D | When a flash-type evaporator is to be secured for an extended period of time, the entire unit should be drained, cleaned, and _____. | completely filled with saltwater | filled with descaling compound | tightly closed to exclude air | vented to the atmosphere | |
| 11 | 1963 | C | Rapid wear on the extreme outer corners to the cutting edges of a drill bit is the result of the drill having _____. | too much cutting speed | not enough cutting speed | too much clearance angle | not enough margin width | |
| 11 | 1964 | A | The oil separator (trap) used in a large shipboard refrigeration system would be located between the _____. | compressor discharge valve and the condenser | condenser and the receiver | receiver and the king valve | receiver and the expansion valve | |
| 11 | 1965 | D | Which of the following types of nuts would be best suited to use when it is important that a nut not work itself loose due to vibration? | Square nut | Wing nut | Cap nut | Castellated nut | |
| 11 | 1966 | D | What type of material is used to construct the rotor of the pump illustrated? | Monel | Brass sheet | Bearing bronze | Steel | GS-0144 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1969 | D | In pressure measurement, absolute pressure is defined as the difference in pressure between _____. | any two pressures measured with respect to a common reference | atmospheric pressure and barometric pressure at a given point | gage pressure and ambient atmospheric pressure | a perfect vacuum and the total pressure at a given point | |
| 11 | 1970 | D | According to Coast Guard Regulations (46 CFR), a fresh water evaporator is classified as a/an _____. | auxiliary boiler | fired pressure vessel | auxiliary condenser | unfired pressure vessel | |
| 11 | 1971 | D | The nameplate of a reciprocating pump lists the following dimensions: "7 X 6 X 4". The diameter of the liquid cylinder is _____. | 4 inches | 7 inches | 6 X 4 inches | 6 inches | |
| 11 | 1972 | C | Which of the following nondestructive testing methods can be used to detect a suspected subsurface defect in a tail shaft liner? | Dye penetrant | Magnetic particle | Ultrasonic | All of the above | |
| 11 | 1973 | B | The neutralization number obtained from a test sample of lubricating oil will tell you precisely _____. | the amount of mineral and metallic solids that will not burn | the number of milligrams of potassium hydroxide used to neutralize a measured sample | what type of acid contaminants are present in a measured sample | how much sulfuric acid the oil has absorbed during operations | |
| 11 | 1974 | C | An oil separator is a device used to remove oil from the _____. | liquid refrigerant | receiver | gaseous refrigerant | expansion valve | |
| 11 | 1975 | C | A decision has been made to change out 1,000 gallons of lube oil in a vessel's main propulsion unit. Which of the following statements is true regarding this decision? | The neutralization number has decreased below minimum levels. | The sole use of the increase in the neutralization number need only be the basis for this decision. | In addition to the increase in the neutralization number, the viscosity of oil has also increased. | A small rise in the neutralization number over several years of use has prompted this decision. | |
| 11 | 1976 | D | In an automation system, the effect of a control action sensed by a controller is known as _____. | command input | set point signal | output | feedback | |
| 11 | 1977 | C | Purging air from a hydraulic system is necessary when _____. | adding small amounts of oil to the system | the system has been overheated | the system has been drained and then filled with new oil | the system has been idle for a long period of time | |
| 11 | 1980 | A | Which of the following statements concerning deep well cargo pumps is correct? | A pumproom is not necessary. | The impeller is located at the upper end of the shaft. | Special priming provisions are necessary. | The prime mover is connected at the lower portion of the shaft. | |
| 11 | 1981 | A | Joiner bulkheads on a MODU provide _____. | compartmentation | watertight integrity | structural support | tank boundaries | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1984 | C | Oil separators installed in refrigeration systems serve to _____. | remove excess oil from the system | remove oil entrained in high pressure liquid lines | return oil entrained in refrigerant vapor back to the compressor crankcase | all of the above | |
| 11 | 1985 | B | The brine density in a submerged tube evaporator should be maintained at _____. | 1.0 pounds of salt per 32 pounds of water | 1.5 pounds of salt per 32 pounds of water | 2.0 pounds of salt per 32 pounds of water | 3.5 pounds of salt per 32 pounds of water | |
| 11 | 1986 | C | When the port power unit is started, as shown in the illustration, the unloading valve "C" _____. | remains centered to allow the servo pump discharge to build pilot pressure to shift the port unit distributor valve | shifts to direct port replenishing flow to the service tank | shifts, blocking the replenishing pump flow to the service tank, thus building the required pilot pressure to shift the distributor valve "A" | shifts to block the servo pump discharge from the starboard unit when started, thus building pilot pressure to shift the starboard unit distributor valve | GS-0123 |
| 11 | 1987 | D | A screwdriver should never be used as a _____. | pry bar | chisel | punch | all of the above | |
| 11 | 1988 | A | The converter pneumatic control bypass valve, shown in the illustration, receives it low pressure signal from the _____. | hot water return manifold | converter | hot water circulating pump discharge line | hot water supply line | GS-0151 |
| 11 | 1989 | D | Which of the following conditions will prevent a shipboard pump from achieving its maximum suction lift? | Leaks developed in the suction piping. | Friction losses as a result of improperly sized pipe. | Gases or vapors released in the liquid as a result of greater than normal pressure drops. | All of the above. | |
| 11 | 1991 | B | Structural bulkheads on a MODU are usually _____. | continuous | watertight | transverse | nonwatertight | |
| 11 | 1992 | C | Plug valves installed in hydraulic systems are most suitable for use as _____. | main supply line throttle valves | variable flow control valves | two position flow control valves | check and choke valves | |
| 11 | 1993 | D | In a disk-type lubricating oil purifier, _____. | the purifier driving gears are lubricated by the reclaimed oil as it leaves the bowl | all dirt and sludge are automatically discharged with the cooling water | sealing water must never be supplied until after oil is fed to the unit | deterioration of the bowl ring gasket will cause the purifier to lose its water seal | |
| 11 | 1994 | A | Properties of a good refrigeration oil include _____. | low wax content | high pour point | high viscosity | all of the above | |
| 11 | 1995 | B | Pushing the file endways (or with the axis), under pressure, against the work, is called _____. | stroke filing | cross filing | draw filing | standard form filing | |
| 11 | 1997 | C | The lignum vitae in a stern tube bearing is normally lubricated with _____. | grease | oil | water | tallow | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 1998 | B | The distributor valves, labeled "A" in the illustration, provide several of the following functions, with the EXCEPTION of _____. | a means for recirculating oil flow from the main variable stroke pump | aligning the servo pump "I" discharge for replenishing oil lost from the main system | aligning the main variable stroke pump discharge/return with the main rams | placing a hydraulic lock on the rams if there is a failure of the hydraulic power unit | GS-0123 |
| 11 | 1999 | B | Which of the following guidelines is considered to reflect good design practices for shipboard steam heating systems? | Provide orifice-type bypasses for all traps and automatic valves. | Provide a dirt pocket and strainer ahead of the steam trap on a unit heater return. | Provide all units with a dirt trap and gate valve in the supply and a check valve on the return. | Wherever possible install vertical runs for condensate piping. | |
| 11 | 2000 | C | To anneal a copper gasket, you should heat the gasket _____. | and quench it in oil | and let cool slowly in the air | cherry red and quench in water | and carbonize it | |
| 11 | 2001 | C | Reinforcing frames attached to a bulkhead on a MODU are called _____. | side longitudinals | intercostals | stiffeners | brackets | |
| 11 | 2002 | B | Hydraulically, servo-operated, automatic, change over valves, utilized in a two ram hydraulic steering gear, serve to _____. | allow an alternate main pump to start in the fully loaded condition thus developing immediate full torque | prevent either main pump from being hydraulically motored when idle by cross pressure flow | prevent both units from operating simultaneously which could result in doubling the flow of oil and pressure leading to over pressurization of the system | all of the above | |
| 11 | 2003 | B | Ball peen hammers are sized according to their _____. | overall length | head weight | face diameter | peen head size | |
| 11 | 2004 | B | If a stateroom has a 6" by 12" opening through which air travels at 100 feet per minute, what is the volume of air being supplied to the stateroom? | 36 cu ft/min | 50 cu ft/min | 72 cu ft/min | 100 cu ft/min | |
| 11 | 2005 | C | Liquid is kept from leaking out at the shaft ends of a helical gear pump by _____. | overlapping spaces between gear teeth | a roller bearing | a stuffing box | the use of shaft end caps | |
| 11 | 2006 | B | The stern tube flushing connection can be used to _____, | assist in flushing out all packing strips when renewing packing underway | provide a positive flow of water through the stern tube for lubricating, cooling, and flushing when required | flush out brackish water resulting from extended in port operation | serve as the only source of supply of water for the stern tube bearing | |
| 11 | 2008 | D | A Bourdon tube-type steam pressure gage is fitted with a siphon loop to prevent damage from the direct effects of _____. | pressure shock | uneven expansion | entering condensate | entering steam | |
| 11 | 2009 | D | The size of the discharge ring used for the efficient operation of a disk type purifier is dependent upon the _____. | rated capacity of that purifier | viscosity of the oil being purified | maximum design speed of that purifier | specific gravity of the oil being purified | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2010 | D | A vessel is in compliance with federal regulations regarding the discharge of sewage by _____. | holding all sewage onboard | treating sewage in an approved system | pumping the sewage ashore to an approved container | all of the above | |
| 11 | 2011 | C | In MODU construction, beams are transverse girders which provide support to _____. | bulkheads | deckhouse structures | decks | vertical frames | |
| 11 | 2012 | B | In the illustration, component "C" is used to replace _____. | the rudder position follow up gear | the necessity for manual repositioning of the six-way valve | the hydraulic telemotor receiver | the mechanical method for positioning of the variable stroke control of the main pump | GS-0123 |
| 11 | 2014 | A | If a stateroom has a 5 inch by 12 inch opening through which the air travels at 100 feet per minute, what is the volume of air being supplied to the stateroom? | 41.6 cu. ft/min | 51.6 cu. ft/min | 61.6 cu. ft/min | 81.6 cu. ft/min | |
| 11 | 2015 | C | Which of the following statements is true regarding mechanical seals? | They may be used in lieu of conventional packing glands for any service other than saltwater. | They are not suitable for use on fuel oil transfer pumps. | They are normally lubricated and cooled by the fluid being pumped. | Once placed into service, leakage between the dynamic seal surfaces may be reduced by monthly adjustment of the spring compression. | |
| 11 | 2016 | A | The number "8" in the notation of an '8-32' tap, indicates the _____. | thread diameter | size of the hole | tap drill size | clearance drill size | |
| 11 | 2017 | C | File lengths are determined by the _____. | overall length of the file | distance between the face and the edge of the file | distance between the point and the heel of the file | length of the tang only | |
| 11 | 2019 | B | Which of the following is the most common type of valving element used in hydraulic system directional control valves? | Nutating disk | Sliding spool | Elongated ball or cone | Restricted orifice poppet | |
| 11 | 2020 | A | Coast Guard regulations concerning marine sanitation devices may be found in _____. | 33 CFR Section 159 | 33 CFR Section 153 | 33 CFR Section 155 | 33 CFR Section 156 | |
| 11 | 2021 | B | In MODU construction, beam brackets are triangular plates joining the deck beam to a _____. | bulkhead | frame | stanchion | deck longitudinal | |
| 11 | 2022 | C | The cylinders and intercoolers of most low pressure air compressors are cooled by _____. | water | oil | air | CO2 | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2023 | A | A tap marked '1/4-20' will cut a thread _____. | 1/4 inch in diameter with a pitch of 20 threads per inch | 1/2 inch long having a total of 20 threads | a total of 20 threads with a pitch of 1/4 inch | 1/20 of an inch long and 1/4 inch in diameter | |
| 11 | 2026 | D | Which of the following problems will occur if a disk-type centrifugal lube oil purifier contains insufficient sealing water prior to admitting oil flow to the bowl? | Contamination of the lube oil by emulsification will result. | The lube oil will not be subjected to the proper centrifugal force. | The lube oil will overheat and flash. | Lube oil will discharge from the heavy phase discharge port to the sludge tank. | |
| 11 | 2029 | A | Feed water supplied to a flash type distilling plant will flash to vapor in the first-stage due to _____. | flash chamber pressure being lower than the saturation pressure corresponding to the feedwater temperature | temperature being higher than the evaporation temperature of the supplied feedwater | heat exchange surfaces being directly in the path of the entering feedwater | orifices finely atomizing the heated feedwater entering the flash chamber | |
| 11 | 2031 | C | Stanchions prevent the entire deck load on a MODU from being carried by the _____. | bulkheads | stringers | frames and beam brackets | deck longitudinals | |
| 11 | 2032 | C | The Phillips screwdriver has a blunt end and flukes with an angle of _____. | 10° | 45° | 30° | 60° | |
| 11 | 2034 | D | An important consideration in selecting a lubricating oil for use in a refrigeration compressor is for the oil to _____. | have a high viscosity index | mix readily with refrigerant | have a high freezing point | have a low pour point | |
| 11 | 2035 | D | If the intercooler relief valve lifts while an air compressor is operating under load, you should check for _____. | a defective pressure switch or pilot valve | a leak in the intercooler piping | leakage through the low pressure unloader control diaphragm | leaking high pressure discharge valves | |
| 11 | 2036 | B | The output from shaft "K", shown in the illustration, becomes an actual control factor when component(s) _____. | 'F4' is rotating | 'F4' is hydraulically locked | 'F2' and 'F3' are energized | 'F1' and 'F2' are energized | GS-0123 |
| 11 | 2037 | D | Assuming valve "A" is correctly aligned in the no-flow position as shown with the system in operation, which of the following statements is true? | The fixed delivery pump would be stopped automatically by a pressure switch. | Valve "B" would be open before valve "D". | Valve "C" would be closed. | Valve "D" would normally open before valve "B". | GS-0049 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2038 | C | Which of the following statements represents the main difference between a stuffing box gland and a mechanical seal for sealing the shaft of a centrifugal pump? | Packed stuffing box glands are subject to wear, but mechanical seals are not. | Packed stuffing box glands must be cooled by the liquid being pumped, but mechanical seals do not require cooling. | If packing fails, the pump can be kept running temporarily by tightening the gland, but if a mechanical seal fails it must be totally renewed to stop the leakage. | The sealing surface of a mechanical seal is parallel to the shaft, but the sealing surface of a packed gland is perpendicular to the shaft. | |
| 11 | 2040 | D | In a shell-and-tube type hydraulic fluid cooler, the amount of heat transferred from the hydraulic fluid to the cooling water depends upon _____. | the temperature of the hydraulic fluid | the flow rate of both the cooling water and the hydraulic fluid | the temperature of the cooling water | all of the above | |
| 11 | 2041 | C | Support of MODU side plating is provided primarily by transverse _____. | beams | girders | frames | bulkheads | |
| 11 | 2042 | C | With regards to the American National Screw Thread nomenclature, 'pitch' is the _____. | angle formed by adjacent flanks of a thread | number of threads divided by the length of the threaded portion of the screw | distance between corresponding points on adjacent threads | angle of taper formed by the centerline of the screw and the crests of the thread | |
| 11 | 2043 | D | The presence of scale and dirt on the saltwater side of a lube oil cooler is usually indicated by _____. | clogged lube oil strainers | seawater leaking into the lube oil system | decreasing lube oil pressure | gradually increasing lube oil temperature | |
| 11 | 2044 | C | One refrigeration ton is equal to _____. | 180 BTU/hr | 2,000 BTU/hr | 12,000 BTU/hr | 2,880,000 BTU/day | |
| 11 | 2045 | B | A leaking suction valve in the second stage of a two stage, high pressure, air compressor can cause excessively high _____. | second stage discharge pressure | first stage discharge pressure | pressure in the aftercooler | compressor final discharge temperature | |
| 11 | 2046 | A | When the steering gear receives a command signal for a 15° right rudder, during the initial period of movement of the rudder _____. | shaft "K" will rotate, but its output to "M" will be nullified | shaft "K" will rotate causing "M" to rotate reducing linkage length | shaft "L" will cause shaft "K" to rotate via the planetary differential gear | shaft "L" will rotate, but its output to "M" will be nullified | GS-0123 |
| 11 | 2047 | B | The tool used to remove a ball bearing from the shaft of a motor is called a _____. | slugging wrench | gear puller | drift pin | come along | |
| 11 | 2048 | A | Fabric type packing, such as flax or hemp, is best suited for _____. | low temperature use | high temperature use | use where alignment is critical | superheated steam applications | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2049 | C | The port labeled "J", shown in the illustration, serves to _____. | vent accumulated air that would interfere with the operation of the controller | provide oil flow under pressure from the compressor lube oil pump to activate the cylinder unloading mechanisms to load up the necessary cylinders | bleed off pressurized oil from the cylinder unloading mechanism to allow the cylinders to unload | sense crankcase suction pressure as the required feedback for proper operation of the unloader control device | RA-0013 |
| 11 | 2050 | B | Which of the listed problems is occurring if a coil type high pressure evaporator constantly requires an increase in the coil steam pressure in order to maintain capacity? | The brine density is improper. | Heat transfer surfaces are being layered with scale. | Impure distillate is being produced. | Shell vapor pressure is constantly decreasing. | |
| 11 | 2051 | A | Lighter longitudinal stiffening frames on the MODU side plating are called _____. | stringers | side frames | side stiffeners | intercostals | |
| 11 | 2052 | B | The follow-up gear on an electro-hydraulic steering gear _____. | relieves excessive fluid pressure. | takes the pump off stroke when the desired rudder angle is attained. | allows for rudder movement faster than the movement of the ship's wheel. | returns the rudder to amidships when the wheel is released. | |
| 11 | 2053 | D | Which of the following statements is true concerning a radiator type heat exchanger? | Raw water is the cooling medium. | Water cooled exhaust elbows remove the heat. | The surge tank must be located a minimum of 4 feet above the highest finned tube. | Air flow provided by a fan is used as the cooling medium. | |
| 11 | 2054 | A | How much heat can a 5 ton refrigeration unit remove from a refrigerated space? | 60,000 BTU/hr | 80,000 BTU/hr | 100,000 BTU/hr | 120,000 BTU/hr | |
| 11 | 2055 | B | Leaking valves in an air compressor can be a result of _____. | excessive discharge pressure | abrasion, dust, and dirt | excessive compressor speed | irregular compression strokes | |
| 11 | 2056 | D | In order to change over the main pumps shown in the illustrated steering gear, which of the components listed must be manually actuated? | "A" | "C" | Six-way valve | Motor controller on-off switches | GS-0123 |
| 11 | 2057 | D | When renewing spiral packing in a centrifugal pump stuffing box, after the packing is firmly seated, the packing gland nuts should be _____. | left in that position | loosened until the gland clears the stuffing box | tightened an additional 10% to compress the packing | loosened, and then retightened until they are only finger tight | |
| 11 | 2059 | A | Aftercoolers are used with air compressors to _____. | reduce the temperature of compressed air | decrease the density of compressed air | dampen pressure pulses in the discharge air | ensure complete expansion of the compressed air | |
| 11 | 2061 | C | The heavier outboard strake of deck plating on a MODU is called the deck _____. | stiffener | beam | stringer | doubler | |
| 11 | 2062 | B | In which of the following types of evaporators is the control of brine density least important? | Solo shell evaporators | Flash evaporators | Submerged tube evaporators | Basket evaporators | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2063 | D | Heat exchanger tubes can be protected against erosion and abrasion by the use of _____. | metallic packing on the inlet end | fiber bushings in the ferrules | zinc pencils on the waterside | plastic tube end protectors | |
| 11 | 2064 | C | What is the equivalent tonnage of a refrigeration system rated at 48,000 BTU per hour? | 2.5 | 3 | 4 | 5 | |
| 11 | 2065 | D | Leaking valves in a low pressure, reciprocating, air compressor can result from _____. | excessive compressor discharge pressure | operating the compressor at excessive speed | uneven piston stroke in the compressor | abrasion by dust and dirt | |
| 11 | 2066 | C | The impeller shown in the illustration is an example of a/an _____. | axial piston impeller | positive displacement impeller | centrifugal impeller | high pressure impeller | GS-0130 |
| 11 | 2067 | C | Rudder motion is prevented from exceeding the movement of the steering wheel by the _____. | return springs | six-way valve | follow-up gear | differential gear | |
| 11 | 2068 | C | An air compressor is equipped with an intercooler and an aftercooler to _____. | inject water vapor into the compressed air | prevent overheating of first stage valves | increase compressor efficiency and economy | reduce the compressed air charge density | |
| 11 | 2069 | A | Return lines in a non-pressurized hydraulic system reservoir should enter the tank well below the fluid surface level to _____. | prevent foaming | prevent moisture accumulation | prevent vacuum formation | accommodate thermal expansion | |
| 11 | 2070 | A | Evaporator priming can be caused by high water level, fluctuating steam pressure, or _____. | fluctuating shell vacuum | low brine density | low feed temperature | a brine overflow weir set too low | |
| 11 | 2071 | B | Where is thicker plating usually found in the construction of integral tanks on a MODU? | On the outside of the tank. | At the bottom of the tank. | At the top of the tank. | At the center of the tank. | |
| 11 | 2072 | C | If it were possible to simultaneously operate both main pumps shown in the steering gear illustration, which of the following statements would be true if the starboard power unit were to be brought on line with the port unit already in operation? | The indicated valve spool in "C" would shift to the left | Pump "I" would supply replenishing oil to the system | The starboard distributor valve "A" would allow recirculation of the starboard main pump | Pump "G" would supply servo control oil flow to control the main pump stroke control mechanism | GS-0123 |
| 11 | 2073 | B | When renewing the shaft packing on a centrifugal pump equipped with an external liquid sealing supply, you should _____. | always turn down the shaft in a lathe to ensure a snug fit | ensure that the lantern ring is aligned with the sealing supply opening | check the stuffing box for irregularities with a dial indicator | make sure the seal cage is always positioned at the base of the stuffing box | |
| 11 | 2074 | B | If an air conditioning system were rated at 24,000 BTU, the equivalent tonnage of the unit would be _____. | 1 ton | 2 tons | 3 tons | 4 tons | |
| 11 | 2076 | B | In order to adjust the temperature set point of the temperature regulating valve illustrated, you should adjust the device indicated by the letter _____. | A | B | M | L | GS-0045 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2077 | A | If a ship service air compressor operating in intermittent service were failing to unload, the _____. | compressor would stop abruptly when power was secured | compressor would run continuously | air receiver indicated pressure would be excessively low | compressor would require more than the normal amount of lubrication | |
| 11 | 2078 | B | On an electro-hydraulic steering gear, which of the listed devices will keep the rudder from over traveling the bridge signal? | Rudder angle indicator | Follow-up gear | Electric transmitter | Rudder angle limit switch | |
| 11 | 2079 | D | A multistage flash evaporator will be unable to produce consistently pure distillate if the _____. | distillate cooler is dirty | tubes of the saltwater feed heater are flooded internally | distillate meter stops | vacuum is fluctuating | |
| 11 | 2080 | D | The Reed and Prince screwdriver has a sharp pointed end with flukes that have an angle of _____. | 10° | 30° | 60° | 45° | |
| 11 | 2081 | D | When securing a centrifugal type distillate pump, which of the listed steps should be carried out first? | Close the pressure gage isolation valves. | Secure the casing vapor vent line. | Secure the stuffing box sealing water line. | Trip the three way dump valve. | |
| 11 | 2082 | D | Regarding the pump shown in the illustration, the quantity and direction of fluid flow is controlled by _____. | varying the direction of rotation and size of the pintle valve | varying the direction of rotation of the prime mover and throttling the pump output | moving the cylinder block off center from the reaction ring | moving the reaction ring off center from the cylinder block | GS-0059 |
| 11 | 2083 | C | On tankers with manually operated tank valves, the type of valve most commonly used is the _____. | butterfly valve | globe valve | gate valve | check valve | |
| 11 | 2084 | D | If a refrigeration box develops a heat load of 60,000 BTU/hour, what size refrigeration unit would be required? | 3 ton | 4 ton | 4.5 ton | 5 ton | |
| 11 | 2085 | D | In heat exchangers, seawater pressure should be maintained lower than freshwater pressure to _____. | eliminate scaling problems on the saltwater side | reduce erosion of heat exchanger surfaces | ease the load on the saltwater service pump | prevent contamination should leaks develop | |
| 11 | 2086 | C | Which of the following is the probable cause for a motor driven, low pressure, reciprocating air compressor to repeatedly trip the circuit breaker upon starting? | Defective pressure switch | Leaking suction unloader | Compressor starting against full load | Compressor starting without any load | |
| 11 | 2087 | C | Most hydraulic steering gears are fitted with relief valves which _____. | function when the rudder is amidships | relieve excess whip pressure from the hydraulic oil system | protect the piping assembly from external rudder shock | relieve excessive telemotor pressure | |
| 11 | 2088 | C | Steam supply piping to deck machinery is insulated in order to _____. | maintain good turbulent free steam flow through the pipe | prevent superheating of the steam | reduce heat loss from the system | contain small steam leaks | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2089 | B | A piece of tapered round stock 36 inches long, 4 inches in diameter at the large end and 2 1/2 inches in diameter at the small end. What tailstock set over was used to machine the taper? | 0.375 inch | 0.750 inch | 1.500 inch | 2.500 inch | |
| 11 | 2090 | B | What is the maximum steam pressure allowed by Coast Guard Regulations (46 CFR) to be provided in the steam heating system of the living spaces? | 30 psig | 45 psig | 60 psig | 75 psig | |
| 11 | 2092 | A | When a heat exchanger is used as a cooler, excessive cooling water flow should be avoided to prevent _____. | erosive tube failure | waterside deposit buildup | tube sheet bowing | water hammer damage | |
| 11 | 2093 | B | After the installation of new impeller wearing rings by pressing them onto the pump impeller hub, it is advisable to _____. | dynamically balance the shaft and impeller | check the shaft and impeller assembly on centers to see if the ring surfaces are true | visually inspect the rings after about an hour of service | all of the above | |
| 11 | 2094 | B | If a refrigeration system extracted 48,000 BTU per hour, the equivalent tonnage of the unit would be _____. | 2 tons | 4 tons | 6 tons | 8 tons | |
| 11 | 2096 | C | If a ship service air compressor failed to unload the _____. | compressor would run continuously | air receiver pressure would be excessively low | belts could slip when starting | compressor would pump lube oil | |
| 11 | 2098 | D | In an electro-hydraulic steering system, rudder shock is limited by _____. | a differential gear | return springs | a hydraulic accumulator | relief valves | |
| 11 | 2099 | D | Which of the following statements is true regarding a positive displacement rotary pump? | Theoretically, there is no limit to shut off head pressure. | Theoretically it is self priming. | The discharge side should be protected against excessive pressure build up via a relief valve. | All of the above. | |
| 11 | 2101 | D | Rapid fluctuation of the last effect shell vacuum in a submerged tube evaporator can cause _____. | erratic air ejector operation | air leaks in the tube nest | rapid scaling in all effects | priming in that effect | |
| 11 | 2102 | A | In a heat exchanger, excessive fluid velocity should be avoided to prevent _____. | erosive tube failure | waterside deposit buildup | tube sheet bowing | water hammer damage | |
| 11 | 2103 | C | Compensated flow control, or constant flow valves are used in hydraulic systems to _____. | compensate for major leaks in the system | maintain the original fluid viscosity | allow for changes in pressure and temperature within the system | assure constant fluid temperature | |
| 11 | 2104 | D | An air conditioning system, required to remove from 33,000 to 35,000 BTU per hour, should have a minimum capacity of _____. | 1.5 tons | 2.0 tons | 2.5 tons | 3.0 tons | |
| 11 | 2105 | A | Carryover in a flash type distilling plant can be a result of _____. | faulty operation of the brine overboard pump | a pressure drop through the loop seal | high distillate conductivity | low distillate conductivity | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2106 | C | If a ship service air compressor failed to unload, the _____. | compressor would dangerously overspeed | air receiver pressure would be excessively low | circuit breaker may open on starting | compressor would pump lube oil | |
| 11 | 2107 | C | If the controlled system temperature downstream of the valve shown in the illustration, decreases below the set point, which of the listed actions will occur? | Stem "C" moves down. | Power piston "H" moves up. | Spring "F" is compressed. | Valve "D" closes. | GS-0045 |
| 11 | 2108 | A | If a centrifugal pump develops insufficient discharge pressure as a result of worn wearing rings, which of the following corrective actions is required? | Replace the rings. | Throttle in on the discharge valve. | Always replace the wearing rings and the impeller as a set. | Throttle in on the suction valve. | |
| 11 | 2109 | A | Accidental flooding of the engine room bilges through the bilge system is prevented by _____. | stop-check valves installed in the bilge suction manifolds | using a positive displacement reciprocating bilge pump | installing eductors in all bilge rose boxes | installing a swing check before each bilge valve | |
| 11 | 2110 | B | When the compressed air reservoir is placed in line with an air compressor and is used as an aftercooler, the reservoir must be _____. | fitted with a manhole | frequently drained of condensed water | fitted with a moisture trap at the inlet | fitted with a sight glass | |
| 11 | 2112 | B | In an electro-hydraulic steering system, damage due to rudder shock is prevented by _____. | buffer springs | relief valves | oil flowing through the pumps | dashpots | |
| 11 | 2113 | C | A device incorporating a variable orifice placed in series with a check valve in a hydraulic system, is used to _____. | allow free movement of hydraulic fluid in both directions | allow fluid flow in one direction only | allow throttled fluid flow in one direction only | restrict hydraulic fluid flow in both directions | |
| 11 | 2114 | A | The receiver used in a refrigeration system _____. | stores liquid refrigerant | collects noncondensable gases | allows refrigerant subcooling | prevents compressor surging | |
| 11 | 2115 | B | Zinc anodes are installed in a marine sea water heat exchanger cooling system to _____. | inhibit oxidation | control electrolysis | prevent scaling | eliminate corrosion | |
| 11 | 2116 | A | Major repairs or alterations affecting the safety of small passenger vessels of less than 100 gross tons shall _____. | not be made without the knowledge and approval of the OCMI | be permissible without the knowledge and approval of the Officer in Charge of Marine Inspection | be made at anytime convenient to the vessel operator without prior approval | be made only when Coast Guard Administrative Form 2892 is submitted | |
| 11 | 2119 | A | If there is a sudden drop in the capacity of a reciprocating air compressor, you should check for _____. | broken compressor valves | worn piston rings or cylinder liners | excessive compressor speed | a defective pressure switch | |
| 11 | 2121 | C | The illustrated system is used to _____. | process sludge found on motor vessels | process sludge found on steam vessels | process oily-water mixtures present in the bilge water | condition reduction gear lube oil by removing the water | GS-0113 |
| 11 | 2122 | D | When a reciprocating pump is operating at maximum speed, the cushioning valves should be _____. | wide opened | half opened | 3/4 opened | almost completely closed | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2123 | A | Rudder position is shown on the bridge by the _____. | rudder angle indicator | follow-up gear | telemotor position | Rapson slide indicator | |
| 11 | 2124 | C | Which lettered component, shown in the illustration, indicates the location of the receiver? | L | H | the device between line 14 and line 15 | K | RA-0012 |
| 11 | 2125 | C | The purpose of a restrictor valve, as it is used in a hydraulic hatch cover system, is to _____. | prevent oil backflow to the actuators | prevent the hydraulic pump from overheating | control the speed of the hatch cover movement while closing | restrict the oil supply to the hatch covers not in use | |
| 11 | 2126 | D | During the inspection for certification of small passenger vessel of less than 100 gross tons, a hydrostatic test of 1-1/4 times the maximum allowable working pressure shall be made to _____. | tubular heat exchangers | hydraulic accumulators | refrigeration service heat exchangers | oil fired boilers | |
| 11 | 2127 | B | The root opening dimension shown in the illustration is used to indicate the _____. | penetration depth of the desired weld | distance across the bottom of the "V" groove | width across the bottom of the weldment | maximum thickness of the completed weld | GS-0076 |
| 11 | 2128 | D | In the spring-loaded, steam pressure, reducing valve shown in the illustration, if the downstream pressure falls below a preset value _____. | spring "A" will be compressed | valve "D" will open | diaphragm "E" will deflect downward | all of the above | GS-0044 |
| 11 | 2129 | D | If the capacity of a reciprocating air compressor gradually drops off, the cause could be _____. | leaking compressor valves | a clogged air filter | worn cylinder liners | all of the above | |
| 11 | 2130 | D | Which of the following statements correctly describes the operation of the pump shown in the illustration? | The pump stuffing box is externally supplied for sealing. | The pump suction is through the vertical flange illustrated on the left. | The pump shaft is fitted with tapered needle bearings | The pump stuffing box is provided with an internal sealing line. | GS-0070 |
| 11 | 2132 | C | The static suction head of a horizontal centrifugal pump, is the difference in elevation between the _____. | discharge liquid level and the suction liquid level | discharge liquid level and the pump centerline | suction liquid level and the pump centerline | suction submergence level and the pump discharge | |
| 11 | 2133 | D | A drilled hole is accurately finished to size with a _____. | center drill | finish drill | broach | reamer | |
| 11 | 2134 | C | In a refrigeration plant, one purpose of the receiver is to _____. | cool the refrigerant gas | superheat the refrigerant liquid | store the refrigerant | condense the refrigerant | |
| 11 | 2135 | A | In the radial piston pump shown in the illustration, oil will enter the cylinder as the piston travels from position _____. | 1 to position 2 | 2 to position 3 | 3 to position 4 | 4 to position 1 | GS-0060 |
| 11 | 2136 | B | Emergency lighting on small passenger vessels of less than 100 gross tons for lounge areas below the main deck shall be _____. | illuminated at all times while vessel is underway | illuminated automatically and actuated upon failure of the main lighting system | portable battery operated and have sufficient capacity for 8 hours of continuous operations | both "A" and "C" | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2137 | C | In the spring-loaded pressure reducing valve illustrated, the auxiliary valve "D" is closed by _____. | diaphragm "E" | mechanical linkage | a spring | high pressure steam | GS-0044 |
| 11 | 2138 | D | When air compressors are arranged for automatic operation, the cylinders can be unloaded during starting by _____. | bypassing the discharge to suction | fitting depressors which hold the suction valve plates on their seats | step unloading the cylinders in a multi-cylinder machine | all of the above | |
| 11 | 2139 | C | If a higher than normal water level is observed through the inspection port of a flash evaporator, you should suspect _____. | a leak in the feedwater heater | improper vacuum | a malfunctioning brine pump | a clogged desuperheater water strainer | |
| 11 | 2140 | A | The motor operated valve, shown in the illustration, is represented by item number _____. | 1 | 2 | 3 | 4 | GS-0125 |
| 11 | 2142 | D | Reciprocating air compressor bearing failure may result from _____. | a misaligned crankshaft | over tightened drive belts | contaminated sump oil | all of the above | |
| 11 | 2143 | D | In a fixed displacement axial piston hydraulic motor, the speed is varied by _____. | regulating the ratio between torque and speed via the torque limiter at the motor | directing the motor output flow through a bypass line | maintaining a constant flow and pressure input | controlling the input flow rate | |
| 11 | 2144 | C | When checking zinc plates, or pencils in the refrigerating system condenser, you should _____. | paint and insulate the plates to prevent corrosion | renew the plates at each inspection | replace the zincs if deteriorated by 50% | file the plates to change the negative value | |
| 11 | 2145 | D | For drilling or machining cast iron, which of the cutting lubricants is it necessary to use? | Lard oil | Soluble oil | Kerosene | None of the above | |
| 11 | 2146 | B | One of the main differences between a propeller pump and a centrifugal pump is the absence of a _____. | volute in the centrifugal type pump | volute in the propeller type pump | velocity nozzle in the centrifugal type pump | reciprocating piston in the centrifugal type pump | |
| 11 | 2147 | B | In a flash evaporator, scale as a result of higher than normal temperatures is most likely to occur in the _____. | second stage feed heater | saltwater feed heater | distillate cooler | second stage vapor separator | |
| 11 | 2148 | B | The purpose of the vertical 'grooves' machined on the main valve "G", in the spring loaded temperature regulating valve shown in the illustration, is to _____. | provide downstream turbulence | provide for quieter valve operation | compensate for upstream pressure surges | increase sensitivity | GS-0045 |
| 11 | 2149 | C | Which of the listed types of seals is used effectively for pumps handling toxic or highly flammable liquids that cannot be permitted to escape into the atmosphere? | Conventional stuffing box | External mechanical seal | Double mechanical seal | Rubber bellows mechanical seal | |
| 11 | 2150 | B | No two drills from differing drill sets are of the exact same size, with the exception of the drills measured as 0.25 inch. These two drills are the 1/4 inch and the _____. | No. 1 drill | "E" drill | No. 80 drill | "A" drill | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2151 | A | In MODU construction, a large number of watertight bulkheads results in _____. | increased capacity to set flooding boundaries | decreased capacity to set flooding boundaries | reduced compartmentation | greater deck load capacity | |
| 11 | 2152 | D | Which of the following statements describes the advantage of the mechanical shaft sealing system over the stuffing box and packing method of shaft sealing for propulsion shafting? | It eliminates the repairing or renewing of the shaft sleeve. | It is fully automatic in operation. | It allows for the removal and reinstallation of all parts without dismantling the shafts. | Each of the above is correct. | |
| 11 | 2153 | A | The dimension of the sensing gap in the left hand limit sensor assembly shown in the illustration is _____. | 1/8 inch | 1/4 inch | 3/8 inch | 1/2 inch | GS-0010 |
| 11 | 2154 | C | Zinc rods are installed in the refrigeration system _____. | liquid line strainer | liquid line receiver | saltwater condenser heat exchanger heads | evaporator tail coil | |
| 11 | 2155 | C | A single-acting simplex pump makes 100 single strokes per minute. The diameter of the water cylinder is 6 inches and the stroke is 10 inches. If the efficiency of the pump is 90%, what is the capacity of the pump? | 92 GPM | 61 GPM | 55 GPM | 18 GPM | |
| 11 | 2156 | D | Deck rails on passenger decks of vessels engaged in a ferry or excursion type operation shall be at least _____. | 30 inches high | 36 inches high | 39 1/2 inches high | 42 inches high | |
| 11 | 2157 | B | Each vessel designed to carry more than 49 passengers must have _____. | a continuous longitudinal watertight bulkhead | a collision bulkhead | at least one watertight bulkhead to prevent fire advancement for 2 hours | a minimum of four watertight bulkheads | |
| 11 | 2158 | A | The pressure side of the radial piston hydraulic motor as shown in the illustration, is aligned to piston number _____. | 1 | 2 | 3 | 2 and 3 | GS-0059 |
| 11 | 2160 | B | When shifting suction from one fresh water tank to another, if the fresh water pump loses suction you should_____. | loosen the mechanical seal | vent the pump casing | check the discharge strainers | all of the above | |
| 11 | 2161 | C | High salinity distillate being discharged from a flash-type distilling plant may be the result of _____. | maintaining the proper distilling plant heat balance | carrying the brine level below normal | leaks in the demister baffles | venting of the saltwater heater drain pump | |
| 11 | 2162 | D | Allowances may be made for the expansion and contraction in piping by the use of expansion joints or _____. | unions | retractable flanges | union bulkhead fittings | bends or loops in the line | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2163 | B | For any given volume of compressed air produced by a multistage air compressor, interstage cooling will _____. | increase the power required for compression | decrease the power required for compression | allow isothermal compression of the air charge | allow the compressed air volume to remain constant | |
| 11 | 2165 | C | In the illustrated heating system, what is the maximum height the heater should be mounted above the deck? | 5" | 6" | 12" | 24" | GS-0150 |
| 11 | 2166 | C | Solid contaminants are prevented from entering the main lube oil system by way of the main engine sump, through the use of _____. | fine mesh screening placed around the pump suction line in the sump | baffles installed without limber or lightening holes to trap the particles | a suction inlet located approximately 10 inches (254 mm) above the sump bottom | a 10 inch (254 mm) dome installed just below the suction inlet and provided with a pipe-opening within one inch of the dome | |
| 11 | 2167 | D | When the steering wheel is turned, oil is directed to the steering gear rams by _____. | modulating the oil flow with the six-way valve | moving the automatic pressure differential valve | moving the receiving telemotor which regulates the two-way valve | varying the eccentricity of a floating ring or angle of a tilting box | |
| 11 | 2168 | D | Penetrations and openings in watertight bulkheads in a vessel of less than 100 gross tons must _____. | only be placed in transverse watertight bulkheads that extend to the bulwark deck | be provided with non-packed slip joints for expansion to permit passage of piping or electric cable | incorporate approved sluice valves | be kept as high and as far inboard as practicable | |
| 11 | 2169 | B | Operating a reciprocating air compressor without an air filter will cause _____. | carbon deposits on valves and pistons | excessive wear on valves and cylinder liners | a clogged air intake | excessive compressor discharge pressure | |
| 11 | 2170 | D | Which of the flange types listed identifies the construction of a pipe joint where a flange is slipped over a length of pipe, the pipe end is heated, then setup (flanged) in a special machine, and then the end of the pipe is machined to form the actual face of the joint? | Raised face flange | Socket joint | Walseal joint | Lap joint (van stone) flange | |
| 11 | 2172 | D | Which of the following statements is correct concerning antifriction bearings installed on pumps? | The inner race should be free to turn on the shaft. | The outer race should be free to turn in its housing. | Alignment is not a critical factor in their installation. | They are usually pressed onto their shafts. | |
| 11 | 2174 | D | A water regulating valve controls the refrigeration condenser cooling water flow in response to condenser _____. | cooling water outlet temperature | liquid refrigerant outlet temperature | liquid refrigerant outlet pressure | refrigerant vapor inlet pressure | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2175 | C | Which of the screwdrivers listed has a tip surrounded by parallel fluted ridges resembling the ridges of a splined socket wrench? | Phillips | Standard | Torx | Reed and Prince | |
| 11 | 2176 | A | Proper internal lubrication of a hydraulic anchor windlass left idle for extended periods can be accomplished by _____. | performing a check run on the unit at regular intervals | testing the hydraulic fluid for proper pH | checking the reservoir for proper level | cleaning strainers at regular intervals | |
| 11 | 2177 | B | If the flow rate to a linear actuator is reduced by half of the original amount, the _____. | pump discharge pressure will be reduced by a proportional amount | speed of the actuator will be reduced | speed of the actuator will be increased | the actuator will move erratically | |
| 11 | 2178 | D | Irregular feeding or surging of the feedwater supply to a flash evaporator may be attributed to _____. | erratic water flow through the air eductor | a clogged vent line from the air eductor condenser | excessive pressure in the seawater feed heater | a dirty strainer in the saltwater feed pump suction line | |
| 11 | 2179 | C | Operating a reciprocating air compressor without an air intake filter can result in a/an _____. | immediate piston damage | immediate clogging of the intake | possible explosion in the compressor | deposit of carbon on the valves | |
| 11 | 2181 | D | The top, front, and right side views of three different objects are shown in the illustration. In which object are all three views correct and complete? | #2 | #16 | #21 | All of the above | GS-0004 |
| 11 | 2182 | C | The nameplate of a reciprocating pump lists the following numerals as indicated 7" X 6" X 4". The diameter of the steam cylinder is _____. | 4 inches | 6 inches | 7 inches | 8 inches | |
| 11 | 2184 | D | An arrow stamped on the valve body of a water regulating valve indicates the _____. | direction of the plunger slide | closed position | open position | direction of the flow | |
| 11 | 2185 | D | Which of the following frequent maintenance procedures is required of compressed air receivers? | A close watch on the temperature. | Constant cleaning to remove oil and dirt. | Constant testing of the relief valves. | Frequent draining of water. | |
| 11 | 2186 | B | The main difference between a common lathe dog and a safety lathe dog is that the latter _____. | is more easily centered | has a headless set screw | has a spring loaded catch | allows for misaligned center holes | |
| 11 | 2187 | A | The penetration of watertight bulkheads and watertight decks by rigid non-metallic piping is prohibited except when _____. | using an acceptable metallic fitting, welded or otherwise is attached to the bulkhead or deck by an acceptable method | the rigid non-metallic plastic pipe is at least of schedule 160 and a metallic shut off valve is provided adjacent to the through deck or bulkhead fitting | metallic shut off valves are welded to nonmetallic hull materials | two non-remotely operated metallic valves are installed on either side of the deck or bulkhead regardless of accessibility | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2188 | C | The brake horsepower of a centrifugal pump will vary directly as the _____. | diameter of the impeller | square of the diameter of the impeller | cube of the diameter of the impeller | impeller efficiency for large changes in the size of the impeller | |
| 11 | 2189 | A | In the illustrated schematic, the device used to replace the six-way valve, as found on many older type steering gears, is the component labeled as _____. | "A" | "B" | "F" | "H" | GS-0123 |
| 11 | 2191 | C | Which type of Marine Sanitation Device (MSD) is used solely for the storage of sewage and flush water at ambient air pressure and temperature? | Type I | Type II | Type III | Type IV | |
| 11 | 2192 | D | Any unusual, or new vibration in the hull or propeller shafting can be an indication of _____. | clutch slippage | overheated bearings | high engine speeds | propeller unbalance | |
| 11 | 2194 | D | A reheater in an air conditioning system functions to _____. | control inlet air temperature | control inlet air volume | maintain relative humidity at 15% | restore conditioned air temperature to a comfortable level | |
| 11 | 2195 | B | Oiling a file as a rust preventative may cause _____. | overheating | pinning | fast cutting | binding | |
| 11 | 2196 | A | For cutting cast iron or soft steel, the proper hacksaw blade should have _____. | 14 teeth per inch | 18 teeth per inch | 24 teeth per inch | 32 teeth per inch | |
| 11 | 2198 | C | An air tank rusts out, explodes and causes $(USA) 24,000 damage to the engine room. By law, this accident is required to be reported to _____. | the owner or his agent | the insurance underwriter | no one | the U.S. Coast Guard | |
| 11 | 2199 | D | If the suction pressure increases to a capacity controlled compressor used in a multi-box refrigeration system, the actions of the unit shown in the illustration should cause _____. | "H" to move away from "I", the pressure in "M" to drop, "K" to move down, and "V" to move "S" upwards | "H" to move towards "I", the pressure in "M" to increase, "K" to move down, and "S" to move down against the force of "V" | "H" move away from "I", the pressure in "R" to decrease, allowing "S" to move down against the force of "V" | "H" to move towards "I", the pressure in "R" to increase, forcing "S" to move down against the force of "V" | RA-0013 |
| 11 | 2200 | D | In the device shown in the illustration, what is the function of item "6"? | It senses temperature for use in the temperature control circuit. | It is used to maintain liquid level one inch below item "8". | Both items of #6 are anodes used to provide the tank with corrosion protection. | It is used to control the oil discharge mode. | GS-0153 |
| 11 | 2203 | A | Respiratory heat' is a term applied primarily to which of the following cargoes? | Fresh vegetables | Meat | Frozen vegetables | All of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2204 | A | To prevent the unnecessary loading of an air conditioning system while maintaining the designed dry bulb temperature and relative humidity in an air conditioning system, you should _____. | admit only enough fresh outside air to provide proper ventilation | reduce the air reheating system load | lower the compressor head pressure | operate the purge recovery unit continuously | |
| 11 | 2205 | C | Which of the files listed will have coarsely spaced teeth? | Second cut | Dead smooth cut | Bastard cut | Smooth cut | |
| 11 | 2208 | A | If the signal input to 'P4' is 48psi, and the supply pressure is 50 psi, the output pressure at 'P1', as shown in the illustration, will be equal to _____. | 0 psi | 10 psi | 25 psi | 50 psi | GS-0145 |
| 11 | 2210 | D | Screwdrivers designed for electrical use should have _____. | longer than normal shanks | larger than normal shanks | shorter than normal shanks | insulated handles | |
| 11 | 2211 | B | Which of the files listed is produced with two safe edges? | Mill | Pillar | Half round | Knife | |
| 11 | 2213 | D | Which of the listed statements describes specific heat? | The amount of heat required to change the temperature of one pound of a material, one degree Fahrenheit. | The amount of heat required to change the temperature of one pound of ice, one degree Fahrenheit. | The amount of heat required to change the temperature of one pound of butter, one degree Fahrenheit. | All of the above. | |
| 11 | 2214 | A | To add refrigerant to the low side of an air conditioning system, the refrigerant should be introduced through the _____. | suction service valve as a vapor | suction service valve as a liquid | discharge service valve as a vapor | charging valve as a liquid | |
| 11 | 2215 | C | Which of the following devices is not considered to be a pressure vessel? (46 CFR) | Low pressure evaporator | Deaerating feed heater | Hydraulic fluid power cylinder | Fuel oil heater | |
| 11 | 2217 | B | Which of the files listed is commonly referred to as a 'rattail' file? | Small half round | Small round | Small triangular | Small flat | |
| 11 | 2218 | C | Which of the screwdrivers listed is fastest and most convenient when tightening many screws? | Square shank | Offset | Ratchet | Standard | |
| 11 | 2219 | B | Which of the screwdrivers listed is designed for the precision assembly of small parts? | Ratchet | Jeweler's | Allen head | Square-shanked | |
| 11 | 2220 | D | You discover an air leak at the manhole cover shortly after pressurizing a P-tank. You must _____. | reduce the P-tank pressure to 25-30 psi to complete the dry material transfer | increase the P-tank pressure to the unloading valve setting to force the manhole cover to seat itself | complete the dry material discharge before attempting any repairs | depressurize the tank, replace the gasket, then tighten the bolts securing the hatch cover | |
| 11 | 2221 | C | A refrigeration system is operating as a simple saturated cycle with an evaporator temperature of 0° F, and a 120° F condensing temperature. Using the table shown in the illustration, determine the weight of the refrigerant circulated through the system. | 2.56 lb/min/ton | 3.56 lb/min/ton | 4.75 lb/min/ton | 5.55 lb/min/ton | RA-0023 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2222 | D | What is the normal direction of flow through the device shown in the illustration while operating in the processing mode? | The oily-water mixture enters through valve "14" and exits with the processed liquid through valve "4". | The oily-water mixture enters through the pressure control valve "2" and exits with the processed liquid through valve "14". | The oily-water mixture enters through valve "4" and exits as processed liquid through valve "14". | The oily-water mixture enters through valve "5" and exits the separator through valve "14" as processed liquid. | GS-0153 |
| 11 | 2223 | A | Unusual hull, or propeller shaft vibrations can be caused by _____. | excessive engine speed in shallow water | slop in a hydraulic clutch | slight overheating of the line shaft spring bearings | high engine speed in deep water | |
| 11 | 2224 | C | If a refrigeration compressor in a multi-box system runs continuously, the cause might be a _____. | high pressure switch stuck in the closed position | clogged mechanical scale trap | shortage of refrigerant | defective thermal bulb | |
| 11 | 2226 | B | The barge shown in the illustration is 40' X 20' X 10'and weighs 22.9 long tons when empty. The theoretical maximum amount of machinery and cargo which may be installed or loaded is _____. | 182.9 long tons | 205.6 long tons | 228.8 long tons | 243.3 long tons | GS-0157 |
| 11 | 2227 | D | The terms rough, coarse, bastard, second cut, smooth, and dead smooth refer to the _____. | distance between the parallel cuts of a file | size of the file | coarseness of file teeth | both A and C are correct | |
| 11 | 2228 | D | By which of the listed methods may heat be transferred from one body to another? | Radiation | Convection | Conduction | All of the above | |
| 11 | 2229 | C | Which of the screwdrivers listed is designed with the shaft made from double coil wire or tightly coiled steel? | Square shank | Ratchet | Flexible shaft | Jeweler's | |
| 11 | 2230 | D | A file coated with oil and stowed away will _____. | cause the file to overheat | cause the file to slide across the work and prevent fast, clean cutting | cause dust and metal particles to collect in the teeth | both B and C are correct | |
| 11 | 2231 | D | Determine the volume of vapor compressed per minute per ton in a simple saturated refrigeration system using the table shown in the illustration. The evaporator temperature is 0° F, with a condensing temperature of 120° F. | 1.07 cu ft/min/ton | 4.75 cu ft/min/ton | 6.39 cu ft/min/ton | 7.77 cu ft/min/ton | RA-0023 |
| 11 | 2232 | B | The length of a file is always measured exclusive of the _____. | edge | tang | point | heel | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2235 | D | Which of the following statements describes the accepted method for testing a thermostatic expansion valve? | Heat the bulb by using a halide torch or similar device and observe the valve stem movement. | Remove the power head from the unit, heat the bulb with a torch while using a scale to measure the distance the diaphragm has moved. | Chill the bulb in ice water while observing the compressor for an increase in suction pressure. | Place the sensing bulb in ice water and then warm by hand. Observe flood-through and temperature change at the suction line. | |
| 11 | 2236 | A | An operating refrigeration system uses the device shown in the illustration. The high pressure gage indicates an abnormal decrease in the head pressure. The probable cause can be related to _____. | fouling of the unit labeled as "I" | item "M" being screwed up to the stops | component "E" having backed off from its seat | component "H" has exceeded its elastic limit | RA-0015 |
| 11 | 2237 | D | Which of the files listed is tapered on three sides and is used to file acute internal angles? | Mill | Round | Square | Triangular | |
| 11 | 2238 | B | Which of the screwdrivers listed is produced with a tip to fit screws with a four way or cross slot? | Standard | Reed and Prince | Allen | Torx | |
| 11 | 2239 | B | To cut drill rod, light angle iron, or tool steel with a hand hacksaw, it is best to use a blade with _____. | 14 teeth per inch | 18 teeth per inch | 24 teeth per inch | 32 teeth per inch | |
| 11 | 2240 | A | What is the lowest permissible flashpoint of the oil used in a hydraulic valve actuating system that operates at 145 psi (1000kPa)? (46 CFR Part 58) | 200° F (93° C) | 212° F (100° C) | 300° F (149° C) | 315° F (157° C) | |
| 11 | 2241 | C | In a simple saturated cycle refrigeration system, the enthalpy of the vapor after compression is 95 BTU/lb. with an evaporation temperature of 0° F. Which of the listed values represents the heat of compression per pound of refrigerant circulated? | 4.75 BTU/lb | 8.25 BTU/lb | 16.79 BTU/lb | The correct answer is not obtainable due to the insufficient quantity of data given. | RA-0023 |
| 11 | 2243 | A | Which of the saw blades listed, when mounted in a hand held hacksaw frame, will cut on both the forward and reverse strokes? | Rod | Hardened | Flexible | None of the above | |
| 11 | 2244 | C | Any air mixture whose dew point remains constant will also have an unchanging _____. | dry bulb temperature | wet bulb temperature | specific humidity | specific volume | |
| 11 | 2245 | A | A fluid power system shall be so designed _____. | that proper functioning of any unit shall not be affected by the back pressure in the system | to maintain a back pressure throughout the power cylinders operating range | such that the operation of any unit in the system will provide for sufficient back pressure | none of the above are correct | |
| 11 | 2248 | C | A simple saturated refrigeration cycle is operating with a 120° F condensing temperature and a 0° F evaporator temperature. Using the table provided, determine the refrigeration effect per pound of refrigerant in circulation. | 11.94 BTU/lb | 81.9 BTU/lb | 42.05 BTU/lb | 44.41 BTU/lb | RA-0023 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2249 | D | If item "1" in the illustrated oily water separator indicates an abnormally high vacuum, which of the following conditions is the most probable cause? | Process water inlet valve, item "5", is open. | Coalescer beds are severely fouled. | No problem exists as a high vacuum should be maintained in the chamber whose vacuum is be measured. | Suction line inlet strainer is obstructed. | GS-0153 |
| 11 | 2250 | B | A hacksaw blade with 14 teeth per inch should be used to cut _____. | angle iron and heavy pipe | cast iron and soft steel | thin tubing or sheet metal | drill rod and tool steels | |
| 11 | 2251 | B | Which of the files listed will have medium spaced teeth and is used for general work? | Dead smooth | Second cut | Bastard cut | Smooth cut | |
| 11 | 2252 | C | Which of the files listed is tapered on all sides and used to enlarge rectangular-shaped holes and slots? | Round | Half round | Square | None of the above | |
| 11 | 2253 | A | A refrigerated container filled with 10,000 lbs. of strawberries has been loaded on your ship. The set point of the box is 35° F and the interior box temperature is 90° F, and after 7 hrs. 37 minutes the box is lowered to 60° F. Based on the following information, which of the listed steps should be taken? [Specific Heat of cargo is 0.94 BTU/lb/˚F, heat gain by container equals 4000 BTU/hr, and refrigeration capacity = 3.42 tons] | Do nothing as the system is operating correctly. | The compressor is worn out and should be replaced. | Replace the liquid line strainer. | Add Freon to the unit to increase the refrigeration effect. | |
| 11 | 2254 | A | The dew point is reached when the wet bulb temperature is _____. | equal to the dry bulb temperature | twice the dry bulb temperature | 100° F less than the dry bulb temperature | 50° F above the dry bulb temperature | |
| 11 | 2255 | A | If the superheat value of a thermostatic expansion valve is set too low, the _____. | the suction line will be abnormally cold and liquid may slug back to the compressor | the suction line will be hot due to a reduced amount of refrigerant returning to the compressor | the temperature of the refrigerant within the condenser will remain the same | the temperature of the refrigerant passing through the subcooler will decrease | |
| 11 | 2256 | D | The ball float shown in the illustration is 12 inches in diameter, with an effective float arm of 35 inches and floats in a liquid with a specific gravity of 0.5. What is the available operating torque? | 120 inch pounds | 200 inch pounds | 240 inch pounds | 280 inch pounds | GS-0158 |
| 11 | 2257 | B | Using a file without a handle may result in _____. | your work becoming rounded | injury to your hand | overheating of the file | pinning | |
| 11 | 2259 | C | A new file should be broken in carefully by filing a piece of _____. | monel stock using heavy pressure | brass stock using heavy pressure | bronze stock using light pressure | stainless steel stock using light pressure | |
| 11 | 2260 | B | The edge of a file not having any teeth is known as a _____. | smooth edge | safe edge | flat edge | dead edge | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2261 | B | In a simple saturated cycle refrigeration system, the enthalpy of the compressed gas is 95 BTU/lb and the weight of compressed vapor is 4.75 lb/min/ton, operating at an evaporation temperature of 0° F, and a condensing temperature of 120° F. Using the data | 78.21 BTU/min/ton | 79.75 BTU/min/ton | 90.15 BTU/min/ton | 95.00 BTU/min/ton | RA-0023 |
| 11 | 2263 | B | A saw blade produced of bonded tungsten-carbide particles and mounted in a hacksaw frame is known as a _____. | wave set blade | rod saw blade | hardened blade | flexible blade | |
| 11 | 2264 | C | In the refrigeration system shown in the illustration, part "K" is the _____. | compressor | condenser | expansion valve | evaporator | RA-0012 |
| 11 | 2265 | B | If a thermostatic expansion valve is adjusted for too high a superheat value _____. | all of the system liquid will flow to the evaporator coil | an insufficient amount of liquid will be fed to the evaporator | an excessive amount of liquid will be fed to the evaporator | only the required amount of refrigerant will enter the evaporator regardless of the required superheat value | |
| 11 | 2266 | A | The ball float shown in the illustration is 9 inches in diameter and is floats in a liquid with a specific gravity of 0.9. If the effective length (EL) is 18 inches and "L" is 3 inches, how many pounds of force will be available at "X" if there is no mechanical loss? | 36 | 108 | 162 | 324 | GS-0158 |
| 11 | 2267 | D | Pinning is often caused by _____. | dropping the file | chalking the file | cleaning the file | bearing too hard on the file | |
| 11 | 2269 | A | Which of the items listed is used to prevent over pressurization in the device shown in the illustration? | Item "2" | Item "14" | Item '16' | This device is never exposed to excessive internal pressures. | GS-0153 |
| 11 | 2270 | A | Which of the following conditions will occur if the power element of a thermostatic expansion valve fails? | The valve will move towards the closed position. | The valve will begin to close, but the external equalizing line will assist in keeping the valve unseated. | The valve will fail open as designed to provide continuous cooling. | The valve will fail open and the cooling capacity will be increased. | RA-0007 |
| 11 | 2271 | D | Which of the following represents the primary cause of the pressure drop between points A and A', as shown in the illustration? | The reduction of pressure is due to the decrease in velocity of the liquid refrigerant leaving the receiver. | The condensing of the flash gas causes the volume to be decreased thereby reducing the pressure. | The adiabatic expansion causes an isentropic effect on the liquid. | The pressure drop is a result of the frictional loss of the liquid flow through the receiver and the liquid line. | RA-0022 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2272 | A | It is not necessary to 'chalk' a file when the metal being filed is _____. | steel | copper | lead | aluminum | |
| 11 | 2273 | B | Which of the saws listed would be more suitable for cutting metal in tight quarters or flush to a surface where a hand held hacksaw frame could not be used? | Coping saw | Stab saw | Back saw | Hole saw | |
| 11 | 2274 | D | The function of a heat interchanger used in a refrigeration system is to _____. | lower the temperature of liquid refrigerant before entering the expansion valve | reduce the possibility of liquid refrigerant from flooding back to the compressor | minimize sweating of the suction line | All of the above. | |
| 11 | 2275 | B | According to regulations (46 CFR), who may grant an extension of the tail shaft examination interval? | Officer in Charge, Marine Inspection office | Commandant (G-MOC) | Authorized Representative of the American Bureau of Shipping | Official Representative of the Naval Pollution Control Office | |
| 11 | 2276 | C | In a refrigeration system, the valve shown in the illustration is used as a _____. | thermostatic, evaporator, refrigerant regulating valve | thermostatic, back pressure regulator | pressure actuated, condenser cooling water regulating valve | gas pressure reducing valve | RA-0014 |
| 11 | 2277 | C | It is necessary to 'chalk' a file when the metal you are filing is _____. | mild steel | stainless steel | aluminum | monel | |
| 11 | 2279 | C | What is the theoretical time necessary to reduce the temperature of 40,000 pounds of onions (placed in a refrigerated container) from 75° F to a set point temperature of 46° F? [The specific heat of onions is 0.90 BTU/LB/° F. The trailer heat gain is 6,500 BTU/hr, with a properly operating refrigeration cooling capacity of 45,000 BTU/hr] | 6 hours 5 minutes | 13 hours 16 minutes | 26 hours 48 minutes | 52 hours 12 minutes | |
| 11 | 2282 | D | Which of the relays shown in the illustration may be used to replace the relays used to energize the compressor contactor and the evaporator fan high speed contactor? | The relays labeled 'K1' and 'K6', provided a suitable jumper is used. | The relays labeled 'K1' and 'K4', the latter relay not being necessary for frozen loads. | The relays should never be exchanged due to very distinctive current and power ratings for each. | All of the relays indicated in the microprocessor are interchangeable, however, in this case replace K7 with K6. | RA-0020 |
| 11 | 2283 | B | When cutting sheet metal too thin to be held in your hand while using a hand held hacksaw, the sheet metal should be placed between two _____. | blocks of steel | blocks of wood | pieces of sand paper | pieces of cloth | |
| 11 | 2284 | B | When opening or closing compressor service and line valves on a typical refrigeration system, you _____. | should turn valves slowly to avoid thermal stresses due to low temperatures | must first remove the seal cap | should examine the gasket frequently to ensure that it is flat | should never tighten the packing gland | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2286 | A | The set point adjustment of the device shown in the illustration is made by rotating _____. | "A" | "B" | "D" | "H" | RA-0014 |
| 11 | 2287 | B | While filing, you can prevent pinning by keeping the file clean and rubbing the teeth of the file with _____. | light oil | chalk | talc | graphite | |
| 11 | 2288 | B | An obstructed expansion valve may be indicated by an incompletely cooled evaporator and _____. | a higher than normal discharge pressure | frosting at the evaporator inlet | a decrease in the amount of frosting across the drier | frosting at the suction side of the compressor | |
| 11 | 2289 | C | The dashed line to the illustrated pump is the _____. | pump relief valve outlet to the sump | pump capacity control feedback loop | casing drain | system replenishing line | GS-0049 |
| 11 | 2290 | B | The components indicated as "7" and "8" as shown in the illustration, are known as the _____. | outlet weir and outlet baffle | inlet weir and inlet baffle | first stage oil separator and drip pan | second stage oil separator and drip pan | GS-0153 |
| 11 | 2291 | B | Which of the following statements describes the thermodynamic changes to the refrigerant occurring between points C' and C", as shown in the illustration? | The specific volume is decreasing as a result of an apparent reduction in pressure developed by the displacement volume of the compressor. | The specific volume is increasing along with a reduction in pressure resulting from the flow of refrigerant through the suction piping. | The entire process can be mathematically explained by the PASS system of analytical thermodynamic procedures. | None of the above describes the changes that are occurring. | RA-0022 |
| 11 | 2292 | B | Mill files are always _____. | double cut | single cut | Swiss patterned | second cut | |
| 11 | 2293 | D | Which term applies to a hacksaw blade having short sections of teeth bent in opposite directions? | Alternate | Double alternate | Rake | Wave | |
| 11 | 2294 | A | If a liquid drying agent is used in a refrigeration system already equipped with a solid drying agent, the liquid drying agent will _____. | release the moisture already trapped in the solid drying agent | react violently with the solid drying agent | cause toxic gases to form in the refrigerated space | solidify the refrigerant oil in the compressor crankcase | |
| 11 | 2295 | B | One of the determining factors regulating the time interval for drawing a vessel's tail shaft depends upon the design to reduce stress concentrations. Which of the following factors, in part, would be considered to meet this design criteria? | Sprocketed keyway and slotted key. | Stress relief grooves at the forward end of the propeller and aft end of the liner. | Keyway is to be cut so as to give a sharp rise from the bottom of the keyway to the shaft surface. | All of the above. | |
| 11 | 2296 | B | According to Coast Guard regulations (46 CFR) lamp, paint and oil lockers, and similar compartments shall _____. | suitably insulated from any woodwork or other combustible matter | be constructed of steel or shall be wholly lined with metal | not be located at the end of a corridor in excess of forty feet in length | be so arranged to prevent excessive movement of its contents during periods of foul weather | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2297 | D | Double cut files are used for _____. | quick removal of metal | finish work | rough work | both A and C | |
| 11 | 2298 | A | Which of the files listed will have closely spaced teeth for finishing to a smooth surface? | Smooth cut | Bastard cut | Second cut | Rough cut | |
| 11 | 2299 | D | Your vessel has received a refrigeration container of 16 long tons of cabbage, loaded at 1700 hours on Friday, with a beginning temperature of 80° F. At what time on Saturday will the box theoretically reach its set point temperature of 50° F, assuming the system is operating correctly? [Specific Heat of cabbage is 0.94 BTU/lb/˚F. The container has a heat gain of 6000 BTU/hr, and the refrigerating system capacity is 40,000 BTU/hr.] | Saturday at 0012 hours. | Saturday at 0724 hours. | Saturday at 1242 hours. | Saturday at 2242 hours. | |
| 11 | 2300 | B | If an expansion valve is adjusted for too low a superheat value _____. | the efficiency of the unit will be increased | too much liquid will be passed back to the compressor | the box temperature will increase causing an expansion of the volume of air | the refrigeration effect will increase contributing to uncontrolled box temperatures | |
| 11 | 2301 | C | The apparent pressure drop between points C'' and C''', as shown in the illustration, is a result of _____. | the flow of the refrigerant through the dehydrator | the flow of the refrigerant through the liquid line solenoid | the flow of the refrigerant through the passages and suction valves of the compressor | the flow of the refrigerant through the cylinder heating device | RA-0022 |
| 11 | 2303 | A | Reduced capacity, accompanied by vibration and noise at the suction of a centrifugal pump, results from cavitation in the fluid being pumped. Cavitation describes the formation of _____. | vapor pockets | water hammer action | fluid friction | steam knock | |
| 11 | 2304 | D | Overcharging an air-cooled refrigeration system will cause the _____. | relief valve to lift | compressor to run continuously | system to automatically change over to the hot gas defrost cycle | compressor to short cycle | |
| 11 | 2305 | B | The actual position of the needle valve in the device shown in the illustration is dependent upon which of the following conditions? | The pressure developed as the liquid flows through the expansion valve. | The effects of the pressure developed in the sensing bulb opposed in part by the pressure acting against the diaphragm provided by the equalizing line. | The force of the valve spring only. | The amount of superheat added to the gas discharged to the condenser. | RA-0007 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2306 | B | Which of the problems listed could happen if you attempted to force open a valve 'frozen' in position by using a wrench on the hand wheel? | Bending of the bonnet assembly | Bending of the valve stem | Damage to the pressure seal | Distortion of the valve body | |
| 11 | 2307 | C | The ball float shown in the illustration is 9 inches in diameter, with an effective float arm of 27 inches and floats in a liquid with a specific gravity of 1.0. How much operating torque will be available? | 120 inch pounds | 143 inch pounds | 180 inch pounds | 243 inch pounds | GS-0158 |
| 11 | 2308 | A | Archimedes' principle states that the resultant pressure acting on a body immersed in a fluid _____. | acts vertically upward through the center of gravity of the displaced fluid and is equal to the weight of the fluid displaced | will cause the body to have a reduction in mass equal in magnitude to the effective mass of the structure located above the line of floatation | is proportional in magnitude and direction, regardless of the direction originally developed when the object was submerged | is applied equal and in all directions throughout the vessel in which it is contained | |
| 11 | 2309 | C | What device shown in the illustration is used to prevent excessive internal pressures within the unit during its operation? | An automatic valve, item #14 opens to prevent excessive pressure. | A rupture disc, item #16 ruptures causing the pressure to drop. | Internal tank pressure overcomes the spring force in item #2 causing it to open. | This device is never exposed to excessive internal pressures. | GS-0153 |
| 11 | 2310 | C | When mounted in a hand held hacksaw frame, which of the blades listed could cut smoothly through a metal file? | Wave set | Hardened | Rod | Flexible | |
| 11 | 2311 | D | As shown in the illustration, point D'' is slightly higher than point D'. This difference is representative of _____. | the higher degree of superheat absorbed during the compression process | an esoteric condition of the refrigerant during adiabatic contractions | the additional pressure found in the system due to normal amounts of air | the additional pressure required to force the discharge valves open | RA-0022 |
| 11 | 2312 | D | Which of the following statements represents the function of the power factor correction capacitors (PCC) shown in the illustration of the refrigeration system controller? | The contacts shown at PCC are only used for reversing the compressor rotation if the phase sequence of the unit is incorrect. | When phase sequence anomalies exist, the PCC is used to automatically remove all inductive loads from the compressor motor. | The programmed circuit control functions to maintain the high starting torque required for refrigeration compressors. | The capacitors lower the current drawn by the compressor drive motor and effectively lowers the total current drawn by the unit. | RA-0020 |
| 11 | 2313 | C | Which of the valves listed for the device shown in illustration will be open while the unit is operating in the back flush mode? | valve "4" | valves "4" and "5" | valves "4" and "14" | valves "4", "5", and "14" | GS-0153 |
| 11 | 2314 | B | Which of the listed components, shown in the illustration is designed to close when the refrigerant low side pressure reaches its upper normal limit? | J | E | F | I | RA-0005 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2315 | D | Which of the statements listed accurately applies to controllable pitch propeller systems? | A pitch indicator is to be fitted on the navigation bridge for vessels 400 gross tons and above. | Independent remote control of pitch is to be provided at or near the oil distribution box. Tests of its operation are to be performed in the presence of the Surveyor. | After installation in the vessel, the complete piping system is to be subjected to a hydrostatic test equal to 1.25 times the design pressure. | The arrangement of piping is to be such that a single failure in one part of the piping or pump unit will not impair the integrity of the remaining parts of the system. | |
| 11 | 2316 | D | According to Coast Guard regulation (46 CFR), an "A" class division, bulkhead or deck shall be constructed _____. | with approved incombustible materials and made intact from deck to deck and to shell or other boundaries | of approved incombustible materials, but need meet no requirements relative to the passage of flame | that if subjected to the standard fire test, they would be capable of preventing the passage of flame for one half hour | that if subjected to the standard fire test, they would be capable of preventing the passage of flame and smoke for one hour | |
| 11 | 2319 | C | In a simple saturated refrigeration cycle, which of the listed values represents the quantity of heat rejected by the refrigerant circulated at the condenser? The enthalpy of the compressed gas is 95 BTU/lb, with a condensing temperature of 120° F and an | 58.84 BTU/min/ton | 78.21 BTU/min/ton | 279.86 BTU/min/ton | 451.25 BTU/min/ton | RA-0023 |
| 11 | 2320 | B | A fine wire bristled brush used for cleaning files is called a _____. | file brush | file card | pulling brush | cleaning card | |
| 11 | 2321 | D | The pressure drop of the refrigerant occurring to the flow through the discharge line and condenser, shown in the illustration, is represented by points _____. | A' and B' | B' and C' | C' and D | D' and A | RA-0022 |
| 11 | 2322 | C | What is the function of the device labeled PSC shown in the illustration of the refrigeration system controller? | The pressure sealed container (PSC) is incorporated into the controller to environmentally protect all overload devices. | This device insures the operator never having to change the connections within a power supply plug. | The PSC is part of the phase sequence selector and is used to ensure proper rotation of all motors utilized with this system. | All of the above. | RA-0020 |
| 11 | 2323 | A | The type of tooth set on a hacksaw blade where the teeth are continuously staggered with one to the left and one to the right is known as _____. | alternate | double alternate | raker | wave | |
| 11 | 2324 | B | Relative humidity can be determined by using a psychometric chart and a/an _____. | hydrometer | sling psychrometer | aneroid barometer | compound barometer | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2325 | A | A small obstruction at the thermostatic expansion valve inlet will result in which of the following conditions? | Suction pressure fluctuation. | Hunting as indicated by fluctuations of the discharge pressure. | Expansion valves are designed to pass small foreign particles so no adverse condition will occur. | Ice is the sole cause of this and will soon melt due to superheat; no adverse condition will occur. | |
| 11 | 2326 | C | According to Coast Guard regulations (46 CFR), a "B" class bulkhead shall be constructed _____. | of steel or equivalent metal construction, suitably stiffened and made intact from deck to deck and to shell or other boundaries | of approved incombustible materials, but need meet no requirements relative to the passage of flame | that if subjected to a standard fire test, they would be capable of preventing the passage of flame for one half hour | that if subjected to the standard fire test, they would be capable of preventing the passage of flame and smoke for one hour | |
| 11 | 2328 | D | If the head pressure of a refrigerating system, serviced by the device shown in the illustration begins to drop below set point, which of the following statements would hold true? | The outlet pressure would be fed back through "P" to directly act upon the upper surface of "H". | Component "C" would be forced off of its seat, allowing the water pressure via "J" to increase to act upon and force "H" down, causing "F" to close. | As the feedback pressure through "O" would decrease, the direct mechanical linkage of "L", "C", and "G" would cause the main valve "F" to close. | Component "C" would be reseated, allowing the increase in the force acting above "H" to reseat the main valve "F". | RA-0015 |
| 11 | 2331 | B | A refrigeration system has a condensing temperature of 110° F, with subcooling to 90° F, and an evaporator temperature of 40° F, with the gas temperature to the compressor suction at 70° F superheat. Using this information and the chart shown in the illustration determine the refrigeration effect per pound of refrigerant circulated. | 45.20 BTU/lb | 54.01 BTU/lb | 70.74 BTU/lb | 101.41 BTU/lb | RA-0023 |
| 11 | 2332 | D | The evaporator fans of the refrigeration system as shown in the illustration are two speed. Which of the following statements properly describes the factors controlling the speed of the fans? | The fans will exclusively operate in the high speed range when both the 'EFH' and the 'EF' operating coils are energized. | Two sets of contactors vary the operating voltages of four winding configurations, allowing dual speed capabilities for two separate motors. | The evaporator blower speed is determined by the output of the current coil. As the compressor load is increased, the blower speed is reduced to eliminate electrical overloading. | Evaporator blower speed is determined by the evaporator return air sensor. | RA-0020 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2333 | A | The term referring to the amount or degree the teeth of a hacksaw blade are pushed out or canted from the blade center is known as _____. | set | pitch | choke | blade cut | |
| 11 | 2334 | D | A lower thermostatic temperature setting will provide a desired degree of comfort in a room where _____. | low relative humidity is maintained | triple banded squirrel cage fans are used | air circulation is a maximum | high relative humidity is maintained | |
| 11 | 2335 | C | The valve labeled "4", for the device shown in the illustration, is the _____. | pump suction valve | oily water inlet regulating valve | oil discharge valve | flow control valve | GS-0153 |
| 11 | 2336 | B | According to Coast Guard regulation (46 CFR), a "C" class division, bulkhead or deck shall be constructed _____. | with approved incombustible materials and made intact from deck to deck and to shell or other boundaries | of approved incombustible materials, but need meet no requirements relative to the passage of flame | that if subjected to the standard fire test, they would be capable of preventing the passage of flame for one half hour | that if subjected to the standards fire test, they would be capable of preventing the passage of flame or smoke for one hour | |
| 11 | 2337 | B | The teeth of a file may 'clog up' with metal filings and scratch your work. This condition is known as _____. | binding | pinning | drawing | jamming | |
| 11 | 2338 | D | If the input signal at 'P4' is 51 psi, and the supply pressure is 50 psi, then the output pressure at 'P1', shown in the illustration will be _____. | 0 psi | 25 psi | 40 psi | 50 psi | GS-0145 |
| 11 | 2339 | C | According to Coast Guard regulations (46 CFR Part 92), a standard fire test is one _____. | of many initial operating tests performed on newly commissioned boilers | which is used to determine the flash point of various marine fuels | which develops a series of time temperature relationships in a test furnace | in which all emergency firefighting and related safety equipment are tested | |
| 11 | 2340 | C | If the superheat value of the thermostatic expansion valve is adjusted too high the _____. | box temperature will continually rise | rate at which condensation occurs on the evaporator coils will increase | suction line of the compressor will be abnormally warm | rate at which condensation occurs within the coils will increase | |
| 11 | 2341 | D | A refrigeration system has an evaporating temperature of 40° F, and the liquid is sub cooled to 90° F. Calculate the weight of refrigerant circulated per minute per ton using the table shown in the illustration. | 1.97 lb/min/ton | 2.41 lb/min/ton | 2.82 lb/min/ton | 3.70 lb/min/ton | RA-0023 |
| 11 | 2342 | D | If the amount of current flow through the operating coils of the various contactors, shown in the illustration, increases above three amps, which of the circuit breakers listed will trip? | CB2 | CB3 | CB4 | none of the above | RA-0020 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2343 | C | Sawing faster than a rate of 40 to 50 strokes per minute while using a hand held hacksaw will generally _____. | sharpen the blade | cause the blade to cut faster | dull the blade | not change how the blade cuts | |
| 11 | 2344 | D | In an air conditioning system, moisture is removed from the air by _____. | filters | separators | ducted traps | dehumidifiers | |
| 11 | 2345 | D | What maintenance may be carried out on a thermostatic expansion valve? | The thermal bulb may be recharged. | The rate action may be increased. | The proportional action may be varied. | The inlet screen may be cleaned. | |
| 11 | 2346 | B | Which of the valves listed is connected to the suction side of the pump used in conjunction with the device shown in the illustration? | valve "4" | valve "14" | valve "5" | A valve is not required as the pump is directly attached to the bottom of the tank. | GS-0153 |
| 11 | 2347 | C | If the microprocessor shown in the illustration is indicating the fault 'Defrost Terminated on Time Limit', which of the following statements indicates the problem and the action taken by the controller? | As no electric cycle defrosting has occurred, the microprocessor initiates the hot gas defrost cycle. | The three way valve has not shifted and the microprocessor automatically turns on the electric heater elements. | The microprocessor has terminated the defrost cycle after 45 minutes of elapsed time, not having sensed a coil temperature of 23.9° C. | The pneumatic relay main contacts have closed, causing the unit to return to the cooling cycle. | RA-0020 |
| 11 | 2348 | A | As shown in the illustration, an increase in pressure in the TXV equalizing line tends to _____. | close the expansion valve | increase the delivery of refrigerant to the evaporator | coincide with a decrease in the suction line temperature | adversely affect the operation of the system | RA-0018 |
| 11 | 2349 | D | Which statement about calibrating a newly installed thermostatic expansion valve is correct? | The procedure requires a refrigeration wrench and a digital thermometer to measure box temperature. | No special tools are required as long as the solid state circuit control panels are functioning properly. | This procedure is done at the factory with tools not available to a mariner. | An accurate thermometer and suction pressure gage are essential to this process. | |
| 11 | 2350 | B | Which of the files listed can be used for sharpening a tool? | A triple cut file. | A single cut file. | Any bastard cut file. | Only a double bastard cut file. | |
| 11 | 2351 | C | A refrigeration system has an evaporator temperature of 40° F and a refrigerant circulation rate of 3.7 lbs/ min/ ton. Using the table shown in the illustration, determine the volume of gas being compressed. | 0.79 cubic ft/min/ton | 1.97 cubic ft/min/ton | 2.93 cubic ft/min/ton | 3.70 cubic ft/min/ton | RA-0023 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2352 | C | Which of the listed procedures can be carried out to insure that the modulation valve, shown in the illustration, is opened completely? | The jacking device not shown is utilized to achieve this desired effect when the device appears to be malfunctioning. | When the lift button is depressed the valve is held open due to the action of the indented cam assembly. | The valve may be opened by opening the circuit breaker labeled CB1. | The head of the modulation valve must be removed in order to prevent its residual magnetism from drawing the valve into a closed position. | RA-0020 |
| 11 | 2353 | C | When using a hand held hacksaw the correct maximum rate of speed for cutting should be _____. | 10 to 20 strokes per minute | 80 to 100 strokes per minute | 40 to 50 strokes per minute | 70 to 80 strokes per minute | |
| 11 | 2354 | A | Routine maintenance on a Central Control Room hermetically sealed air conditioning unit should include _____. | changing the air filter | recharging the system | changing compressor lubricant | renewing container vacuum | |
| 11 | 2355 | A | When a thermostatic expansion valve is installed in a container refrigeration system, the sensing bulb may not require insulation if the bulb is installed _____. | outside of the cooled air stream | in the cooled air stream | on the tail end of the condenser outlet pipe | at the mid-horizontal level of a vertically run tail coil | |
| 11 | 2356 | C | The type of tooth set on a hacksaw blade where every third tooth remains straight, while the other two are alternately set is known as _____. | Alternate | Double alternate | Raker | Wave | |
| 11 | 2357 | B | The valve labeled "5", in the device shown in the illustration is the _____. | pump suction valve | oily water inlet valve | flow control valve | overboard discharge regulating valve | GS-0153 |
| 11 | 2358 | B | Which of the following alarms and instrumentation is not required for a vessel incorporating a controllable pitch propeller in its main propulsion system? | Pitch indicator | Low oil temperature | High oil pressure | Low oil pressure | |
| 11 | 2359 | D | Each pressure vessel containing refrigerants, which may be isolated, shall be _____. (46 CFR) | subject to annual hydrostatic tests to be performed in the presence of a marine inspector | protected by a relief valve set to relieve at a pressure not exceeding 110 percent of the maximum allowable working pressure of the vessel | stored in an upright position in addition to being secured so as to prevent accidental release of the refrigerant within a confined space | protected by a relief valve set to relieve at a pressure not exceeding the maximum allowable working pressure of the vessel | |
| 11 | 2360 | B | The type of tooth set on a hacksaw blade where two adjoining teeth are staggered to the right, then two to the left, and continue to alternate in this manner is known as _____. | Alternate | Double alternate | Racker | Wave | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2361 | D | In a typical refrigeration system, the liquid refrigerant in the condenser is 90° F with an evaporator temperature of 40° F. Using the table shown in the illustration, determine the amount of heat absorbed by the liquid flashing to gas. | 5.23 BTU/lb | 6.67 BTU/lb | 7.33 BTU/lb | 11.7 BTU/lb | RA-0023 |
| 11 | 2362 | A | If the microprocessor shown in the illustration indicates a fault code representing 'Microprocessor Faulty', which of the following conditions is indicated and what corrective action should be taken? | The self checking feature of the microprocessor locates a malfunction due to a circuit or component failure, necessitating the replacement of the microprocessor. | If the unit initiates such an alarm, the unit is obviously functioning correctly and just needs to be reset. | This fault code does not exist and this situation will never occur due to standard manufacturing criteria. | None of the above. | RA-0020 |
| 11 | 2363 | D | Expansion valve maintenance should include which of the following procedures? | Cleaning of in-line filters. | Ensuring that the thermal bulb is in good contact with the suction line. | Checking that the thermal bulb is in the proper location. | All of the above. | |
| 11 | 2365 | B | Which of the installation steps listed is necessary for the proper operation of the thermostatic expansion valve? | Clean outlet pipe and secure bulb tangential to the flow of refrigerant. | Clean off oxidation from the surface of the suction line and sensing bulb with fine abrasive cloth. | Remove excess lengths of the sensing bulb capillary tube from the device to increase sensitivity. | Heat shrink insulating material around the device once the bulb has been properly secured. | |
| 11 | 2366 | C | Which of the following statements is correct concerning requirements for propellers? | A propeller may not be changed with one of a different pitch unless stress evaluations are supplied and permission is granted by a Marine Surveyor. | When steel propellers are used, zinc anodes are to be fitted on the aftermost strut bearing housing and on the forward most section of the rudder assembly. | The exposed steel of the shaft is to be protected from the action of the water by filling all spaces between the cap, hub and shaft with a suitable material. | Ultrasonic examinations of the propeller may be performed in lieu of required dry-docking periods, provided certified copies are distributed to the proper regulatory bodies. | |
| 11 | 2367 | A | When the oily water separator, shown in the illustration, is in operation and processing clear bilge water, what should be the internal water level? | The water level should be located in the upper section of the tank. | The water level should be located in the lower section of the tank as controlled by flow control valve "14". | The water level in the tank should be slightly above the upper coalescer bed "9". | No water level is maintained in the tank. | GS-0153 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2368 | D | Concerning the device shown in the illustration, which of the listed components would be removed or disconnected last during cleaning and inspection of the tank internals? | valves, items "4" and "5" | weir, item "7" | coalescer bed, item "9" | coalescer bed, item "12" | GS-0153 |
| 11 | 2369 | B | The differential height of the left hand side of the tube from the zero mark to the open end for device "C" is 4.4". If the barometric pressure is 14.7 psia, and the "U" tube contains mercury, what minimum pressure applied to "A" would just force the liquid out of the tube? | 4.32 psia | 4.32 psig | 29.92 psia | 2.16 psig | GS-0154 |
| 11 | 2370 | A | Which of the following statements is correct concerning the regulations (46 CFR) regarding internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition? | They shall be kept clear of and suitably insulated from any woodwork or other combustible matter. | All exhausts and uptakes shall run as close as possible to the horizontal and shall exit the machinery space at a point above the highest load line. | The general construction of the vessel shall be such as to minimize noise hazards in the upper machinery spaces. | This protection shall be such as to be capable of preventing an excessive temperature rise in the upper machinery spaces. | |
| 11 | 2371 | C | The locking plates shown in the illustration are used in many marine applications. Which figure indicates the improper method for using these devices? | "A" | "B" | "C" | "D" | GS-0156 |
| 11 | 2372 | A | The compressor contactor assembly shown in the illustration has burnt out. If all safety devices are operating correctly, which of the following conditions could be a probable cause? | Low line voltage supplied to the system controller. | Twenty amperes of current flowing through relay contact 'K7'. | Steady, continuous running for periods of 12 hours or more. | Excessive refrigerant in system. | RA-0020 |
| 11 | 2373 | A | Regarding the device shown in the illustration, what would be the most probable cause if item "1" indicated an unusually high vacuum while the oily water separator was operating in the processing mode? | An unusually high vacuum indicates a restriction in the inlet piping. | An unusually high vacuum is the result of the flow control valve '# 14' being excessively throttled. | An unusually high vacuum is the result of the coalescer beds being installed in reverse order. | This type of oily-water separator always operates with an unusually high vacuum. | GS-0153 |
| 11 | 2374 | C | The latent heat of water vapor in air is dependent upon the _____. | dry bulb temperature | wet bulb temperature | dew point | dry point | |
| 11 | 2375 | B | When replacing a thermostatic expansion valve sensing bulb, it is necessary to _____. | apply a light film of oil to increase heat transfer | apply a light film of oil to prevent oxidation | apply a heavy coating of grease to function as a heat sink | carefully coat the device with silicone sealant to reduce the effects of convective cooling | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2376 | B | You are observing the operation of the oily-water separator shown in the illustration. Item "1" initially indicates a vacuum and a moment later indicates a positive pressure. Which of the following statements describes what has occurred? | The unit has just begun the oily-water mixture processing mode. | The unit has just begun the oil discharge mode. | The unit is obviously flooded and needs to be drained to the proper operating level. | The unit is operating incorrectly and must be secured immediately. | GS-0153 |
| 11 | 2378 | D | A hacksaw blade will break if _____. | the rate of cutting is too great | the blade becomes loose in the frame | too much pressure is applied to the blade | all the above | |
| 11 | 2379 | B | Hydraulic hose assemblies are permitted by 46 CFR to be installed between two points of relative motion _____. | provided proper releasing mechanisms are available to enable quick disconnect capabilities | but shall not be subjected to torsional deflection under any conditions of operation | provided the entire length of the device is visible to the operator at all times | to prevent the formation of loading stresses | |
| 11 | 2380 | B | If air is continuously allowed to enter the device shown in the illustration while operating in the processing mode _____. | the air will accumulate in the top of the unit and will be manually vented off using valve "2" | the accumulation of air in the top of the unit will be sensed as oil by item "6" and initiates the oil discharge mode | the air will present no problem to the operation of the unit, it is entrained with the treated water and is pumped overboard | the unit will prevent this as the associated pump is normally controlled with a level control device | GS-0153 |
| 11 | 2381 | D | What is the primary function of the devices shown in the illustration? | The transit washers transmit the rotary motion of the cap screw to the actuating assembly. | These abrasion resistors prevent damage to the surface around the bolt holes when tightening the bolts. | The grounding straps help prevent electrolysis by improving the conductivity between the components. | The locking plates are used to prevent the fastening devices from vibrating loose. | GS-0156 |
| 11 | 2382 | C | The refrigeration system shown in the illustration utilizes a modulation valve, providing suction modulation capacity control, and produces some distinctive operating characteristics. Which of the following statements represents the peculiarities encountered when operating this system? | The operation of the valve will always cause compressor crankcase frosting, giving the impression of heat loss and operational inefficiencies. | The discharge pressure will moderate according to the relative movement of the modulation valve to limit excessive head pressure. | Suction and discharge pressures may drop below expected normal readings when the unit is in the power limit or modulating cool mode. | As the modulation valve closes, the contacts at PCC close, reducing the speed of the compressor and increasing the overall operating efficiency of the unit. | RA-0020 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2383 | C | The vessel has received a refrigerated container loaded with 9 long tons of ice cream. The current box temperature is 31° F but has a normal set point of minus 10° F. Under ideal conditions how long will it take to pull the box temperature down to set point, if the equipment is operating properly? [Specific Heat of cargo is 0.39 BTU/lb/˚F, with a container heat gain of 6000 BTU/hr, and a refrigeration system capacity of 3.5 tons] | 6 hours 48 minutes | 7 hours 58 minutes | 8 hours 57 minutes | 9 hours 38 minutes | |
| 11 | 2384 | C | Rather than design an infinite variety of valve sizes for use as thermostatic expansion valves, some manufacturers use _____. | an adjusting cap to meet the various size differences | a flexible diaphragm | internal restrictors of different sizes | a feeler bulb with an adjustable pressure line | |
| 11 | 2385 | C | Which of the following statements represents the last step to be followed when replacing the power element of the device shown in the illustration? | Replace all removed shrouding. | Calibrate the sensing bulb. | Measure evaporator tail coil superheat. | Remove all excess capillary tubing. | RA-0007 |
| 11 | 2386 | D | The ball float shown in the illustration has a circumference of 18.85" and is used in water with a specific gravity of 1.0. If 16 pounds of force is available at "X", and the effective length of the float arm is 24 inches, what is the length of "L"? | 2.00 inches | 2.50 inches | 2.75 inches | 3.00 inches | GS-0158 |
| 11 | 2387 | B | The device shown in the illustration is a _____. | relief valve | flushometer valve | hydro-kineter | back pressure regulator | GS-0155 |
| 11 | 2388 | C | The device shown in the illustration is used to _____. | maintain proper sanitary system operating pressure | provide pressure relief in low pressure systems | control flush water flow to toilets and urinals | inject emergency feed water into high pressure vessels | GS-0155 |
| 11 | 2390 | D | The diaphragm orifice labeled "H", as shown in the illustration is used as a/an _____. | pressure reducer | check valve | injector | time delay | GS-0155 |
| 11 | 2391 | D | Which figure shown in the illustration, is the nut lock improperly used? | "A" | "B" | "C" and "D" | "C" and "E" | GS-0156 |
| 11 | 2392 | C | As shown in the illustration, the gage labeled "C" contains mercury and both devices "B" and "D" indicate 'zero' units when exposed to atmospheric pressure. If the pressure indicated on "A" is 16.2 psia, the corresponding readings of the gages "B", and " | B = 2.1 psig, D = 450" H2O, h = 3" | B = 40.9 psig, D = 450" H2O, h = 3" | B = 1.5 psig, D = 41.59" H2O, h = 3" | B = 2.1 psig, D = 42" H2O, h = 6" | GS-0154 |
| 11 | 2394 | D | Constant superheat is maintained at the evaporator outlet of a refrigeration coil by a _____. | solenoid valve | low pressure cutout switch | king valve | thermal expansion valve | |
| 11 | 2396 | D | Water flow is established through the unit shown in the illustration when _____. | "E" is moved from the position shown | "A" is tilted off of its seat | total force above "C" is reduced below the value of the total force acting beneath "C" | all of the above | GS-0155 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2397 | A | Which of the following statements is correct concerning the operation of the device shown in the illustration? | The tilting of "A" from its seat releases the pressure from above "C". | Only by releasing "E" will the unit be able to shut itself off. | For the unit to be activated, "A" can only be moved initially in line with the axis of the unit. | The movement of "E" will directly push "D" in a smooth vertical motion. | GS-0155 |
| 11 | 2398 | C | Edges on objects not visible in the view shown are represented in blueprints by _____. | a thick solid line | dashed line having alternating long and short dashes | dashed lines having approximately equal length dashes | Hidden edges are not represented because they are 'hidden'. | |
| 11 | 2400 | D | If water continues to trickle into the toilet bowl after the device shown in the illustration has apparently closed, the problem is likely due to _____. | "E" being stuck or held in a position other horizontal | a problem with "H" that allows continuous low flow across the device | "A" being cocked into a fully open position | "C" having developed a warp or ripple at the seating surface | GS-0155 |
| 11 | 2401 | D | When should the nut lock shown in the illustration, be replaced with standard lock washers or other similar devices used in the industry? | Flat locks are no longer used in the marine industry and should be replaced during the next maintenance procedure. | When torque values of 25 foot pounds or greater are being used, replacement with spring washers is mandatory. | Bellvue washers are the ideal substitute for these locking devices provided a thread locking adhesive is used. | Replacement with another nut locking device is unnecessary. | GS-0156 |
| 11 | 2402 | A | The pressure applied to the instruments via port "A", as shown in the illustration, is 16 psia. What will be the equivalent pressure readings for "B" and "D"? | B = 1.3 psig D = 36 inches of H2O | B = 16 psig D = 63 inches of H2O | B = 17.4 psig D = 42 inches of H2O | B = 14.7 psig D = 32 inches of H2O | GS-0154 |
| 11 | 2403 | C | During the operation of a large multi-box refrigeration system, using a fixed capacity compressor, only two of the five boxes are in the process of actively being cooled. If two additional boxes were to be brought into the cooling process simultaneously, the _____. | high side pressure would drop by 25 psi at the beginning of the cooling period | amount of subcooling via the condenser would increase by approximately 5° F | low side pressure would temporarily increase | low side pressure would temporarily decrease | |
| 11 | 2404 | B | If a refrigeration system is overcharged with refrigerant, one result will be _____. | low suction pressure | higher than normal compressor head pressure | increased system operating efficiency | short cycling on the low pressure cutout | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2405 | A | Which of the listed statements describes the method used to determine the amount of superheat to be developed in the evaporator coil? | Note the evaporator pressure, determine corresponding saturation temperature, and subtract it from the temperature measured at the thermostatic expansion valve sensing bulb. | Determine the suction/ discharge temperature differential and multiply by the constant of .0967. | Multiply the travel of the expansion valve stem by the conversion factor. | Subtract the temperature of the gas after the unit has been pumped down from its operating temperature as determined by the evaporator test gage during normal operation. | RA-0016 |
| 11 | 2406 | D | During the operation of a five box refrigeration system, using a fixed capacity compressor, two additional boxes came on line with the two boxes already in the active cooling process. At the beginning of the cooling period for the two additional boxes, the operating conditions of the system would require the quantity (flow rate) of refrigerant to the compressor suction to _____. | remain the same, with a decrease in suction pressure | increase, while maintaining the previous suction pressure | remain the same with an increase in suction pressure | increase, with an increase in suction pressure | |
| 11 | 2407 | A | The device shown in the illustration is used as a/an _____. | refrigeration compressor capacity unloading mechanism | air conditioning proportional-plus-reset, humidity/ temperature ratio controller | multi-box back pressure regulator with accumulator | combined box temperature thermostat and thermal expansion device | RA-0013 |
| 11 | 2408 | B | The compressor crankcase (suction pressure) is sensed through the port in the illustration labeled as _____. | D | B | X | J | RA-0013 |
| 11 | 2409 | A | A liquid is being transferred by a centrifugal pump. As the liquid passes through the volute, its velocity decreases and _____. | its pressure increases | its pressure decreases | the potential energy decreases | the kinetic energy increases | |
| 11 | 2410 | A | The watch engineer finds the cargo refrigeration compressor has blown the shaft seal. In this situation, he should _____. | secure the compressor at once and close the suction and discharge valves | pump the system down and isolate the leak | close the suction valve, secure the compressor, and then replace the shaft seal | tighten the shaft seal packing to reduce leakage, slow the compressor, and operate the expansion valves by hand until repairs can be made | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2411 | C | It is necessary to replace a branch suction section of bilge system piping within the machinery space. The machinery space is 100' in length and 85' in breadth. The molded depth of the bulkhead deck is 25'. Which of the listed pipe sizes should be used? | 2" (nominal size) schedule 40 | 3" (nominal size) schedule 80 | 4" (nominal size) schedule 80 | 5" (nominal size) schedule 60 | |
| 11 | 2412 | B | If "A" were open to the atmosphere, as shown in the illustration, the pressure gage would read zero and the levels in the "U" tube would be equalized. If "D" is manufactured to indicate inches of water, what will be indicated reading of the diaphragm gage if the atmospheric pressure is 14.7 psia? | D = 407.6 inches of water | D = 0.0 inches of water | D = 14.76 inches of water | D = 27.73 inches of water | GS-0154 |
| 11 | 2413 | A | Protective equipment to be used while carrying out oxyacetylene welding should always include _____. | goggles | ear plugs | non-sparking tools | steel toe safety shoes | |
| 11 | 2414 | B | When the refrigeration system compressor suction pressure corresponds to an elevation in coil temperature, a low pressure cutout switch is set to automatically start the compressor. The normal stopping point of the compressor is set by adjusting the ____ | cut-in point of the low pressure cutout switch | low pressure cutout switch differential | cutout point of the high pressure cutout switch | high pressure cutout switch differential | |
| 11 | 2415 | B | Which of the following statements represents the information obtained by the indication on the gage shown in the illustration? | The absolute pressure of the refrigerant corresponding to the saturation temperature. | The corresponding saturation temperature of the refrigerant to the indicated gage pressure. | The pressure of the refrigerant and the corresponding superheat temperature. | The indicated pressure of the refrigerant and the saturation temperature of water. | RA-0016 |
| 11 | 2416 | A | In an emergency, the electro-hydraulic steering units can be directly controlled by the _____. | trick wheel | rapson slide | follow-up gear | receiver unit | |
| 11 | 2417 | B | Which nondestructive testing method is suitable for use in detecting and identifying a diameter subsurface void in a six inch diameter stainless steel shaft? | Magnetic particle | Radiography | Ultrasonic | Dye penetrant | |
| 11 | 2418 | B | One function of the thermal expansion valve is to _____. | act as a pilot from the solenoid valve | regulate the amount of refrigerant flow to the coil | regulate the water flow | turn the compressor off and on | |
| 11 | 2419 | C | The safety heads of most large reciprocating compressors used in refrigeration systems are held in place by _____. | discharge pressure in the safety return line | large Teflon gaskets | heavy coil springs | tack welding on the sides | |
| 11 | 2420 | C | The device shown in the illustration is a _____. | ball check valve | lift check valve | swing check valve | piston check valve | GS-0056 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2422 | B | Dry bulk material transfer to an offshore drilling rig has just begun when you discover air leaks at the P-tank manhole cover. You must _____. | complete the discharge before attempting any repairs | de-pressurize the tank, inspect, clean and reseat the gasket | reduce the P-tank pressure to 25-30 psi to complete the transfer | place a burlap bag around the leaking manhole flange | |
| 11 | 2423 | C | Regarding the hydraulic transmission illustrated, the "A" end is a _____. | variable stroke motor | fixed displacement pump | variable stroke pump | fixed displacement motor | GS-0057 |
| 11 | 2425 | C | The coil temperature measured at the expansion valve sensing bulb of an operating system is 33° F. The coil pressure gage, similar to the device shown in the illustration, indicates 25 psig. What adjustments or changes, if any, should be made to the system? | The filter drier needs to be changed to increase the suction pressure. | The evaporator coils need to be steam cleaned or high pressure washed. | The expansion valve should not be adjusted, as the degree of superheat is within the accepted range. | The liquid line strainer is obviously fouled and needs to be cleaned. | RA-0016 |
| 11 | 2426 | D | If the valve "A" on the pump illustrated is closed, the _____. | packing will tend to wear rapidly | pump may loose suction if the suction is from below the pump | shaft sleeve may become excessively worn | All of the above. | GS-0070 |
| 11 | 2427 | C | In hydraulics, the graphic symbol illustrated in Fig. A is used to represent a/an _____. | variable resistor | expansion joint | spring | flexible mount | GS-0068 |
| 11 | 2428 | D | What is the reading of the vernier micrometer caliper scale shown in figure "A" in the illustration? | 0.8158 inch | 0.8228 inch | 0.8358 inch | 0.8388 inch | GS-0091 |
| 11 | 2429 | A | The reading indicated on a vernier micrometer caliper scale is .8388 inches. Which of the figures illustrated represents this reading? | Figure A | Figure C | Figure D | Figure F | GS-0091 |
| 11 | 2430 | C | While cleaning out a P-tank _____. | provide a gas mask when using petroleum based solvents for cleaning | standard tank safety precautions are unnecessary if the manway hatch is off | provide properly grounded and electrically safe portable lighting | use a combustible gas indicator when working in the tank | |
| 11 | 2432 | D | A pressure gage, similar to device "D" shown in the illustration, is installed on the vessel's ventilation system. The gage is indicating 30 inches of water (7.465 kPa), but the accuracy of the gage is in doubt. Using a piece of clear hose, you construct a simple U-tube mercury manometer, similar to device "C" illustrated. Once installed, the distance between levels is 12.7 centimeters. How inaccurate is the existing draft gage? | The gage reads slightly lower, but the inaccuracy is too insignificant to be concerned. | The draft gage is correct when acknowledging the effects of absolute pressure on the system. | The existing draft gage indicates a pressure equal to atmospheric pressure. | The mechanical draft gage is indicating an error incorrect by 55 percent of the true measured value. | GS-0154 |
| 11 | 2433 | D | In the illustrated device, what is the function of the short sensing element attached to "S" in figure "A"? | It senses temperature for use in the temperature control circuit. | It is used to maintain liquid level one inch below the wier plate. | Both sensing elements are anodes used to provide the tank with corrosion protection. | It is used to control the oil discharge mode. | GS-0113 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2434 | C | At ambient temperature and atmospheric pressure, R-12 is a/an _____. | corrosive liquid | flammable gas | odorless gas | superheated liquid | |
| 11 | 2436 | A | The reading indicated on a vernier micrometer caliper scale is .2928 inches. Which of the figures in the illustration represents this reading? | Figure B | Figure C | Figure E | Figure F | GS-0091 |
| 11 | 2437 | D | The reading on the micrometer scale shown in figure "II" in the illustration is _____. | 0.321 inch | 0.350 inch | 0.351 inch | 0.371 inch | GS-0095 |
| 11 | 2438 | B | What is the reading of the vernier caliper scale shown in figure "F" in the illustration? | 1.719 inch | 1.723 inch | 1.812 inch | 1.871 inch | GS-0092 |
| 11 | 2439 | C | Which of the illustrated figures represents the use of a right hand roughing tool? | Figure P | Figure S | Figure T | Figure V | GS-0090 |
| 11 | 2440 | D | Which chemical symbol represents ammonia? | AM3 | AMn3 | NM3 | NH3 | |
| 11 | 2441 | D | If a vessel is not provided with duplicate service systems, which of the systems listed will satisfy the regulations if serviced by two pumps? (46 CFR) | Main condensate | Fuel oil service | Lube oil service | All of the above | |
| 11 | 2443 | A | A centrifugal pump gradually develops insufficient discharge pressure. What corrective action is required? | Replace the wearing rings. | Throttle in on the discharge valve. | Replace the lantern rings. | Throttle in on the suction valve. | |
| 11 | 2444 | B | The low pressure cutout switch will cause the compressor in a refrigeration system to short cycle if the _____. | expansion valve thermal bulb loses its charge | differential pressure between the cut-in pressure and cutout pressure is too small | expansion valve freezes in the closed position | refrigerant has too much oil in circulation | |
| 11 | 2445 | A | If the "B" end of the hydraulic transmission illustrated, were provided with a variable position tilting box, and the 'A: end displacement were to be constant, the _____. | speed output of the "B" end would increase in proportion as the tilting box angle would approach zero | available horsepower at the "B" end would increase in proportion as the tilting box angle would approach zero stroke | speed output of the "B" end would increase in proportion to increasing the "B" end tilting box angle | available horsepower at the "B" end would increase in proportion to decreasing the angle of the "B" end tilting box towards zero | GS-0057 |
| 11 | 2446 | A | Which piping material is recommended to be used in extra heavy duty sizes in ammonia refrigeration system construction? | Steel | Monel | Bronze | Copper | |
| 11 | 2447 | D | When cleaning out a P-tank _____. | it will be necessary to use approved petroleum base solvents and a gas mask | a combustible gas indicator must be in use during the cleaning process | standard tank safety precautions are not necessary when the manway is open to provide light and ventilation | provide a safety harness that permits an unconscious person to be pulled out through the manway | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2448 | B | What is the reading of the vernier caliper scale shown in figure "B" in the illustration? | 3.7850 inch | 5.3700 inch | 5.8050 inch | 6.3700 inch | GS-0092 |
| 11 | 2449 | C | If your skin comes in contact with liquid ammonia refrigerant, you should immediately _____. | contact physicians health care | apply an antibacterial ointment | flush the affected area with water | remove all necessary clothing | |
| 11 | 2451 | C | It is necessary to test the hydraulic system of a controllable pitch propeller. According to 46 CFR what should be done? | The vessel must be dry-docked and the propeller removed when performing this test. | The system pressure should be prevented from exceeding the maximum allowable operating pressure set forth by the manufacturer. | The system should be tested at a pressure of 1 1/2 times the maximum allowable pressure. | All necessary repairs must approved by the Chief Engineer of the vessel. | |
| 11 | 2452 | C | Using the information given, solve for "H", "I", and "J" in the table accompanying the psychometric chart shown in the illustration. | H = 33.0 BTU/lb, I = 15.5 cubic ft/lb, J = .0127 lbs/lb | H = 33.0 BTU/lb, I = 13.97 cubic ft/lb, J = 78.0 grains/lb | H = 34.1 BTU/lb, I = 13.97 cubic ft/lb, J = 88.0 grains/lb | H = 34.1 BTU/lb, I = 14.97 cubic ft./lb, J = 98.0 grains/lb | RA-0021 |
| 11 | 2453 | C | Which materials should be used for ammonia refrigeration system evaporator cooling coil construction? | Copper tubing with copper fins | Copper tubing with aluminum fins | Aluminum tubing with copper fins | All of the above may be used. | |
| 11 | 2454 | D | When checking the oil level in a refrigeration compressor, the most accurate reading is obtained _____. | immediately after purging | immediately after charging | after being secured for 3 hours with the sump heater secured | immediately after shutdown following a prolonged period of operation | |
| 11 | 2455 | B | If an evaporator or condenser coil of a container refrigeration system becomes dirty and requires cleaning, one of the suggested methods is to use the _____. | 'Binks' gun with weak acid solvent | pressure wash or a steam cleaning system | copper wire rotary brush | all of the above | |
| 11 | 2456 | D | Ammonia is lighter than air and if a leak should occur its concentration will be _____. | lower near the top of an enclosed space | dependent upon available free hydrogen ions | of minimum importance during venting procedures | lower near the deck of an enclosed space | |
| 11 | 2457 | A | When cleaning a P-tank _____. | wear a dust mask to filter out mud and cement particles | only use approved petroleum based solvents | it is not required to use standard tank safety procedures | an explosimeter must be provided to test the tank atmosphere | |
| 11 | 2458 | B | The illustrated device is used to _____. | force a uniformly heated sample of oil by applied pressure, through the bottom orifice with in a specified time | allow a uniformly heated 60 c.c. sample of oil to gravitate through the bottom orifice, using the time as a measurement viscosity | determine the temperature at which vapors are produced, ignited, and extinguished | measure the volatility of an oil sample, by determining the resulting pressure as the volume of vapor is continually increased | GS-0069 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2459 | D | The pressure in a high pressure refrigeration system about to be opened for repair should be _____. | 1 to 2 psig | 4 to 7 psig | 11 to 12 psig | 0 psia | |
| 11 | 2462 | D | The relative humidity is 90% and the dry bulb temperature is 50° F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature. | 19.50° F | 12.50° F | 4.90° F | 1.50° F | RA-0021 |
| 11 | 2463 | D | The unit shown in the illustration has just been internally cleaned. An inspection was carried out and the unit found to be properly lined up, although item "1" indicates an unusually high vacuum. Your next step should be to _____. | retighten all the cap screws on the lid | reseat the relief valve, item "2" | close off control valve, item "14" | check the bilge water inlet strainer | GS-0153 |
| 11 | 2464 | C | The temperature in a refrigerated space is controlled by adjusting the thermostat connected to the _____. | suction line solenoid | thermostatic expansion valve | liquid line box solenoid | low pressure cutout switch | |
| 11 | 2465 | C | Standard driers used in many container type refrigeration systems may contain _____. | activated charcoal or silica gel | special chemicals to increase adsorption rates | activated alumina or silica gel | all of the above may be used | |
| 11 | 2466 | C | If the temperature of the ammonia gas in the discharge piping and the condenser of a refrigeration system remains above 266° F, the _____. | refrigeration effect increases | unit will begin to subcool | vapor will cease to condense | process of sublimation will begin | |
| 11 | 2467 | B | The flame of a sulphur candle in the presence of an ammonia leak will turn _____. | pink | white | yellow | blue | |
| 11 | 2468 | B | When manually cleaning a P-tank _____. | the worker must be provided with an OBA | have a person standing by on deck | a short length of rope should be worn around the waist to pull the worker to safety | an explosimeter must be provided to test the tank atmosphere | |
| 11 | 2469 | C | The type of welded joint illustrated is referred to as a/an _____. | socket weld | edge weld | butt weld | annulus weld | GS-0078 |
| 11 | 2471 | B | According to Coast Guard Regulations (46 CFR) an accumulator is a/an _____. | device in which bilge water may be stored prior to being pumped ashore | unfired pressure vessel in which energy is stored under high pressure in the form of a gas or a gas and a hydraulic fluid. | industry accepted term for the equipment which is used to collect oily bilge liquids | test procedure in which the relieving capacity of the safety valves are verified | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2472 | B | Sample #5 in the table shown in the illustration indicates a relative humidity of 90%. Using the accompanying psychometric chart, determine which of the samples contains the greatest amount of moisture per pound of dry air. | Sample 1 | Sample 2 | Sample 3 | None of the above are correct, as it is contradictory to measure moisture on a weight per pound of 'dry' air basis. | RA-0021 |
| 11 | 2473 | A | Which of the following devices is the safest to use when locating ammonia leaks? | Litmus paper | Sulphur candle | Halide torch | All of the above are recommended. | |
| 11 | 2474 | B | The water regulating valve installed in a refrigeration system is operated by the _____. | compressor discharge temperature | compressor discharge pressure | solenoid | sensing line from the tail coil | |
| 11 | 2476 | B | Which of the following refrigerants will normally require water cooled compressor components? | R-134 | Ammonia | R-22 | All of the above are correct. | |
| 11 | 2477 | A | The receiver used in a refrigeration system _____. | stores liquid refrigerant | collects noncondensable gases | allows refrigerant to be subcooled | prevents liquid refrigerant from slugging to the compressor | |
| 11 | 2478 | D | Theoretically, if the "B" end of the hydraulic transmission illustrated were provided with a variable position tilting box, and the "A" end displacement were to be constant, the _____. | speed output of the "B" end would decrease in proportion as the tilting box would approach zero stroke | available horsepower at the "B" end would increase in proportion as the tilting box would approach zero stroke | speed output of the "B" would increase in proportion to increasing the "B" end tilting box angle | available horsepower at the "B" end would increase in proportion to the increasing angle of the "B" end tilt box angle | GS-0057 |
| 11 | 2479 | C | What would occur if "A" shown on the illustrated pump is closed? | Recirculation will not be available at low flow. | Satisfactory venting of the pump casing would not be possible. | The interval of replacing the packing will become more frequent. | All of the above. | GS-0070 |
| 11 | 2480 | D | Average condensing pressures of an ammonia refrigeration system range between _____. | 120 and 160 psig | 130 and 170 psig | 140 and 180 psig | 150 and 190 psig | |
| 11 | 2482 | D | Using the psychometric chart, which of the air samples listed below has the identical specific volume to an air sample having a dry bulb temperature of 70° F, and a moisture content of 11 grains per pound of dry air? | Dry bulb 72° F, Dew point 33.5° F. | Dry bulb 63.0° F, Relative humidity 60%. | Dry bulb 69.0° F, Heat content 23.25 BTU/lb. | Dry bulb 63.4° F, Wet bulb 59.5° F. | RA-0021 |
| 11 | 2483 | D | An ammonia leak will turn moistened pink litmus paper _____. | orange | red | purple | blue | |
| 11 | 2484 | D | The thermal expansion valve reacts directly to the _____. | temperature in the space being cooled | liquid refrigerant pressure at the solenoid valve | pressure drop across the evaporator coils | temperature of the evaporator coil outlet | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2486 | A | Under normal conditions ammonia refrigerants should be added at the _____. | high side of the system | suction service connection | discharge service connection | expansion valve side port connection | |
| 11 | 2488 | B | To service a 60 ton air conditioning package, the easiest way to determine the type of refrigerant used is to _____. | use your service gage set and refrigeration card | look at the unit name plate | ask the Chief Engineer | look on the top of the TXV | |
| 11 | 2489 | C | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 225 pound load stationary would be _____. | 34 lbs. | 45 lbs. | 75 lbs. | 90 lbs. | GS-0110 |
| 11 | 2490 | C | Pure anhydrous ammonia is considered non-corrosive to _____. | iron only | steel only | copper-bearing metals | None of the above are correct. | |
| 11 | 2491 | D | If auxiliary machinery vital to the main propulsion system is not provided with independent duplicate systems, which of the systems listed would satisfy regulations if serviced by two pumps? (46 CFR) | Main condensate | Lube oil service | Fuel oil service | All of the above | |
| 11 | 2492 | D | The introduction of outside air to the air conditioning system is 90° F with a relative humidity of 60%. The air has been conditioned to 56° F with a relative humidity of 80%. Using the psychometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air. | 44 grains | 54 grains | 64 grains | 74 grains | RA-0021 |
| 11 | 2493 | B | When used as a refrigerant, ammonia containing moisture will act as a corrosive mixture to _____. | steel components | brass and bronze metals | stainless steel components | All of the above are correct. | |
| 11 | 2494 | C | When hot gas defrosting a refrigeration system, one way to overcome the possibility of a large slug of liquid refrigerant entering the compressor suction is to use the installed _____. | subcooler | liquid extractors | re-evaporator | drain lines | |
| 11 | 2495 | B | If the combination moisture indicator and sight glass indicates an accumulation of moisture within the system, which of the listed procedures would be the most practical to follow? | Secure the system, disassemble and de-ice the thermostatic expansion valve. | Close the king valve, pump down the system, isolate the drier, remove and replace with new drier element. | Purge the entire system to the atmosphere, replace the drier, and add Freon. | Using a vacuum pump, draw the system down to 1,270 microns for a period of three hours. | |
| 11 | 2496 | C | While the illustrated oily-water separator is operating in the processing mode, if item "1" indicates higher than normal absolute pressure, what is the probable cause? | The bilge suction is completely flooded. | The flow control valve "14" is completely open. | The coalescer beads are severely fouled. | There is minor air leakage from the pump discharge. | GS-0153 |
| 11 | 2497 | D | Which of the listed valves should be closed when adding ammonia to a refrigeration system? | Master valve | Suction service | Discharge service | King valve | |
| 11 | 2498 | B | Which refrigeration system will require the use of an oil trap? | Brine | Ammonia | Methyl Chloride | All of the above. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2499 | B | The distillate pump for a 10,000 GPD evaporator, should be rated at a minimum of _____. | 5.9 gpm | 6.9 gpm | 208.3 gpm | 416.7 gpm | |
| 11 | 2500 | B | Axial thrust of the pump shaft illustrated is compensated for by the use of _____. | a balancing piston | equalizing holes in the impeller | tapered needle thrust bearings | shaft lantern rings | GS-0070 |
| 11 | 2502 | D | A machinery space supply fan is delivering 5000 cubic feet of air per minute. The temperature of the air is 71° F, with a relative humidity of 38%. How many pounds of air are delivered to the space in a 24 hour period? | 22,222.22 lbs/day | 67,500.00 lbs/day | 432,000.00 lbs/day | 533,333.33 lbs/day | RA-0021 |
| 11 | 2503 | A | The best method in assisting the proper alignment and welding of the flange and pipe shown in the illustration is to _____. | insert a temporary sleeve into the pipe for alignment | tack weld flat iron straps from the flange to the pipe to complete the fabrication | slip a temporary sleeve around the pipe | stand the flange on end vertically position the pipe on the flange, tack weld, then lay flat to complete the fabrication | GS-0078 |
| 11 | 2504 | C | A flapper valve, also known as a beam valve, is frequently used in refrigeration compressor discharge valves, and is designed to _____. | feed discharge pressure to the suction line | aid in hot gas defrosting | pass liquid slugs | equalize system pressure for compressor cycling | |
| 11 | 2505 | A | What is the reading of the vernier caliper scale shown in figure "C" in the illustration? | 3.3750 inch | 3.3500 inch | 3.4750 inch | 4.3750 inch | GS-0092 |
| 11 | 2507 | B | In the illustration shown, the letters "UNC" used in the notation "1/4-20 UNC-2" indicates the _____. | thread profile | thread series | class of finish | class of fit | GS-0037 |
| 11 | 2508 | A | Oil is returned to the illustrated radial piston hydraulic pump piston(s) numbered as _____. | 1 | 2 | 3 | 2 and 3 | GS-0059 |
| 11 | 2509 | B | Refrigerant recovery equipment that is considered as being system dependent _____. | must have its own power source | recovers refrigerant with the aid of components in the system | are portable units | can only recover liquid refrigerant | |
| 11 | 2510 | C | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 233 pound load stationary would be _____. | 35 lbs. | 47 lbs. | 78 lbs. | 93 lbs. | GS-0110 |
| 11 | 2511 | A | A P-tank system, as used on oilfield supply boats _____. | must be kept free of moisture and water | is designed to transfer viscous liquids | is capable of pumping chunks of cement that find their way into the system | answers B and C above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2512 | A | The preconditioned air temperature is 90° F with a relative humidity of 66%. After the air has been conditioned, its temperature has been reduced to 60° F and is saturated. Using the psychometric chart shown in the illustration, calculate the number of grains of moisture removed from one pound of the air. | 62.00 grains | 78.00 grains | 140.0 grains | 218.0 grains | RA-0021 |
| 11 | 2514 | A | The suction pressure switch controlling the refrigeration compressor operation is actuated by _____. | pressure acting on a bellows | temperature acting on a bellows | temperature acting on a thermal element | pressure acting on compressor suction valves | |
| 11 | 2515 | D | What function is provided by the holes located at the bottom of the loop within the item "20" shown in the illustration? | The holes permit draining of the loop when the unit is secured. | The holes are not holes at all, but rather an indication of gas bubbles flowing through the system. | The holes are provided to allow for any expansion of ice which may form when the unit is secured. | The holes aid in the return of the refrigeration oil to the compressor. | RA-0018 |
| 11 | 2516 | C | Which of the listed illustrated figures represents the correct use of a lathe threading tool? | Figures L/P | Figures L/U | Figures V/L | Figures V/P | GS-0090 |
| 11 | 2517 | C | Refrigerant entering the compressor of a refrigeration system should be in which of the following conditions? | Sub-cooled liquid | Sub-cooled vapor | Superheated vapor | Liquid | |
| 11 | 2519 | A | The petcock "B" installed on the illustrated pump is used to _____. | vent the casing at start-up | supply sealing water to the stuffing box | provide recirculation at low flow | provide a sensing signal to control the pump discharge rate | GS-0070 |
| 11 | 2520 | D | Inhalation of high concentrations of CFCs may have which of the following effects? | drowsiness | loss of concentration | cardiac arrhythmia's | all of the above | |
| 11 | 2521 | C | The chemical formula for ozone is represented as _____. | O | O2 | O3 | Oz | |
| 11 | 2522 | C | Using the psychometric chart shown in the illustration, determine the quantity of heat removed from one pound of air as it is cooled from 85° F at 80% relative humidity to 57° F at 70% relative humidity? | 12.2 BTU | 17.2 BTU | 22.5 BTU | 64.9 BTU | RA-0021 |
| 11 | 2523 | C | The device illustrated is used as a _____. | refrigeration system packless valve | quick closing valve | pressure reducing valve | high pressure diesel engine air start valve | GS-0054 |
| 11 | 2524 | D | R-12 has been a suitable refrigerant for use in high temperature applications with _____. | reciprocating compressors | rotary compressors | centrifugal compressors | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2525 | A | What is the function of the device shown in the illustration? | The device determines whether the unit will be in the cooling, or heating and defrost modes of operation. | The device is used to ensure that all returns go to the compressor discharge. | The device is used to provide flow through the pilot solenoid. | The device is utilized to reduce the amount of blowback occurring in the condenser due to propagated wave fronts. | RA-0017 |
| 11 | 2527 | B | The function of the device illustrated is to _____. | control steam input to a heat exchanger | control condensate output from a heat exchanger | provide on/off control of drain pump | provide air purging of low pressure refrigeration or air conditioning systems | GS-0048 |
| 11 | 2528 | C | When taking readings at the suction service valve of an operating refrigeration compressor _____. | the pressure, or temperature reading is only required, as the refrigerant is saturated | the pressure and temperature reading is required as the refrigerant is probably subcooled | the pressure and temperature reading is required as the refrigerant is superheated | the readings at this location must always be recorded as pressure absolute and degrees centigrade | |
| 11 | 2529 | C | Refrigerant leaving the metering device in a refrigeration system is a _____. | sub-cooled liquid | sub-cooled vapor | saturated liquid/vapor mixture | saturated liquid | |
| 11 | 2531 | C | Operating pressure on a P-tank system should be _____. | the same pressure required for repressurization and cleaning the system | a constantly maintained range of 15 to 18 psi | slightly below the pilot unloading valve setting | slightly below the safety valve setting | |
| 11 | 2532 | D | The quarters steam heating system warms the outside air from 30° F at 80% relative humidity to 105° F. Additional humidification is not provided and the air feels very dry. Using the psychometric chart, determine the amount of heat added to each pound of air and its approximate relative humidity after being heated. | 28.7 BTU, 26% relative humidity | 14.8 BTU, 6% relative humidity | 10.3 BTU, 16% relative humidity | 18.4 BTU, 6% relative Humidity | RA-0021 |
| 11 | 2533 | C | If you know that a refrigeration system is leaking refrigerant, you would first_____. | recover the refrigerant | charge the system | look for traces of oil | evacuate the system | |
| 11 | 2534 | D | Which of the devices listed will indicate the proper operation of a refrigeration system dryer? | Dryer sensing bulb | McLeod gage | Particulate test | Moisture indicator | |
| 11 | 2535 | B | The pilot solenoid valve used in conjunction with item #5 shown in the illustration is _____. | in the open position when the unit is in the heating mode and the solenoid is de-energized | a normally closed valve when the unit is in the cooling mode and the solenoid is de-energized | energized only during the defrost mode | normally open if the unit is in the defrost and heating mode and the solenoid is de-energized | RA-0018 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2536 | B | What will cause the throughput of the oily-water separator shown in the illustration to decrease when operating in the processing mode? | The flow control valve "14" is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload. | A decrease in the processing ability may be caused by a worn pump internals. | The throughput of the separator may be reduced if the inlet valve "4" remains open during processing mode. | The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion. | GS-0153 |
| 11 | 2537 | D | Which of the following base oils cannot be refined without developing a change in chemical composition? | animal | vegetable | mineral | both A and B | |
| 11 | 2538 | A | The function of the illustrated device is to _____. | relieve compressed air from the intercooler after the compressor has cycled off | relieve compressed air directly from the low pressure cylinder after the compressor has cycled off | provide variable discharge air flow to the compressed air system depending on the load on the system | direct compressed air from the air receiver directly to the low pressure cylinder unloading device | GS-0034 |
| 11 | 2540 | B | The device illustrated would be best used as a _____. | variable capacity pump | variable or constant speed motor | power take-off driven lube oil pump | hydraulic hatch supply pump | GS-0058 |
| 11 | 2541 | C | Large quantities of halogenated floro-carbons when released from refrigeration systems, will contribute to ozone depletion in the _____. | bathosphere | ionosphere | stratosphere | troposphere | |
| 11 | 2542 | B | If the "B" end were driven by an electric motor and the "A" end were disconnected from the line terminals of the motor controller, the unit illustrated could then be used as a _____. | mooring winch | variable output alternator | fixed output alternator | hydraulic crane power supply | GS-0057 |
| 11 | 2543 | D | Which can be considered as a drop-in replacement refrigerant? | R-500 | R-123 | R-134a | none of the above since all require a lube oil change out and replacement with a different type of lube oil | |
| 11 | 2544 | B | In a multi-evaporator refrigeration system, a solenoid valve is installed in the liquid line before _____. | the receiver | each expansion valve | the condenser | the oil separator | |
| 11 | 2547 | C | What is the reading of the vernier micrometer caliper scale shown in figure "D" in the illustration? | 0.9253 inch | 0.9403 inch | 0.9453 inch | 0.9553 inch | GS-0091 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2549 | D | Industrial process and commercial CFC type refrigeration equipment with annual leak rates of 35% or more, require leak repair of the system if it contains a refrigerant charge of more than _____. | 15 pounds (6.8 kg) | 25 pounds (11.4 kg) | 40 pounds (18.1 kg) | 50 pounds (22.6 kg) | |
| 11 | 2550 | A | Which of the listed welded joints represents the least amount of preparation? | 1B | 3A | 3B | 4A | GS-0077 |
| 11 | 2551 | A | A light dust trail from the storage tank vent, plus a fluctuating P-tank pressure and constant movement of the material discharge hoses indicates _____. | satisfactory movement of weight material | a clogged discharge line | chunks of material are moving through the system and transfer will stop momentarily | inadequate fluidizing of the weight material | |
| 11 | 2552 | C | A boiler forced draft pressure gage indicates nine (9) inches of water. This corresponds to a pressure of _____. | 0.216 psi | 0.228 psi | 0.325 psi | 0.433 psi | |
| 11 | 2553 | B | What is the reading of the vernier micrometer caliper scale shown in figure "B" in the illustration? | 0.2228 inch | 0.2928 inch | 0.3008 inch | 0.3028 inch | GS-0091 |
| 11 | 2554 | B | The liquid line, thermostatically controlled, solenoid valve is operated in response to the _____. | superheat in the tail coil | temperature of the box | compressor suction pressure | compressor discharge pressure | |
| 11 | 2555 | D | When the device shown in the illustration is in the defrost mode, the _____. | solenoid valve is de-energized and the valve assembly moves to the right | compressor discharge pressure acts on the right side of the piston causing it to move to the left | condenser pressure acts on the back of the valve forcing it to move towards the left | the solenoid valve is energized and the valve assembly is moved to the right | RA-0017 |
| 11 | 2557 | D | Most Freon refrigerants are originated primarily from which of the following base molecules? | ammonia and carbon dioxide | ammonia and ethane | methane and sulfur dioxide | ethane and methane | |
| 11 | 2558 | D | Which of the following statements regarding the illustrated device is true? | If the valve disk is damaged, the entire valve unit must be replaced. | The plug, located in the upper left portion of the valve body can be removed to install a feedback pipe line if the valve is to be used as a pilot choke. | The cap determines the height of lift of the swinging valve disk. | The valve disk alone can be removed for replacement or reconditioning. | GS-0056 |
| 11 | 2559 | B | The greatest drawback in the use of the device illustrated on large ocean going vessels is the _____. | use of a skeg for mounting | amount of torque required to position this rudder | positioning, directly aft of the propeller | necessity to construct the rudder in one large casting | GS-0101 |
| 11 | 2560 | D | If solenoid "B" illustrated is energized, the _____. | pump should reverse the direction of flow | cylinder should extend | pump should discharge directly to the reservoir | cylinder should retract | GS-0041 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2562 | D | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 266 pound load stationary would be _____. | 40 lbs. | 53 lbs. | 56 lbs. | 89 lbs. | GS-0110 |
| 11 | 2564 | B | In a refrigeration system, the condenser cooling water regulating valve is directly controlled by the _____. | temperature of the cooling water | compressor discharge pressure | amount of refrigerant in the system | temperature of the refrigerant after expansion | |
| 11 | 2566 | A | In a refrigeration system, the component installed downstream of the thermal expansion valve is called the _____. | evaporator | receiver | compressor | solenoid valve | |
| 11 | 2567 | D | What type of valve is shown in the illustration? | Globe valve - rising stem | Gate valve - rising stem | Globe valve - rising disk | Gate valve - rising gate | GS-0047 |
| 11 | 2568 | D | Refrigerant recovery cylinders are color coded_____. | gray top and yellow lower body | gray top and light blue lower body | light blue top and yellow lower body | yellow top and gray body | |
| 11 | 2569 | B | The purpose of nozzles in a liquid mud system is to_____. | aerate the mud to insure proper oxygen content | maintain the quality of the mud | clean the mud from the bottom of the tanks | Prevent barate from damaging the pump | |
| 11 | 2570 | C | A pneumercator is an instrument used to indicate _____. | air pressure in the diesel engine starting circuit | phosphates in boiler water | tank fluid level | micro ohms in condensate | |
| 11 | 2571 | D | Movement of the material discharge hoses, fluctuating P-tank air pressure and a light dust trail from the receiving tank vent indicates _____. | a clogged discharge line | improper movement of the weight material | chunks of material are in the system and will stop the flow momentarily | satisfactory operation of the system | |
| 11 | 2573 | D | Why do OSV's with a liquid mud system generally have more than two tanks? | To increase the quantity of mud carried. | The pumps are unable to handle the greater quantity of mud carried by one or two tanks. | To reduce the amount of free communication therefore, reducing the center of gravity of the OSV. | To prevent list and stability problems when receiving half a load of fluid from the rig. | |
| 11 | 2576 | B | In a liquid mud system, the sea valve must be tightly secured and not leak because_____. | a leaking sea valve decreases stability of the OSV | any leakage can destroy the product being transported | leaking oil-base mud creates an environmental hazard according to Coast Guard regulations (33 CFR) | more liquid mud will be discharged to the MODU than ordered | |
| 11 | 2577 | A | Which of the following steps should be taken before taking on a load of liquid mud for transport to a MODU? | Inspect tanks to insure they are clean and dry. | Test a sample to insure that the emulsifying amines do not exceed a STEL of 25 ppm. | Flood the tanks with carbon dioxide and test product with an explosimeter (gas detector). | All of the above. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2578 | A | It is important to circulate the liquid mud on an OSV at regular intervals to_____. | keep the mud ingredients in suspension and retain weight properties | reduce the free surface effect and increase the metacentric height (GM) during transport | increase the free surface effect and reduce the metacentric height (GM) during transport | minimize the release of explosive gases during transport | |
| 11 | 2579 | C | It is important to circulate liquid mud on an OSV to_____. | insure that the liquid mud maintains a weight of less than 8.3 lbs/gal. | reduce damage to the mud due to salt water contamination | ensure that the pump suctions remain unplugged and keep the liquid mud in good condition | reduce corrosion damage due to the acidic nature of zinc bromide | |
| 11 | 2580 | D | Unless told otherwise by the mud dock representative, the recommended circulation time and rate for most new water based liquid mud for each tank is_____. | once a day for three hours with a diesel powered mud pump at half throttle | thirty to sixty minutes every twelve hours with a diesel powered pump at full throttle or by a high capacity electric mud pump | one day circulating, three days off with a small electric mud pump | fifteen minutes every six hours with a small pump, or diesel pump at half throttle | |
| 11 | 2582 | C | The reading on the micrometer scale shown in figure "A" in the illustration is _____. | 0.066 inch | 0.071 inch | 0.076 inch | 0.081 inch | GS-0093 |
| 11 | 2584 | C | A multiple evaporator coil unit is equipped with an evaporator back pressure regulating valve. This valve must be bypassed when pumping down the system for repairs because reduction of suction pressure would cause the valve to _____. | rupture | open | close | chatter | |
| 11 | 2585 | C | When the system shown in the illustration is operating in the defrost or heating mode, the majority of the gas flows through the defrost pan heater. A small quantity of the remaining gas is used to _____. | create a pressure drop to increase all flow velocities | assist in the defrosting of the equalizing line | force the remaining liquid out of the receiver and into the system | reduce the chances of any thermo-hydraulic lock occurring during the defrost cycle | RA-0018 |
| 11 | 2586 | B | The reading on the micrometer scale shown in figure "3" in the illustration is _____. | 0.133 inch | 0.178 inch | 0.193 inch | 0.250 inch | GS-0094 |
| 11 | 2587 | A | The refrigerants referred to as CFC's are _____. | fully halogenated | partially hydrogenated | fully carbonated | completely filled with hydrogen atoms | |
| 11 | 2588 | D | A micrometer scale reading is indicated as 0.438 inches and is represented in the illustration by _____. | Figure A | Figure C | Figure G | Figure H | GS-0013 |
| 11 | 2589 | A | All refrigerant recovered from burned out small appliances must be _____. | sent to a designated reclamation facility for processing | contained in a refillable cylinder | destroyed although it can be reused | used to clean out burn-outs | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2591 | D | Which of the following refrigerants is an interim retrofit replacement for R-11? | R-500 | R-134a | R-12 | R-123 | |
| 11 | 2592 | B | The lathe tool shown as figure "Q" in the illustration is commonly known as a/an _____. | cutting-off tool | left-cut, side-facing tool | right hand turning tool | universal turning tool | GS-0090 |
| 11 | 2593 | A | Excess pressure used in a P-tank system will more than likely _____. | rupture the P-tank | discharge the material at an excessive rate | plug up the fixed discharge line with weight material | damage the air compressor | |
| 11 | 2594 | B | In preparing to remove the air from a refrigeration condenser for a large multi-box water cooled type III system, all of the refrigerant in the system should be _____. | at a superheated temperature | pumped to the receiver | pumped to the evaporator | at a saturated temperature | |
| 11 | 2595 | D | If the three way valve shown in the illustration malfunctions while at sea, which of the following procedures can be carried out to correct the situation? | The unit should be bypassed to insure the system always operates in the cooling mode. | The pilot solenoid valve should be changed out even if it appears to be operating satisfactory. | The device may be removed from the unit using swaging tools. | The device may be rebuilt using the proper rebuild kit if provided. | RA-0017 |
| 11 | 2596 | B | The reading on the micrometer scale shown in figure "C" in the illustration is _____. | 0.325 inch | 0.349 inch | 0.361 inch | 0.453 inch | GS-0013 |
| 11 | 2597 | C | When recovering R-12 from a small appliance with a working compressor, using a recovery device manufactured after November 15, 1993, what percentage of the remaining charge must be removed from the system? | 75% | 80% | 90% | 99% | |
| 11 | 2598 | C | Technicians servicing small refrigeration appliances can employ what type of recovery equipment? | passive only | active only | either active or passive | do not need to recover the refrigerant | |
| 11 | 2600 | D | Which of the following represents a low-pressure refrigerant as defined by EPA regulation? | R-12 | R-22 | R-502 | R-123 | |
| 11 | 2601 | B | What differentiates 'system-dependent' and 'self-contained' recovery devices in refrigeration systems? | self-contained recovery devices can only be used on large CGC and HCFC units | self-contained recovery devices usually contain a compressor, system-dependent recovery devices do not | the system compressor must be working to use system dependent devices, the system compressor may or may not be operational when self-contained devices are used | there is no difference between the devices | |
| 11 | 2603 | C | Overfilling a refrigerant container is extremely dangerous because of the high pressures generated. The generation of pressure is the_____. | vapor pressure of the refrigerant | discharge pressure of the recovery compressor | hydrostatic pressure of the expanding liquid | discharge pressure from the recovery cylinder | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2604 | C | The reading indicated on a vernier micrometer caliper scale is .3107 inches. Which of the figures in the illustration represents this reading? | Figure B | Figure C | Figure E | Figure F | GS-0091 |
| 11 | 2605 | A | How do the modulating valves, found in some container refrigeration systems, differ in operation from solenoid valves found in the same system? | An unenergized modulation valve is in the normally open position. | An unenergized modulation valve is in the completely closed position. | An unenergized solenoid valve is in the normally open position. | All modulation valves have the identical operating characteristics as solenoid valves used in refrigeration systems. | |
| 11 | 2607 | C | All refrigeration systems must be protected with a _____. | high pressure cut-out | refrigerant receiver | pressure relief device | low pressure cut-out | |
| 11 | 2608 | A | The hydraulic graphic symbol illustrated in Fig. B is used to represent a/an _____. | variable orifice | piloted choke | belle ville spring | check valve | GS-0068 |
| 11 | 2609 | C | If passive recovery is used on a refrigeration unit with a non-operating compressor, the recovery should be made through_____. | high side only | low side only | high and low side | venting to atmosphere, cannot be recovered | |
| 11 | 2610 | D | The process of removing refrigerant from a system and storing it without testing or processing is known as _____. | reclaiming | recouping | recycling | recovering | |
| 11 | 2611 | C | Figure "D" in the illustration is an improperly installed hose with a restriction developed at the _____. | right hand fitting being smaller than required | severe bend in loop | sharp bend formed at the left | indicated radial twist | GS-0063 |
| 11 | 2612 | C | Which of the following is not part of the high side of a refrigeration system? | condenser | receiver | accumulator | liquid line | |
| 11 | 2613 | B | Refillable tanks used to ship CFC and HCFC refrigerants or used to recover these refrigerants must meet the standards of _____. | the United States Coast Guard | the United States Department of Transportation | Underwriters Laboratories | the Environmental Protection Agency | |
| 11 | 2614 | C | If you find an extremely large refrigerant leak while using a halide torch, your flame will _____. | change from blue to orange | 'flare up' and remain lighted | probably go out | stay blue | |
| 11 | 2615 | B | How does a refrigeration solenoid valve differ from a modulating valve? | A solenoid valve can only be installed in liquid lines. | A liquid line solenoid valve is either completely opened or closed, whereas a modulation valve is positioned according to the strength of the applied electrical signal. | Solenoid valves are only used in low voltage refrigeration control systems, while modulation valves are used in high voltage applications. | Both valves operate in exactly the same manner, only the manufacturer's terminology is the differentiating factor. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 2617 | C | A micrometer scale reading is indicated as 0.148 inches and is represented in the illustration by _____. | Figure D | Figure E | Figure F | Figure I | GS-0013 |
| 11 | 2619 | C | Within the territorial limits of the United States, violations of the Clean Air Act of 1990, that includes the intentional release of R-11, R-12, R-22 and other related class I or class II substances may result in fines for each violation per day of _____. | $5,000 | $10,000 | $25,000 | $50,000 | |
| 11 | 2620 | C | The reading on the micrometer scale shown in figure "B" in the illustration is _____. | 0.402 inch | 0.410 inch | 0.412 inch | 0.415 inch | GS-0093 |
| 11 | 2622 | B | The reading indicated on a vernier micrometer caliper scale is .4715 inches. Which of the figures in the illustration represents this reading? | Figure A | Figure C | Figure E | Figure F | GS-0091 |
| 11 | 2623 | D | Operating a P-tank system with excessive pressure in the tank will most likely cause _____. | damage to the air compressor | the dry bulk material to be discharged at an excessive rate | the discharge to plug up with weight material | damage to the slope sheets | |
| 11 | 2624 | B | Which of the following instruments can be used to measure the rate of air flow? | Thermometer | Anemometer | Psychrometer | Aerometer | |
| 11 | 2626 | B | The illustrated thread form would be used with a/an _____. | pump shaft coupling nut | lathe lead screw | schedule 80 heavy iron pipe | 3/4-10 NC threaded stock | GS-0088 |
| 11 | 2627 | D | When using nitrogen to pressure leak test a system, the nitrogen tank should always have a _____. | cut off valve | blue top | level indicator | regulator | |
| 11 | 2628 | D | The weld type illustrated and indicated as '5B' is known as a/an _____. | X | K | double bevel | double J | GS-0077 |
| 11 | 2631 | B | Consultation should be made prior to beginning the conversion of an existing CFC-12 system to HFC-134a with _____. | the Environmental Protection Agency | the system's manufacturer | the United States Coast Guard | the owner of the system | |
| 11 | 2632 | B | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 283 pound load stationary would be _____. | 42 lbs. | 94 lbs. | 113 lbs. | 114 lbs. | GS-0110 |
| 11 | 2633 | A | If a block and tackle arrangement were rigged as illustrated in figure "D", the amount of force "P" required to hold the 283 pound load stationary would be _____. | 94 lbs. | 107 lbs. | 114 lbs. | 125 lbs. | GS-0110 |
| 11 | 2634 | D | When air is at its dew point, it is at its _____. | lowest absolute humidity | lowest relative humidity | highest absolute humidity | highest relative humidity | |
| 11 | 2635 | D | The movement of the armature within a modulating valve as used on some refrigeration systems is opposed by the _____. | pressure of the flash gas developed | vacuum formed as the refrigerant flows through the valve | weight of the armature | spring force | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2637 | B | Which of the refrigerants listed is considered as a suitable replacement for R-11? | R-22 | R-123 | R-134a | R-227 | |
| 11 | 2638 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute with 6" diameter cylinder, and an 11" stroke with 90% volumetric efficiency, what is the capacity of this pump? | 61 gpm | 121 gpm | 242 gpm | 407 gpm | |
| 11 | 2639 | A | Under what conditions would the oily-water separator, shown in the illustration, fail to effectively process a mixture of oily-water? | When the oily-water mixture is an emulsion the effectiveness of the separator is greatly reduced. | Without detergents the effectiveness of the separator is greatly reduced. | When there are small air leaks in the discharge piping, the effectiveness of the separator will greatly reduced. | When the oily-water separator is in the process mode it will effectively handle emulsions. | GS-0153 |
| 11 | 2640 | D | Which of the illustrated lathe tools would be used to produce figure V? | A | B | D | E | GS-0009 |
| 11 | 2641 | C | Persons recovering refrigerant from small appliances must be certified as a _____. | Type II technician | Type III technician | Type I or Universal technician | All of the above | |
| 11 | 2642 | B | Which of the refrigerants listed is considered as a suitable and limited ozone producing alternative for R-11? | R-22 | R-123 | R-134a | R-227 | |
| 11 | 2643 | D | The air compressor for a P-tank unit should be operated for several minutes with its discharge valves open to the atmosphere to _____. | assist in unloading the compressor during its start up | remove bulk material dust from the discharge lines | check the pilot unloader operation | assist in delivering moisture free air | |
| 11 | 2644 | B | As the amount of moisture in the air increases, the difference between the dry bulb and wet bulb temperatures will _____. | increase | decrease | remain unchanged | be greatest at dew point | |
| 11 | 2646 | B | In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat turns slowly or not at all, even without a load being applied, and nearly normal pressure is indicated on the high side of the system, the probable cause is the _____. | replenishing pump coupling is broken | relief valve "L" is not closing | manual transfer valve is in the wrong position for the main pump being operated | pressure from "E" has failed to bleed off when "J" is placed in the operating position | GS-0160 |
| 11 | 2647 | A | Alkyl benzene ISO 32 cSt refrigerant oil is miscible and suitable to use with_____. | R-22 | R-32 | R-134a | R-143a | |
| 11 | 2649 | D | Refrigerant leaks in a small shipboard water cooler _____. | must be repaired within 30 days | must be repaired if the annual leak rate is 35% of the total charge above 50 lbs | must be repaired if the annual leak rate is 15% of the total charge | do not have to and are not required to be repaired | |
| 11 | 2650 | C | The reading on the micrometer scale shown in figure "III" in the illustration is _____. | 0.631 inch | 0.642 inch | 0.687 inch | 0.692 inch | GS-0095 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2651 | C | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 7.8 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside | 8.626 inches | 10.786 inches | 12.252 inches | 14.514 inches | GS-0108 |
| 11 | 2653 | D | According to the data provided in the table, if the evaporator pressure is 29.4 psia and the temperature of the refrigerant leaving the evaporator is 35° F, approximately how much superheat was picked up in the evaporator? | 10° F | 15° F | 20° F | 25° F | RA-0023 |
| 11 | 2654 | D | The speed of a belt driven ventilation fan can be increased without changing the motor speed by using a _____. | smaller diameter fan | smaller diameter drive pulley | larger diameter fan | larger diameter drive pulley | |
| 11 | 2656 | B | What will cause the throughput of the oily-water separator illustrated to decrease when operating in the processing mode? | The flow control valve 'V-3' is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload. | A decrease in the processing ability may be caused by worn pump internals. | The throughput of the separator may be reduced if the inlet valve 'V-4' remains open during processing mode. | The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion. | GS-0113 |
| 11 | 2657 | C | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 104 gpm | 52 gpm | 26 gpm | 91 gpm | |
| 11 | 2658 | C | With a service gage manifold connected to a refrigerant compressor as illustrated, which arrangement of the gage manifold valves and compressor service valves would allow for the reading of the compressor suction pressure? | Valves "A" and "B" open, valves "C" and "D" closed on their front seats. | Valves "A" and "B" closed, valves "C" and "D" open just off the back seats. | Valve "A" closed and valve "D" just off its back seat. | Valves "A" and "B" open, valves "C" and "D" open in mid-position. | RA-0003 |
| 11 | 2659 | D | A flat piece of sheet metal can be fastened to the device illustrated and would require the use of which listed type of fastener? | pop rivet | flat head countersunk machine screw | carriage bolt | cap screw | GS-0036 |
| 11 | 2660 | B | The approximate quantity of hydraulic oil available to the system can be determined by _____. | removing "G" and measuring the level in the sump with a 'dip stick' | observing the color change of the column in "J" and its comparative height | removing "D" and measuring the height of the remaining liquid with a float stick | removing the cap from "A" and measuring the height of the hydraulic oil | GS-0118 |
| 11 | 2662 | A | The device illustrated is referred to as a/an _____. | inverted bucket trap | upright bucket trap | "P" type trap | none of the above | GS-0048 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2663 | C | All shipboard personnel responsible for the maintenance and repair of air conditioning systems must be certified through an approved Environmental Protection Agency (EPA) program _____. | if the system is using HFC-134A or HCFC-123 | before they can set the operating controls of the system | if they will be performing maintenance, service or repair that could reasonably be expected to release Class 1 or Class 2 refrigerants into the atmosphere | all of the above | |
| 11 | 2665 | C | Solenoid valves used in refrigeration systems may be classified as _____. | normally open, de-energized | normally closed, energized | normally open or normally closed | normally energized or normally de-energized | |
| 11 | 2666 | D | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 183 gpm | 91 gpm | 128 gpm | 46 gpm | |
| 11 | 2668 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 54 gpm | 81 gpm | 27 gpm | 108 gpm | |
| 11 | 2669 | B | Small appliances with less than three pounds of refrigerant should be _____. | liquid charged | vapor charged | either vapor or liquid charged | initially liquid charged and then topped with a vapor charge | |
| 11 | 2672 | C | The steering gear shown in the illustration, when compared to the more conventional linear actuator ram units is/are _____. | less likely to sustain oil leaks | considered by inspection societies to be more dependable than the more conventional units due to the use of the vane motor | designed to be of lesser weight and size when compared with conventional units producing the same torque | all of the above are correct | GS-0116 |
| 11 | 2673 | D | The air compressor for a P-tank unit should be operated for several minutes with its discharge valves open to the atmosphere to _____. | discharge moisture formed during the compression process | dry out fixed discharge piping and hoses | assist in producing water free compressed air | all of the above | |
| 11 | 2674 | C | In a chilled water air conditioning unit using a reciprocating compressor, the refrigerating effect of the primary refrigerant can be increased by _____. | increasing refrigerant pressure in the coil | increasing chilled water flow through the cooler | subcooling the refrigerant in the condenser | superheating the refrigerant in the compressor | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2676 | B | A flat piece of thin sheet metal fastened to the device illustrated, would most likely require the use of which listed type of fastener? | countersunk flat head, Phillip screw | round head machine screw | fitted or body bolt | molly screw | GS-0036 |
| 11 | 2677 | D | Moisture is removed from CFC-12 using a recycler by _____. | bleeding noncondensables off | opening a drain petcock on the oil separator | condensing the water in the condenser | using a dehydrator cartridge | |
| 11 | 2678 | B | The type of heat indicated in section "2" in the illustration is known as _____.<br>I. latent heat of fission<br>II. latent heat of fusion | I only | II only | Both I and II | Neither I nor II | SG-0001 |
| 11 | 2680 | D | The thread machined on the device illustrated is a/an _____. | one-eighth inch right-hand national coarse | one inch, right-hand national coarse | one-eighth inch, left-hand national coarse | one inch, left-hand national coarse | GS-0038 |
| 11 | 2681 | B | Of the four refrigerants CFC-11, CFC-12, HFC-134a, and HCFC-22; HCFC-22 operates at the _____. | lowest system pressure with the lowest boiling point | highest system pressure with the lowest boiling point | lowest system pressure with the highest boiling point | highest system pressure with the highest boiling point | |
| 11 | 2684 | D | The expansion valve used in a refrigeration system regulates the _____. | superheat of the gas leaving the compressor | back pressure in the evaporator | temperature in the refrigerated space | degree of superheat of the gas leaving the evaporator | |
| 11 | 2685 | A | The carbon ring of a refrigeration compressor crankshaft mechanical seal is held in position against the stationary ring by using a/an _____. | spring | snap ring | woodruff key | thrust washer | |
| 11 | 2686 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 131 gpm | 33 gpm | 65 gpm | 163 gpm | |
| 11 | 2687 | B | If oil under pressure is supplied to the space between "N" and "I" in the illustration _____. | "O" will be hydraulically locked in place even though oil is returned to the main pump from the left side of "N" and the area to the right of "P" | "O" will rotate clockwise as oil is returned from the left side of vane "N" | "O" will rotate counter-clockwise as oil is returned from the area between "N" | "U" will rotate counter-clockwise as oil is returned from the area between "N" and the vane located at "P" | GS-0116 |
| 11 | 2688 | B | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 7.3 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 10.263 inches | 11.467 inches | 13.886 inches | 16.467 inches | GS-0108 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2690 | D | An untagged refrigerant cylinder is found in your storage area. It is light (sky) blue, and the refrigerant it contains is _____. | CFC-12 | CFC-11 | HCFC-22 | HFC-134a | |
| 11 | 2691 | A | The heat removed from a fluid as indicated by line "3" in the illustration is known as _____.<br>I. subcooling<br>II. latent heat of condensation | I only | II only | Both I and II | Neither I nor II | SG-0001 |
| 11 | 2692 | B | In the illustration, the item labeled as '31' is _____.<br>I. used to vent off air from the stuffing box<br>II. used to supply sealing water to the stuffing box | I only | II only | Both I and II | Neither I nor II | GS-0012 |
| 11 | 2694 | B | In a refrigeration system, the bulb for the thermal expansion valve is always located _____. | in the middle of the evaporator coils | near the evaporator coil outlet | near the evaporator coil inlet | at the beginning of the bottom row of the evaporator coils | |
| 11 | 2695 | B | When installing a mechanical shaft seal on a refrigeration compressor, extreme care must be taken to prevent _____. | any lubricant from contacting the carbon surface that would cause the expulsion of the saturated Teflon film | dirt and foreign particles from coming in contact with the highly polished sealing surfaces | the Teflon film from being damaged by the corrosive effects of excessive handling | shaft scoring due to improper use of the installation tools provided with the seal kits | |
| 11 | 2697 | B | What would be the result of throttling the suction valve to the point where the flow was less than that recommended by a centrifugal pump manufacturer?<br>I. The designed discharge head would be reduced.<br>II. The packing life would be greatly reduced. | I only | II only | Both I and II | Neither I nor II | |
| 11 | 2698 | C | In order to maximize the performance of an operating centrifuge, you can adjust the fuel oil _____.<br>I. viscosity<br>II. through-put | I only | II only | Both I and II | Neither I nor II | |
| 11 | 2700 | C | The reading on the micrometer scale shown in figure "H" in the illustration is _____. | 0.418 inch | 0.428 inch | 0.438 inch | 0.448 inch | GS-0013 |
| 11 | 2701 | B | The type of thread illustrated is a/an _____. | acme thread | national coarse thread | square thread | can not be determined from information provided | GS-0038 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2702 | B | What will cause the throughput of the oily-water separator shown in the illustration to decrease when operating in the processing mode? | The flow control valve 'V-3' is open excessively wide and permitting an excessive amount of bilge water to enter the separator, resulting in an overload. | A decrease in the processing ability may be caused by worn pump internals. | The throughput of the separator may be reduced if the inlet valve 'V-4' remains open during processing mode. | The throughput of the separator varies while in the processing mode as determined by the quantity of oil in the emulsion. | GS-0113 |
| 11 | 2703 | B | P-tank dry bulk material discharge hoses must be connected _____. | after admitting compressed air to the P-tank | before admitting compressed air to the P-tank | after opening the jet air | before the P-tank is loaded | |
| 11 | 2704 | C | Refrigeration systems using forced air circulation evaporators have a tendency to cause rapid dehydration of foods unless _____. | a complete change of air takes place within each 30 second interval | foods are packaged in corrugated storage boxes | the air is circulated slowly with a minimum temperature change | a humidifier is installed within the refrigeration system | |
| 11 | 2705 | C | The color of the refrigeration oil can indicate various operating conditions of the compressor/ refrigeration system in which it is used. Black oil can be an indication of _____. | copper plating caused by moisture in the system | bearing wear or piston scoring | carbonization resulting from air in the system | gasket breakdown | |
| 11 | 2706 | C | Potable and non-potable water systems aboard ship _____. | may be temporarily connected with a removable spool | are permanently connected through a double stop valve | may never be cross-connected by any means | may be connected if they are used only for wash water | |
| 11 | 2708 | B | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 63 gpm | 126 gpm | 251 gpm | 31 gpm | |
| 11 | 2710 | C | Which of the figures in illustration GS-0080 would be used in conjunction with figure "B" of the device shown in illustration GS-0124? | figure B | figure C | figure F | figure G | GS-0080 |
| 11 | 2711 | C | HCFC-123 presents health threats to service technicians, which may include its _____. | flammability as a liquid | freezing in the compressor | toxic threat | being caustic and strong offensive odor | |
| 11 | 2712 | C | The type of heat indicated in section "4" in the illustration is known as _____.<br>I. latent heat of condensation<br>II. latent heat of vaporization | I only | II only | Both I and II | Neither I nor II | SG-0001 |
| 11 | 2714 | A | The valve shown in the illustration is installed on the suction side of the compressor in a refrigeration system. Which of the following statements about this valve is correct? | "E" is the inlet. | "D" is the back seat. | The valve is of the packless type. | All of the above. | RA-0008 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2715 | D | The oil observed in the sight glass of an operating refrigeration compressor appears to be brownish in color. This is indicative of _____. | carbonization caused by air in the system | bearing wear or piston scoring | head gasket breakdown | copper plating caused by moisture in the system | |
| 11 | 2716 | A | In a hydraulic system using the device illustrated, the high pressure return is provided by _____. | A | B | C | D | GS-0118 |
| 11 | 2717 | A | In addition to the recovery of refrigerant, recovery machines not necessarily able to pull a vacuum can also evacuate a system of _____. | non-condensable gases | oil | moisture | acids | |
| 11 | 2718 | B | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 346 pound load stationary would be _____. | 52 lbs. | 115 lbs. | 129 lbs. | 138 lbs. | GS-0110 |
| 11 | 2719 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, and a 10" stroke at an 80% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 98 gpm | 196 gpm | 272 gpm | |
| 11 | 2720 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute with a 5" diameter cylinder, a 5" stroke, and operating with a 93% volumetric efficiency, what is the capacity of this pump? | 61 gpm | 38 gpm | 30 gpm | 24 gpm | |
| 11 | 2721 | C | CFC refrigerants exposed to high temperature or direct flame, will decompose and may produce _____. | methyl chloride | ammonia | hydrofluoric acid | ozone | |
| 11 | 2722 | C | When operating the oily-water separator shown in the illustration, why is it necessary to avoid detergents mixing with the bilge water? | The detergent will agitate within the separator and cause it to explode. | The detergent will damage the special protective coating in the inside of the unit. | The detergents may cause the oil and water to become an emulsion which this unit is not capable of separating. | The detergent will foam causing the main bilge pump to become air bound. | GS-0153 |
| 11 | 2723 | B | The purpose of the jet air line in a P-tank system is to _____. | blast bulk material out of the fill line by using high air pressure | fluidize dry material in the material discharge line | fill the P-tank | pressure the P-tank | |
| 11 | 2724 | C | Which of the lettered components shown in the illustration indicates the high pressure cutout? | E | B | C | F | RA-0005 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2725 | A | The color of the oil observed in the sight glass of an operating refrigeration compressor experiencing bearing wear or piston scoring would appear _____. | gray or metallic | black | clear, because the heavier particles would gravitate to the bottom of the sump | as a light blue-green | |
| 11 | 2726 | B | A shot of anchor chain is equal to _____. | one chain link | one - 90 foot segment | 90 fathoms | one - 15 foot segment | |
| 11 | 2727 | A | A purge cycle is required on all low pressure chillers because _____. | such a chiller can operate at a pressure below atmospheric pressure | evacuation of all air from a chiller is not possible | chillers are often opened for maintenance | because of the refrigerant's low boiling point | |
| 11 | 2728 | A | If you have a simplex single acting reciprocating pump making 200 strokes/minute with 3" diameter cylinder, a 4" stroke, and operating with a 93% volumetric efficiency, what is the capacity of this pump? | 11 gpm | 23 gpm | 40 gpm | 46 gpm | |
| 11 | 2729 | B | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 7" stroke, operating with a 90% volumetric efficiency, what is the capacity of this pump? | 105 gpm | 39 gpm | 77 gpm | 107 gpm | |
| 11 | 2730 | B | The reading on the micrometer scale shown in figure "E" in the illustration is _____. | 0.112 inch | 0.137 inch | 0.148 inch | 0.151 inch | GS-0013 |
| 11 | 2732 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 4" stroke, operating with a 90% volumetric efficiency, what is the capacity of this pump? | 22 gpm | 20 gpm | 88 gpm | 44 gpm | |
| 11 | 2733 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute with a 7" diameter cylinder, a 8" stroke, operating with a 91% volumetric efficiency, what is the capacity of this pump? | 267 gpm | 67 gpm | 133 gpm | 152 gpm | |
| 11 | 2735 | B | Which of the listed statements describes the reason why oil foaming occurs when starting a refrigeration compressor? | If the oil level is not initially high, this condition is the result of agitation created by the movement of the mechanical components. | This condition is the result of the sudden low pressure created in the crankcase at start up causing the release of refrigerant accumulated within the oil. | This will occur only if crankcase heaters are used. | This phenomenon is inherent only in hermetically sealed units and is always provisional. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2736 | A | As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 7.1 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 11.153 inches | 13.635 inches | 16.153 inches | 20.106 inches | GS-0108 |
| 11 | 2737 | D | What is the cooling medium used for most portable recovery unit condensers aboard ship? | condenser water | air conditioner drains | chiller water taken at inlet | potable water | |
| 11 | 2738 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute with a 6" diameter cylinder, a 5" stroke, and operating with an 88% volumetric efficiency, what is the capacity of this pump? | 102 gpm | 85 gpm | 51 gpm | 205 gpm | |
| 11 | 2739 | D | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 5" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump? | 55 gpm | 110 gpm | 38 gpm | 28 gpm | |
| 11 | 2740 | C | When a horizontal type centrifugal pump is used for dewatering the engine room bilges, you would _____.<br>I. use a rotary, liquid piston type pump to obtain a prime<br>II. partially open the sea suction valve, then gradually switch over to the required | I only | II only | Either I or II | Neither I nor II | |
| 11 | 2741 | C | The most cost-effective method of recovering refrigerant from a chiller with more than 5 lbs of refrigerant, to meet EPA requirements is to use a _____. | liquid pump | vapor recovery machine | liquid followed by vapor recovery | vapor followed by liquid recovery | |
| 11 | 2742 | C | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, a 9" stroke, and operating at a 90% volumetric efficiency, what is the capacity of this pump? | 233 gpm | 135 gpm | 67 gpm | 270 gpm | |
| 11 | 2743 | D | The bitter end is the _____. | looped end of a mooring cable | end of the chain shackled to the anchor | fixed end of the mooring cable fastened to the mooring winch drum | end of the anchor chain fastened to the vessel | |
| 11 | 2744 | B | Which of the listed refrigerants has been more suitable than the others for use in a centrifugal refrigeration compressor? | R-12 | R-11 | Ammonia | Carbon dioxide | |
| 11 | 2746 | D | P-tanks on board a supply boat are filled through the _____. | jet air or purge line | discharge line | fill line by gravity | pressurized fill line | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2747 | D | An estimated 15% of all refrigerant emissions from chillers occur during _____. | servicing | purging | charging | normal operation | |
| 11 | 2748 | D | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, an 11" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump? | 165 gpm | 330 gpm | 407 gpm | 82 gpm | |
| 11 | 2749 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, a 12" stroke, and operating with a 90% volumetric efficiency, what is the capacity of this pump? | 90 gpm | 180 gpm | 360 gpm | 529 gpm | |
| 11 | 2750 | B | If you have a simplex single acting reciprocating pump making 100 strokes/minute with 7" diameter cylinder, and a 13" stroke with a 90% volumetric efficiency, what is the capacity of this pump? | 390 gpm | 97 gpm | 672 gpm | 195 gpm | |
| 11 | 2751 | A | In refrigeration systems, which type of contamination will the reclamation process be unable to separate? | mixed refrigerants | acid | moisture | air | |
| 11 | 2752 | B | In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat does not turn, and pressure can not be developed on either side of the system, the probable cause is the _____. | replenishing pump coupling is broken | relief valve is not closing | manual transfer valve is in the wrong position for the main pump being operated | spring set point for "I" is too low | GS-0160 |
| 11 | 2753 | C | What is the maximum volume to which refillable refrigeration cylinders should be filled? | 60% full | 70% full | 80% full | 90% full | |
| 11 | 2754 | B | In addition to moisture, a refrigerant dehydrator charged with silica gel is designed to absorb _____. | refrigerant | acids | noncondensable gases | refrigerant oil | |
| 11 | 2756 | B | In checking the level of a tank, three pneumercator readings have been taken. If each reading is higher than the last, this indicates that _____. | excessive charging air was supplied | insufficient charging air has been supplied | the relief valve is sticking | the tubing between the tank and the gauge has a leak | |
| 11 | 2757 | A | In a refrigeration system, The push-pull technique can be used for the recovery of _____. | both liquid and vapor | liquid only | vapor only | should never be used with low pressure systems | |
| 11 | 2758 | A | All of the links in the next to the last inboard shot of chain are painted _____. | yellow | white | red | orange | |
| 11 | 2759 | C | A rupture disc on a recovery tank for low pressure refrigerants relieves at _____. | 1 psig | 10 psig | 15 psig | 25 psig | |
| 11 | 2760 | C | The reading on the micrometer scale shown in figure "F" in the illustration is _____. | 0.120 inch | 0.137 inch | 0.148 inch | 0.173 inch | GS-0013 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2761 | C | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 14" stroke with a 90% volumetric efficiency, what is the capacity of this pump? | 154 gpm | 840 gpm | 77 gpm | 308 gpm | |
| 11 | 2762 | D | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 13" stroke, at 90% volumetric efficiency, what is the capacity of this pump? | 143 gpm | 286 gpm | 672 gpm | 72 gpm | |
| 11 | 2763 | C | When removing the primary refrigerant from a system using water as a secondary refrigerant, it is important to follow which procedure(s) to safeguard the equipment? | Insure that the water doesn't become contaminated with oil in the direct contact heat exchanger. | Insure that the water and refrigerant separator is functioning properly. | Insure that the water is drained or continually circulating to avoid freeze-up. | Leave some refrigerant in the system to prevent the water from contaminating the refrigerant if there is a leak. | |
| 11 | 2764 | A | In a vapor compression refrigeration system with a freeze, dairy, and thaw box, a solenoid valve should be installed _____. | immediately before each expansion valve | on the inlet side of the receiver | in the liquid line bypassing the expansion valve | in the vapor line bypassing the oil separator | |
| 11 | 2765 | A | Which of the listed components of the refrigeration system shown in the illustration provides the functions similar to an evaporator during the heating cycle of the unit? | The accumulator, device "20". | The condenser, device "6". | The receiver, device "9". | The defrost pan heater, device '26'. | RA-0018 |
| 11 | 2766 | B | P-tanks are filled through the _____. | discharge line | pressurized fill line | fill line by gravity | the hatch or manway in the top of the tank by gravity | |
| 11 | 2767 | C | All of the links in the last shot of anchor chain are painted _____. | yellow | white | red | orange | |
| 11 | 2768 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute with a 6" diameter cylinder, a 12" stroke with a volumetric efficiency of 90%, what is the capacity of this pump? | 66 gpm | 132 gpm | 264 gpm | 529 gpm | |
| 11 | 2769 | B | The rupture disc on a low pressure centrifugal unit relieves pressure directly from the _____. | economizer | chiller | condenser | compressor | |
| 11 | 2770 | D | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 396 pound load stationary would be _____. | 79 lbs. | 98 lbs. | 118 lbs. | 132 lbs. | GS-0110 |
| 11 | 2772 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute with a 7" diameter cylinder, an 11" stroke and operating at a 90% volumetric efficiency, what is the capacity of this pump? | 82 gpm | 165 gpm | 330 gpm | 407 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2773 | C | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 360 gpm | 90 gpm | 180 gpm | 529 gpm | |
| 11 | 2774 | D | The thermostat controlling the operation of the solenoid valve to a refrigerated box senses _____. | evaporator coil inlet temperature | evaporator coil outlet temperature | compressor discharge temperature | the refrigerated box temperature | |
| 11 | 2775 | D | Which of the listed item numbers represents the drip pan heater used in the refrigeration system shown in the illustration? | 6 | 8 | 18 | 26 | RA-0018 |
| 11 | 2777 | B | Charging liquid CFC-11 into a system under a heavy vacuum could cause _____. | the purge unit to operate | system secondary refrigerant to freeze | air and moisture to enter the receiver | rupture disk to rupture | |
| 11 | 2779 | D | As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 6.1 inches. When the pipe, is bent into a 90 degree turn, the length of the out side edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 6.189 inches | 7.291 inches | 9.006 inches | 9.582 inches | GS-0108 |
| 11 | 2780 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 77 gpm | 154 gpm | 308 gpm | 840 gpm | |
| 11 | 2781 | C | The EPA allows a large low pressure system to be pressurized during repairs by _____. | adding excess refrigerant | adding nitrogen | adding heat with controlled hot water | adding CFC-22 | |
| 11 | 2782 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 143 gpm | 286 gpm | 672 gpm | |
| 11 | 2783 | A | In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. A red painted detachable line would be found between the _____. | number 1 and 2 shots of chain | number 2 and 3 shots of chain | number 3 and 4 shots of chain | all of the above | |
| 11 | 2785 | D | Which of the listed item numbers represents the low pressure cutout of the refrigeration system shown in the illustration? | 24 | 28 | 29 | 30 | RA-0018 |
| 11 | 2786 | B | Dust covers or plugs must be placed on all dry material fill and discharge lines P-tanks to _____. | maintain good seamanship | prevent moisture from entering the tank | prevent accidental discharge on deck | prevent accidental filling of the tank | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2787 | C | The high pressure cut-out switch used on refrigeration units for low pressure systems is set to shut off the compressor at _____. | 1 psig | 5 psig | 10 psig | 15 psig | |
| 11 | 2789 | C | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 529 gpm | 66 gpm | 132 gpm | 264 gpm | |
| 11 | 2790 | D | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 242 gpm | 407 gpm | 61 gpm | 121 gpm | |
| 11 | 2791 | B | The inlet of the purge units used with some compressors in low pressure refrigeration systems is connected to the _____. | economizer | condenser | compressor | evaporator | |
| 11 | 2792 | D | Which illustrated device would be best suited for measuring the flow rate of wet gases using a primary, differential pressure, flow element? | Figure A | Figure D | Figure E | All of the above | GS-0126 |
| 11 | 2793 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 98 gpm | 49 gpm | 196 gpm | 272 gpm | |
| 11 | 2794 | C | A properly adjusted thermostatic expansion valve will have a constant valve opening under a condition of constant _____. | supply pressure | suction pressure | refrigerant superheat | compressor speed | |
| 11 | 2795 | B | Which of the listed item numbers represents the device specifically termed the "heat exchanger" of the refrigeration system shown in the illustration? | 6 | 13 | 18 | 26 | RA-0018 |
| 11 | 2796 | C | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 99 gpm | 25 gpm | 32 gpm | |
| 11 | 2797 | D | If you have a simplex single acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 92 gpm | 180 pm | 183 gpm | 46 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2798 | B | In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The third shot of chain should have _____. | three turns of wire wrapped around the detachable link | three turns of wire wrapped around the stud of the third link on each side of the detachable link | three turns of wire wrapped around the stud of the link on each side of the detachable link | one turn of wire wrapped around the stud of the third link on each side of the detachable link | |
| 11 | 2799 | C | Liquid recovery alone will typically remove the total refrigerant charge from a low pressure system up to _____. | 50% | 60% | 70% | 75% | |
| 11 | 2800 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 50 pm | 59 gpm | 96 gpm | |
| 11 | 2801 | B | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 61 gpm | 242 gpm | 407 gpm | 121 gpm | |
| 11 | 2802 | C | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 529 gpm | 132 gpm | 264 gpm | 66 gpm | |
| 11 | 2803 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 15 gpm | 38 gpm | 47 gpm | 61 gpm | |
| 11 | 2804 | D | Hot gas bypass is one of the methods used to _____. | relieve excessive compressor head pressure | produce flash gas at the expansion valve | reduce flooding of the receiver at low loads | defrost the evaporator coils | |
| 11 | 2805 | C | Which of the listed item numbers represents the liquid line solenoid valve for the refrigeration system shown in the illustration? | 22 | 27 | 29 | 17 | RA-0018 |
| 11 | 2806 | C | In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The second shot of the chain is painted _____. | white on the detachable link | red for two links on either side of the detachable link | white for two links on either side of the detachable link | red on the detachable link | |
| 11 | 2807 | D | The rupture disc used on low pressure refrigerant containers is set for _____. | 1 psig | 5 psig | 10 psig | 15 psig | |
| 11 | 2808 | D | A micrometer scale reading is indicated as 0.246 inches and is represented in the illustration by _____. | Figure C | Figure D | Figure F | Figure I | GS-0013 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2809 | A | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 423 pound load stationary would be _____. | 141 lbs. | 156 lbs. | 169 lbs. | 185 lbs. | GS-0110 |
| 11 | 2810 | A | If you have a duplex single acting reciprocating pump making 200 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 23 gpm | 11 gpm | 40 gpm | 46 gpm | |
| 11 | 2811 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 77 gpm | 154 gpm | 105 gpm | |
| 11 | 2812 | C | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 51 gpm | 61 gpm | 31 gpm | 123 gpm | |
| 11 | 2813 | D | In order to recognize the amount of anchor chain paid out, specific portions of the chain are color coded and wrapped with wire. The first shot of chain is painted _____. | white on the detachable link and red on each link to either side of the detachable link | white on the detachable link and white on each link to either side of the detachable link | red on the detachable link and red on each link to either side of the detachable link | red on the detachable link and white on each link to either side of the detachable link | |
| 11 | 2814 | A | Which of the precautions listed should be taken before opening any part of a refrigeration system? | Make certain that a positive pressure exists in the system to prevent entrance of moisture. | Find the leaks in the system with a Halide torch. | Set the high pressure cutout on manual to prevent automatic starting. | Use the hot gas defrost line to remove frost on coils. | |
| 11 | 2815 | D | Which of the item numbers listed represents the accumulator of the refrigeration system shown in the illustration? | 8 | 12 | 13 | 20 | RA-0018 |
| 11 | 2816 | B | During normal operation, how is most of the refrigerant released to the atmosphere from low pressure systems? | through water-side systems | through the purge unit | through a leaking rupture disk | through the compressor shaft seal | |
| 11 | 2817 | C | A short weighted hose is attached to the end of the P-tank fixed discharge line on board a supply boat to _____. | prevent accidental back flow of dry bulk material | maintain a non-vibrating delivery rate | prevent dry material from being discharged on deck | All of the above | |
| 11 | 2818 | C | The reading on the micrometer scale shown in figure "H" in the illustration is _____. | 0.154 inch | 0.413 inch | 0.438 inch | 0.450 inch | GS-0013 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2819 | B | A high reading is only indicated at the salinity cell labeled "6" shown in the illustration. This would be the probable result of _____. | a minor tube leak in the distillate condenser in item "III" | a faulty cell at this location | the compensating temperature is set too low for this cell location | All of the above | GS-0053 |
| 11 | 2820 | A | As shown in the illustration, a section of standard weight seamless steel pipe, has an external diameter of 6.6 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside e | 10.367 inches | 13.006 inches | 15.367 inches | 19.059 inches | GS-0108 |
| 11 | 2822 | D | The lathe tool shown as figure "O" in the illustration is commonly used for _____. | cutting acme threads | left hand side facing | right hand turning | grooving | GS-0090 |
| 11 | 2823 | A | Minor repairs may be performed on low pressure refrigerant systems without recovering the refrigerant charge if the pressure in the system is raised to atmospheric. How may this be accomplished? | heat the refrigerant | pressurize the system with nitrogen | charge the system until it is completely filled with liquid refrigerant | open the system vent to the atmosphere and allow the pressure to equalize | |
| 11 | 2824 | B | Before charging a refrigeration unit, the refrigerant charging lines should be _____. | flushed with clean refrigerant oil | purged with the refrigerant | washed with an ammonia and alcohol solution | grounded to the compressor | |
| 11 | 2825 | A | Which of the numbers listed represents the main component of the refrigeration system, shown in the illustration, used to determine whether the unit is to operate in the cooling or heating mode? | 5 | 14 | 29 | 30 | RA-0018 |
| 11 | 2826 | A | Under what conditions would the oily-water separator system illustrated fail to effectively process a mixture of oily-water? | When the oily-water mixture is an emulsion the effectiveness of the separator is greatly reduced. | Without detergents the effectiveness of the separator is greatly reduced. | When there are small air leaks in the discharge piping, the effectiveness of the separator will greatly reduced. | When the oily-water separator is in the process mode it will effectively handle emulsions. | GS-0113 |
| 11 | 2827 | C | In a low pressure refrigeration system, excessive running of the purge system generally indicates which probable condition? | faulty purge system vent valve | overcharged system | system leaks | high ambient temperature | |
| 11 | 2828 | D | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 28 gpm | 110 gpm | 38 gpm | 55 gpm | |
| 11 | 2830 | B | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 88 gpm | 157 gpm | 176 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2831 | A | Design characteristics of lubricating oil sump tanks include _____. | installation of baffles to prevent excessive sloshing of oil | sufficient capacity to contain all the lube oil in the system except for the contents of the gravity tank | cooling coils made of welded seamless steel pipe | insuring the bottom of the sump is integral with the shell plating | |
| 11 | 2832 | A | Excessive moisture being collected in the purge unit of a low pressure refrigeration system could indicate which probable condition? | leaking condenser or chiller tubes | low efficiency purge unit | dryer core needs replacement | improper charging of refrigerant | |
| 11 | 2833 | C | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 423 pound load stationary would be _____. | 118 lbs. | 127 lbs. | 141 lbs. | 150 lbs. | GS-0110 |
| 11 | 2834 | B | Low side passive charging of a refrigeration system may be speeded up by _____. | warming the service cylinder with a torch | warming the service cylinder with hot water | inverting the service cylinder | inclining the service cylinder | |
| 11 | 2835 | C | Which of the numbers listed represents the equalizing line shown in the illustration? | 4 | 11 | 16 | 19 | RA-0018 |
| 11 | 2836 | B | In a refrigeration system, what is meant by the term 'high efficiency purge unit?' | Those purge units which discharge the highest percentage of refrigerant with the air being removed. | Those purge units which discharge very little refrigerant with the air being removed. | Those purge units which draw very little electrical power. | Those purge units which need the least amount of on-going maintenance. | |
| 11 | 2837 | A | A short, weighted hose is attached to the end of the P-tank fixed discharge line on board a supply boat to _____. | keep the end of the hose under water and prevent dust from blowing on the boat | maintain a low discharge flow rate | keep the end of the fixed discharge line from excessively vibrating | All of the above | |
| 11 | 2838 | A | If your vessel burns 5 tons of fuel per hour at 23 knots, how many tons per hour will it burn at 18 knots? | 2.4 tons | 3.9 tons | 3.1 tons | 3.3 tons | |
| 11 | 2839 | D | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 672 gpm | 195 gpm | 970 gpm | 390 gpm | |
| 11 | 2840 | A | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 308 gpm | 154 gpm | 77 gpm | 840 pm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2841 | B | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 143 gpm | 286 gpm | 726 gpm | 672 gpm | |
| 11 | 2842 | C | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 23 gpm | 34 gpm | 47 gpm | 93 gpm | |
| 11 | 2843 | B | What must be done to use standard leak detection methods on a low pressure refrigeration system? | lower the pressure in the system below atmospheric | raise the pressure in the system above atmospheric | cool the refrigerant | add HCFC-22 to the system | |
| 11 | 2844 | C | When using the test set up shown in the illustrated to find a leak in an evaporator coil, it is important to remember that _____. | the flame will turn blue in the presence of a refrigerant | a large flame is more sensitive than a small flame | The refrigerant is heavier than air and will be detected below the leak | all of the above | RA-0004 |
| 11 | 2845 | A | Which of the item numbers listed represents the device used to activate the three way valve of the refrigeration system shown in the illustration? | 24 | 27 | 29 | 30 | RA-0018 |
| 11 | 2846 | B | The reading on the micrometer scale shown in figure "I" in the illustration is _____. | 0.220 inch | 0.246 inch | 0.250 inch | 0.253 inch | GS-0013 |
| 11 | 2847 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 105 gpm | 314 gpm | 52 gpm | 209 gpm | |
| 11 | 2848 | D | While the illustrated system is operated at sea the strainer in line "4" becomes fouled, this will result in _____. | a significant reduction in distillate production | pump "K" becoming vapor bound | the temperature regulated by "L" difficult to maintain | nothing unusual for the area of operation indicated | GS-0053 |
| 11 | 2851 | D | Which of the figures in illustration GS-0080 would be used in conjunction with figure "C" in illustration GS-0015? | figure A | figure D | figure F | figure K | GS-0080 |
| 11 | 2853 | B | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 5.2 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside | 7.980 inches | 8.168 inches | 13.168 inches | 16.127 inches | GS-0108 |
| 11 | 2854 | C | A quick method used to test a water cooled condenser for refrigerant leaks is to test the _____. | cooling water for proper pH | receiver for water content | air vents on the condenser heads with a halide torch | condenser tubes hydrostatically | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2855 | B | Which of the item numbers listed represents the device used to prevent refrigerant flow into the 'drip pan heater' during normal cooling periods of the refrigeration system shown in the illustration? | 24 | 27 | 29 | 30 | RA-0018 |
| 11 | 2856 | D | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 99 gpm | 32 gpm | 49 gpm | |
| 11 | 2857 | C | Why is a short, weighted hose attached and secured to the end of the fixed discharge line from a supply boat P-tank? | To keep the end of the hose from lifting off the deck of the supply boat. | To keep down the discharge flow rate. | To prevent injury when pressurized air discharges from the open end of the hose | All of the above | |
| 11 | 2858 | A | If you have a duplex single acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 92 gpm | 46 gpm | 180 gpm | 183 gpm | |
| 11 | 2859 | C | If your vessel burns 6 tons of fuel per hour at 22 knots, how many tons per hour will it burn at 17 knots? | 4.6 tons | 3.9 tons | 2.8 tons | 1.7 tons | |
| 11 | 2860 | C | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 98 gpm | 272 gpm | 196 gpm | 49 gpm | |
| 11 | 2861 | A | All watertight doors and watertight hatches on small passenger vessels of less than 100 gross tons are required to be marked in letters _____. | of at least 1-inch, 'watertight door-close in an emergency' or 'watertight hatch-close in emergency' | not to exceed 1-inch 'watertight door-close in emergency' or 'watertight hatch-close in emergency' | of at least 1-inch, 'emergency exit, keep clear' | not to exceed 1-inch, 'emergency exit, keep clear' | |
| 11 | 2862 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 12 gpm | 25 gpm | 50 gpm | 93 gpm | |
| 11 | 2864 | C | Which of the processes listed would be the most satisfactory method to use to lower the humidity of the air being circulated by an air conditioning system? | Cooling the air to a temperature just above dew point. | Heating the air to a point at which moisture will boil off, then recooling it. | Cooling the air to a point below dew point, then reheating it. | Heating the air and then cooling it to a point below dew point. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2866 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 107 gpm | 53 gpm | 80 gpm | 27 gpm | |
| 11 | 2867 | B | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 99 gpm | 32 gpm | 25 gpm | |
| 11 | 2868 | A | If the discharge valves on a refrigeration compressor are leaking slightly, the compressor will _____. | run continuously | not start | short cycle on the water low pressure switch | short cycle on the high pressure switch | |
| 11 | 2869 | A | In the illustration, the item labeled as '27' is _____.<br>I. used to vent off air from the casing<br>II. to supply sealing water to the stuffing box | I only | II only | Both I and II | Neither I nor II | GS-0012 |
| 11 | 2870 | B | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 236 pound load stationary would be _____. | 47 lbs. | 59 lbs. | 79 lbs. | 94 lbs. | GS-0110 |
| 11 | 2871 | D | According to the Regulations, all escape hatches and other emergency exits on small passenger vessels of less than 100 gross tons shall be marked on _____. | exterior side, in less than 2-inch letters 'watertight opening-keep clear' | exterior side only, in at least 2-inch letters 'emergency exit-keep clear' | both sides, in at least 2-inch letters 'watertight door-close in emergency' | both sides, in at least 2-inch letters 'emergency exit-keep clear' | |
| 11 | 2872 | C | If you have a duplex double acting reciprocating pump making 200 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 46 gpm | 92 gpm | 183 gpm | 180 gpm | |
| 11 | 2873 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 59 gpm | 50 gpm | 99 gpm | |
| 11 | 2874 | B | A cargo hold has been determined to have a relative humidity of 80% and a dry bulb temperature of 85° F. When the hold is closed and the dry bulb temperature decreases, the relative humidity in the space will _____. | decrease | increase | decrease to zero | remain unchanged | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2875 | B | If you have a duplex double acting reciprocating pump making 200 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 11 gpm | 46 gpm | 23 gpm | 40 gpm | |
| 11 | 2876 | C | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 77 gpm | 154 gpm | 175 gpm | |
| 11 | 2878 | C | When a P-tank has been properly emptied, the tank pressure will immediately _____. | increase to 3-5 psi | decrease to 35-37 psi | decrease to 3-5 psi | increase to 35-37 psi | |
| 11 | 2879 | B | If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 19 knots? | 12.8 tons | 16.3 tons | 10.6 tons | 10.1 tons | |
| 11 | 2880 | A | If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 110 gpm | 28 gpm | 55 gpm | 38 gpm | |
| 11 | 2881 | B | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 31 gpm | 123 gpm | 61 gpm | 51 gpm | |
| 11 | 2882 | C | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 22 gpm | 44 gpm | 88 gpm | 20 gpm | |
| 11 | 2883 | C | If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 20 knots? | 11.7 tons | 10.7 tons | 19.0 tons | 14.2 tons | |
| 11 | 2884 | C | The compressor used in an air-cooled air conditioning system is short cycling. A service check determines the suction pressure is above the normal cut-in point with an exceptionally high head pressure and high superheat at the evaporator. This is probably a result of a _____. | loosely fitted compressor drive belt | partially opened liquid service valve | reduction in condenser air flow (dirty condenser) | fully closed discharge service valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2885 | D | When repairing a refrigeration system, a swedge would be used to carry out which of the following operations? | Swedges are used to remove any sweated edges formed on the tubing while soldering. | Swedges are used during the breaking-in of refrigeration compressors and drive motors. | A swedge is no longer used with repairing refrigeration systems due to progressive changes in the tool industry. | Swedges can be used to expand an end of one tube to fit onto a tube of the same external diameter. | |
| 11 | 2886 | A | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 270 gpm | 67 gpm | 135 gpm | 223 gpm | |
| 11 | 2887 | B | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 82 gpm | 330 gpm | 165 gpm | 407 gpm | |
| 11 | 2889 | D | One of the primary steps in assisting someone who has been overcome by ammonia vapors is to _____. | loosen all clothing | provide the victim with smelling salts | rinse the affected area with water | give the patient plenty of fresh air | |
| 11 | 2890 | D | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 99 gpm | 59 gpm | 50 gpm | |
| 11 | 2891 | A | The lubrication of a precision high speed bearing depends upon a system that produces _____. | adequate quantity at sufficient pressure | high detergent oil with pressure additives | constant viscosity lubrication | a minimum of 15 psi to all parts of the system | |
| 11 | 2892 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 21.3 gpm | 42.5 gpm | 46.3 gpm | 85 gpm | |
| 11 | 2893 | C | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 36 gpm | 45 gpm | 18 gpm | 72 gpm | |
| 11 | 2894 | C | In a two stage centrifugal air conditioning system, the liquid refrigerant passes through the condenser directly to the _____. | evaporator | chiller | economizer | expansion valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2895 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 14 gpm | 28 gpm | 19 gpm | 7 gpm | |
| 11 | 2896 | A | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 43 gpm | 86 gpm | 100 gpm | 172 gpm | |
| 11 | 2897 | D | If a refrigeration compressor were short cycling on the low pressure cutout switch, the cause might be that the _____. | system was overcharged with refrigerant | system was low on oil | suction valves were leaking slightly | system was low on refrigerant | |
| 11 | 2898 | C | When all of the dry bulk material has been delivered from a P-tank, it should be blown out by repressurizing to _____. | 5-10 psi | 10-15 psi | 25-30 psi | 40-50 psi | |
| 11 | 2899 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 51 gpm | 31 gpm | 61 gpm | 123 gpm | |
| 11 | 2900 | C | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 33 gpm | 49 gpm | 25 gpm | 98 gpm | |
| 11 | 2901 | A | Considering equal capacities, which refrigeration system can employ the smallest compressor? | Ammonia | Carbon Dioxide | Dichlorodifluoromethane | Monochlorodifluoromethane | |
| 11 | 2902 | C | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 254 pound load stationary would be _____. | 13 lbs. | 43 lbs. | 64 lbs. | 102 lbs. | GS-0110 |
| 11 | 2903 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 82 gpm | 132 gpm | 164 gpm | 41 gpm | |
| 11 | 2904 | C | The primary purpose of the thermostatic expansion valve as used in most refrigeration plants is to _____. | regulate refrigerant passage through the solenoid valve | ensure that liquid refrigerant returning to the compressor has the proper superheat | maintain a constant degree of superheat at the evaporator coil outlet | maintain constant evaporator coil pressure independent of suction pressure variations | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2905 | C | In a refrigeration system, once the compound gage manifold lines are attached to the service connections, you should ascertain that the valves on the gage manifold are closed, and then _____. | open the discharge valve service port by closing the service valve | continue to backseat the discharge service valve by turning it clockwise | open the discharge valve service port by closing the service valve approximately 1/4 to 1/2 of a turn | open only the valve connected to the discharge service fitting on the outlet of the king valve | |
| 11 | 2906 | A | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 55 gpm | 75 gpm | 151 gpm | 303 gpm | |
| 11 | 2907 | D | If R-502, which is a mixture comprised of 48.8% R-22 and 51.2% R-115, is recovered from a refrigeration system, it must be placed in a recovery tank containing _____. | either R-22 or R-115 | R-22 only | R-115 only | R-502 only | |
| 11 | 2908 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 240 gpm | 120 gpm | 329 gpm | 479 gpm | |
| 11 | 2909 | C | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 225 gpm | 113 gpm | 74 gpm | 56 gpm | |
| 11 | 2910 | D | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 159 gpm | 345 gpm | 319 gpm | 80 gpm | |
| 11 | 2911 | A | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 86 gpm | 172 gpm | 343 gpm | 400 gpm | |
| 11 | 2912 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 217 gpm | 108 gpm | 403 gpm | 434 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2914 | C | The primary purpose of the thermostatic expansion valve in a typical multi-box shipboard refrigeration system is to _____. | control the refrigerated space temperature | regulate the compressor suction pressure | regulate the amount of refrigerant superheat leaving the evaporator | control the refrigerant temperature entering the evaporator | |
| 11 | 2915 | C | When purging a refrigeration gage manifold, which of the fittings listed is normally tightened last? | The hose fitting at the discharge valve is tightened last after purging the low pressure line. | The fittings at the discharge and suction valves of the compressor are both closed simultaneously to prevent objective cross flows. | The hose fitting at the suction service valve is tightened last after purging the center connection. | The low pressure hose fitting at the gage manifold is the only fitting that is connected first and tightened last. | |
| 11 | 2916 | A | The lathe tools shown as figure "M" in the illustration are commonly known as _____. | forming tools | cutting-off tools | parting tools | universal turning tools | GS-0090 |
| 11 | 2917 | C | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 102 gpm | 204 gpm | 51 gpm | 245 gpm | |
| 11 | 2918 | B | As soon as all of the pulverized material has been discharged from a P-tank, the tank should be _____. | vented and depressurized | repressurized and blown out with the discharge hoses disconnected | repressurize and blown out with the discharge hoses connected | allowed to stand empty, but pressurized until refilled | |
| 11 | 2919 | A | The prohibition against the venting of halogenated floro-carbon refrigerants to the atmosphere requires that, at a minimum, the refrigerant must be _____. | recovered | reclaimed | recycled | destroyed | |
| 11 | 2922 | D | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 120 gpm | 329 gpm | 479 gpm | 240 gpm | |
| 11 | 2923 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 56 gpm | 225 gpm | 270 gpm | |
| 11 | 2924 | C | One benefit of proper air circulation in a refrigerated cargo space is _____. | more temperature differential | increased moisture content | reduced slime and mold | increased density of the air | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2925 | D | Valve "10" in the refrigeration system shown in the illustration is known to close effectively. The low side of the system is pumped down and the compressor is off. The suction pressure gage initially indicates a vacuum, but slowly increases to '0' psig | Compressor discharge valves are not sealing properly. | Condenser check valve, item "7" has a defective valve seat. | Heat exchanger, item "13" has an internal leak. | There is a small leak at the dehydrator fittings indicated by the presence of minute quantities of oil. | RA-0018 |
| 11 | 2926 | C | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 4.6 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 5.246 inches | 6.113 inches | 7.226 inches | 7.435 inches | GS-0108 |
| 11 | 2927 | B | If solenoid "A" illustrated is energized, the _____. | pump should reverse the direction of flow | cylinder should extend | pump should discharge directly to the reservoir | cylinder should retract | GS-0041 |
| 11 | 2928 | A | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 294 pound load stationary would be _____. | 74 lbs. | 90 lbs. | 98 lbs. | 118 lbs. | GS-0110 |
| 11 | 2929 | B | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 80 gpm | 161 gpm | 319 gpm | 345 gpm | |
| 11 | 2930 | C | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 86 gpm | 343 gpm | 172 gpm | 400 gpm | |
| 11 | 2931 | D | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 434 gpm | 403 gpm | 217 gpm | |
| 11 | 2932 | A | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 102 gpm | 51 gpm | 204 gpm | 245 gpm | |
| 11 | 2934 | C | Which of the lettered items correctly identifies the parts of the refrigeration valve shown in the illustration? | A-front seat, C-back seat, and D-seal cap | D-front seat, E-normal outlet, and G-valve packing | A-seal cap, D-front seat, and F-gage connection | B-valve stem, C-front seat, and F-packing gland | RA-0008 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2935 | C | The refrigeration system shown in the illustration is pumped down and the compressor is cycled off. The compressor suction and discharge valves and valve "10" have been checked and found to be in good order. Which of the problems listed is indicated if the suction pressure rises rapidly from a vacuum to above atmospheric pressure? | There is a discernible hole in the suction piping. | The system contains excessive refrigerant. | Check valve, item '27' has acquired foreign matter preventing it from closing. | Dehydrator, item "12" is clogged and requires changing. | RA-0018 |
| 11 | 2936 | B | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 67 gpm | 84 gpm | 245 gpm | 270 gpm | |
| 11 | 2937 | C | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 23 gpm | 42 gpm | 85 gpm | 179 gpm | |
| 11 | 2938 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 107 gpm | 80 gpm | 53 gpm | 25 gpm | |
| 11 | 2939 | A | An example of a small refrigeration appliance identified as TYPE I, is _____. | A water cooler with four pounds of refrigerant | a cargo container refrigerant system containing 4.9 lbs of refrigerant. | a 25 ton air conditioning plant provided it does not meet the criteria for a TYPE II appliance. | each of the above answers is correct | |
| 11 | 2940 | A | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 39 gpm | 49 gpm | 98 gpm | |
| 11 | 2941 | C | The purpose of nozzles in a liquid mud system is to_____. | aerate the mud to insure proper oxygen content | clean the mud from the bottom of the tank | circulate the mud to prevent barite from settling | Prevent barite from damaging the pump | |
| 11 | 2942 | B | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 52 gpm | 26 gpm | 72 gpm | 103 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2943 | C | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 79 gpm | 237 gpm | 158 gpm | 39 gpm | |
| 11 | 2944 | D | The high pressure cutout switch will stop the refrigeration centrifugal compressor when there is _____. | a stoppage of condenser cooling water flow | fouled condenser tubes | excessive air in the system | all of the above | |
| 11 | 2945 | D | The refrigeration system shown in the illustration has been operating in the cooling mode for twenty minutes and has not entered the programmed defrost period. Which of the following is indicated if the line marked '25' feels hot, even though the box temperature has been gradually decreasing? | Check valve, item '27' is leaking. | Drip pan heater, item '26' is no longer melting ice. | Solenoid valve, item "24" is operating correctly and is opened. | Three way valve, item "5" is not seating properly. | RA-0018 |
| 11 | 2946 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 98 gpm | 196 gpm | 266 gpm | |
| 11 | 2947 | A | What three (3) types of drilling fluids can be transported by an OSV? | water based mud, oil based mud and completion fluids | salt water mud, fresh water mud and correction fluids | offshore mud, inland mud and dry chemicals | barite, oil and zinc bromide | |
| 11 | 2948 | B | The operation of a P-tank depends upon _____. | liquefying the dry bulk material | directing the bulk material to a central discharge point within the pressure vessel | providing a central suction point to the liquid mud pump | All of the above | |
| 11 | 2949 | C | A micrometer scale reading is indicated as 0.349 inches and is represented in the illustration by _____. | Figure A | Figure B | Figure C | Figure G | GS-0013 |
| 11 | 2952 | C | Which of the following steps should be taken before taking on a load of liquid mud for transport to a MODU? | Flood the tanks with carbon dioxide and test product with an explosimeter (gas detector) | Test a sample to insure that the emulsifying amines do not exceed a STEL of 25 ppm. | Insure that the sea chest valve is closed and not leaking. | All of the above. | |
| 11 | 2953 | D | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 334 pound load stationary would be _____. (See illustration GS-0110) | 54 lbs. | 61 lbs. | 77 lbs. | 84 lbs. | GS-0110 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2954 | D | An economizer, or heat interchanger, is installed in a refrigeration system to _____. | reduce the possibility of sweating of the suction line | reduce the temperature of liquid refrigerant prior to entering the expansion valve | reduce the possibility of liquid refrigerant flooding back to the compressor | all of the above | |
| 11 | 2955 | D | The refrigeration system shown in the illustration is operating in the cooling mode. The discharge head pressure is slightly above normal and the suction pressure is lower than normal, with the ball in the sight glass floating high. Which of the following indicates the probable cause? | There is a restriction at the three way valve. | There is a restriction at the pilot valve controlling the three way valve. | The condenser check valve is not operating correctly causing the condenser coils to become flooded. | There is a restriction in the liquid line. | RA-0018 |
| 11 | 2956 | B | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 209 gpm | 52 gpm | 105 gpm | 314 gpm | |
| 11 | 2957 | B | Federal regulations permit refrigerant to be released to the atmosphere under which conditions? | When testing a system for leaks using R-12 and nitrogen. | When release is considered 'De Minimis'. | When adding oil to a compressor. | During replacement of a compressor. | |
| 11 | 2958 | C | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 59 gpm | 71 gpm | 30 gpm | 119 gpm | |
| 11 | 2960 | B | If valve 'V2A' in the illustration does not open when the oily-water separator shifts into the oil discharge mode, which of the following statements describes what would occur? | Backflush water would cause the oil accumulated in the upper section of the tank to be forced back into the bilge spaces. | The separator operation would stall as a result of oil remaining on the longer probe of item "S". | The separator operation would stall do to the presence of water at the shorter probe of item "S". | The separator operation would continue as valve 'V4' is only used during the remote manual mode. | GS-0113 |
| 11 | 2961 | D | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 59 gpm | 24 gpm | 94 gpm | 47 gpm | |
| 11 | 2962 | B | In the hydraulic schematic illustrated, the pump symbol indicates the use of a _____. | constant flow gear type pump | constant flow pump of indefinite construction | constant flow screw type pump | bi-directional rotating constant flow pump | GS-0041 |
| 11 | 2964 | C | The amount of refrigerant in a storage cylinder is measured by _____. | pressure | volume | weight | temperature | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2965 | D | Which of the conditions listed would indicate the refrigeration system shown in the illustration is insufficiently charged? | The position of the floating ball in the receiver tank sight glass. | A suction pressure whose saturation temperature is equal to the existing box temperature. | The existence of, or the ability to develop, a 150 psi head pressure. | All of the above. | RA-0018 |
| 11 | 2966 | C | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 626 gpm | 134 gpm | 268 gpm | 537 gpm | |
| 11 | 2967 | D | Newly developed refrigerants, used to reduce stratospheric ozone depletion, are sometimes referred to as azeotropic. This means that the resulting liquid_____. | will condense at a temperature lower than the boiling point of the component with the lowest boiling point | boils at a temperature equal to the boiling point of the component with the lowest boiling point | will condense at a temperature equal to the highest condensation point of the component with a condensation point equal to any one of the components | boils at a temperature independent of any individual components in the mixture | |
| 11 | 2969 | A | When checking the level of a fuel oil tank using a pneumercator, the initial reading obtained can be quickly verified by _____. | repeating the process and getting the same reading again | sounding the tank with a tape coated with a fuel indicating paste | a gauge reading of zero when the control handle is in the purge position | a gauge reading equal to supply air pressure when the control handle is in the purge position | |
| 11 | 2970 | D | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 67 gpm | 135 gpm | 155 gpm | |
| 11 | 2971 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 30 gpm | 9 gpm | 36 gpm | 18 gpm | |
| 11 | 2972 | A | In the illustrated system, what pressure will be indicated on the gauge if the load (x) is 8000 lbs and the piston area is 10 sq. in? | 800 psi | 8,000 psi | 80,000 psi | 80 psi | GS-0062 |
| 11 | 2973 | C | If solenoid "A" of the valve illustrated is energized, the cylinder will _____. | extend with rate of movement controlled | retract with rate of movement controlled | extend with rate of movement uncontrolled | retract with rate of movement uncontrolled | GS-0041 |
| 11 | 2974 | B | Dehydrators are usually located in the liquid line of refrigeration systems in order to _____. | remove oil from the refrigerant | prevent icing of the expansion valve | reduce compressor discharge line sweating | prevent liquid slugging in the suction line | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2975 | D | The suction pressure of the refrigeration system shown in the illustration is abnormally low, with a normal discharge pressure. Which of the following statements describes the probable cause and corrective action? | Excessive refrigerant is circulating within the system; bleed excess to the atmosphere. | Filter drier is too large for the system; replace with proper size. | Compressor check valves are leaking; replace only the damaged valves. | Moisture is frozen in the expansion valve; thaw valve and replace drier. | RA-0018 |
| 11 | 2976 | D | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 3.8 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside e | 1.097 inches | 1.571 inches | 4.712 inches | 5.969 inches | GS-0108 |
| 11 | 2977 | D | With regards to the illustrated rudder, the pivot point and connection to the vessel is provided by _____. | rudder stock | stern post | clevis post | gudgeon and pintle | GS-0131 |
| 11 | 2978 | B | The compressor in figure 4, if permitted to operate as illustrated will _____. | lose its volumetric efficiency | damage the bearings of the motor | trip the breaker when being restarted for the first time after replacing the belts | result in a constant enlargement of the clearance expansion volume | GS-0159 |
| 11 | 2979 | D | The direction and rate of rotation for the cab in the hydraulic crane circuit shown, is controlled by the _____. | variable stroke pump (item #3) | main pump (item #13) | control valve (item #1) | manual control valve (item #10) | GS-0161 |
| 11 | 2980 | D | The wire rope drum used in the illustrated hydraulic crane circuit is prevented from accidentally paying out by _____. | slightly shifting the hoist valve into position "I" to hold the load in a steady position | the installation of a braking valve in line "K" to the hydraulic motor | the use of a spring set, electric solenoid released brake | components labeled 4 and 5 | GS-0161 |
| 11 | 2981 | B | If solenoid "B" of the valve illustrated is energized, the cylinder will _____. | extend with rate of movement controlled | retract with rate of movement controlled | extend with rate of movement uncontrolled | retract with rate of movement uncontrolled | GS-0041 |
| 11 | 2982 | B | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 362 pound load stationary would be _____. | 88 lbs. | 91 lbs. | 121 lbs. | 145 lbs. | GS-0110 |
| 11 | 2983 | A | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 42 gpm | 34 gpm | 21 gpm | 85 gpm | |
| 11 | 2984 | B | A liquid line solenoid valve controls refrigerant flow to the evaporator by _____. | throttling the refrigerant | fully opening or closing | sensing the superheat in the tail coil | sensing the temperature in the liquid line | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2985 | A | Which of the following conditions would indicate that the drier of the refrigeration system shown in the illustration became restricted and required replacement? | Normal discharge pressure with an abnormally low suction pressure. | Frosting at the outlet of the drier and an excessively high suction pressure. | Frosting at the outlet of the drier and frosting at the three way valve. | Suction pressure low with a normal discharge pressure. | RA-0018 |
| 11 | 2986 | A | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 204 gpm | 102 gpm | 245 gpm | 51 gpm | |
| 11 | 2988 | C | The operation of a P-tank depends upon _____. | moving the dry barite with a liquid mud pump | using nozzles to recirculate the dry bulk material | aerating the barite | All of the above | |
| 11 | 2989 | A | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 21 gpm | 28 gpm | 11 gpm | 43 gpm | |
| 11 | 2990 | D | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 126 gpm | 63 gpm | 251 gpm | 31 gpm | |
| 11 | 2991 | C | The amount of HCFC-123 in a storage cylinder is measured by _____. | saturation pressure | volume | weight | saturation temperature | |
| 11 | 2992 | C | The discharge valve of pump "O" in the system illustrated is only opened by 25%, this will result in _____. | a reduction in distillate purity | the pump becoming vapor bound | valve "S" being actuated and dumping to the bilges after a few hours of operation | nothing unusual for the type of operation indicated | GS-0053 |
| 11 | 2994 | A | The lubrication oil in the sump of a secured refrigeration compressor is heated to _____. | reduce absorption of refrigerant by the oil | prevent refrigerant vaporization | remove entrained water | remove wax and gum | |
| 11 | 2995 | B | An excessive amount of oil is circulating throughout the refrigeration system shown in the illustration. Which of the following statements would indicate this improper operating condition? | The oil p.p.m. sensor, device '30' would initiate an electronic signal. | The suction pressure would be low, with the discharge pressure normal and an associated lack of space cooling. | All pressures would be normal, but the box temperature would be above set point. | The three way valve and the thermostatic expansion valve would each have a tendency to operate more efficiently due to the reduction of internal frictional forces. | RA-0018 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 2996 | B | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 119 gpm | 85 gpm | 42 gpm | 170 gpm | |
| 11 | 3000 | B | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 45 gpm | 36 gpm | 18 gpm | 72 gpm | |
| 11 | 3001 | D | When the insulation breaks down within a metal encased, portable, electric tool, _____. | added safety features are built into the receptacle to allow continued use of the tool | care should be taken to insert the plug correctly when energizing the tool | you should stand on a grounded deck plate before energizing the tool | line voltage may be placed on the tool casing making it dangerous to operate | |
| 11 | 3004 | B | The individual box temperatures of a multi-box refrigeration system are controlled by _____. | expansion valves | solenoid valves | back-pressure valves | regulation of the cooling water | |
| 11 | 3005 | C | A refrigeration container is fitted with a cooling system similar to the one shown in the illustration. The suction pressure drops rapidly just after the compressor is started. Although the evaporator coil is warm, frost is forming at the expansion valve outlet. Which of the following statements describes the most probable cause and the corrective action to be taken? | There is a shortage of refrigerant requiring an immediate charge. | The three way valve has become lodged in the mid position requiring prompt disassembly and cleaning. | The power element of the expansion valve has lost its charge due to a break in the capillary tube; therefore, it is necessary to change the power element. | These start-up characteristics are normal and no additional actions are necessary. | RA-0018 |
| 11 | 3006 | D | Acetylene should never be used at pressures in excess of 15 psig because the _____. | acetylene cylinders have a maximum allowable pressure of 15 psig | fusible plug will blow out | relief valve will lift | slightest shock could cause an explosion | |
| 11 | 3007 | C | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 84 gpm | 50 gpm | 101 gpm | 202 gpm | |
| 11 | 3010 | D | In the circle illustrated, the circumference is 157.6 inches. What is the area of the shaded portion? | 394.0 square inches | 168.5 square inches | 337.0 square inches | 179.6 square inches | GS-0134 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3011 | C | Oil is supplied to the illustrated steering gear _____. | through flexible hydraulic hoses via the connection ports located in the top surface of "O" | via the connections indicated as "J" | through high pressure piping at "A" and then internal ports provided in the housing assembly "U" | via hydraulic hoses connected to the orifices in "B" | GS-0116 |
| 11 | 3012 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 19 gpm | 7 gpm | 14 gpm | 28 gpm | |
| 11 | 3013 | A | A 'P-tank', as used aboard oilfield supply boats is _____. | a pressurized vessel designed to carry dry pulverized materials | a tank which is used to store compressed air at 100 psi | a pneumatically operated tank used to transport liquid drill mud | All of the above | |
| 11 | 3014 | C | Water regulating valves are installed to vary the water flow through the water cooled refrigeration condensers in response to _____. | compressor speed | compressor discharge temperature | compressor discharge pressure | condenser discharge temperature | |
| 11 | 3015 | D | The three way valve of the refrigeration system shown in the illustration leaks internally while the system is in the cooling mode. Which of the following statements indicates this condition? | Low discharge pressure with an associated low suction pressure. | Higher than normal condenser air outlet temperature with a higher than normal suction temperature. | The inability of the unit to properly pump down the high side. | Low discharge pressure and a normal or high suction pressure. | RA-0018 |
| 11 | 3016 | A | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 378 pound load stationary would be _____. | 95 lbs. | 119 lbs. | 126 lbs. | 151 lbs. | GS-0110 |
| 11 | 3017 | B | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6 inch diameter cylinder, a 4 inch stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 140 gpm | 70 gpm | 35 gpm | 20 gpm | |
| 11 | 3019 | D | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 35 gpm | 140 gpm | 70 gpm | |
| 11 | 3022 | A | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5 inch diameter cylinder, a 12 inch stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 73 gpm | 291 gpm | 145 gpm | 349 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3023 | C | In the circle illustrated, the circumference is 125.6 inches. What is the area of the shaded portion? | 234.0 square inches | 107.0 square inches | 114.1 square inches | 214.0 square inches | GS-0134 |
| 11 | 3025 | D | If the suction line of the refrigeration system shown in the illustration sweats excessively during operation, the expansion valve may be stuck open. Which of the following statements would indicate the most probable cause of this situation? | The power element and sensing bulb have lost their charge. | The equalizing line has become clogged with wax and ice. | The box door is open creating excessive thermal loading. | The sensing bulb has become detached from the suction line. | RA-0018 |
| 11 | 3026 | B | Which of the following listed pressures is the maximum acetylene gas pressure that can be safely used in gas welding? | 10 psi | 15 psi | 25 psi | 35 psi | |
| 11 | 3027 | D | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 100 gpm | 43 gpm | 172 gpm | 86 gpm | |
| 11 | 3028 | D | In the illustration, line "K" is a _____. | dimension line | leader line | cutting plane line | phantom line | GS-0006 |
| 11 | 3029 | A | The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 4.750" and "F" = 6", with an indicated radius of "R" = .125" and the taper per foot, "L" = 1.5"; then the tapered length "X" is _____. | 6.000 inches | 7.812 inches | 8.000 inches | 10.00 inches | GS-0133 |
| 11 | 3030 | B | In the illustrated 8,000 GPD evaporator the salt water feed pump and pump "N" are identically constructed. If the vapor pressure in chamber "II" is 2.1 psia, with a feed temperature of 170° F; operating pump "N" with the discharge valve 100% open will _____. | produce the designed quantity of distillate | contribute to chamber "II" and "III" operating at the same absolute pressure | increase the purity of the distillate | produce a higher than normal brine concentrate | GS-0053 |
| 11 | 3031 | D | The function of item "7" shown in the illustration is to _____. | direct the flow of the oily-water mixture against the coalescer bed | support the tank access panel | allow the oil accumulated to exit the device, while remaining separated from the liquid | prevent separated oil from mixing with the incoming bilge water | GS-0153 |
| 11 | 3032 | A | The illustrated shaft has an overall length of 15 inches. If the diameter of "E" = 2.5" and "F" = 3.5", with an indicated radius of "R" = .125" and the length of the tapered section "X" is to be 5"; then the amount of tailstock offset should be _____. | 0.750" | 0.833" | 1.250" | 1.500" | GS-0133 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3033 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 211 gpm | 130 gpm | 118 gpm | 60 gpm | |
| 11 | 3034 | B | Thermostatic expansion valves are opened _____. | by spring pressure and closed by refrigerant pressure | by refrigerant pressure and closed by spring pressure | and closed by spring pressure | and closed by refrigerant pressure | |
| 11 | 3035 | A | The refrigeration system shown in the illustration has a frosted and frozen suction line and the surrounding air has a high relative humidity. The box temperature is 10° F above set point, with the unit operating in the cool mode. Which of the listed actions should be taken? | Initiate the defrost cycle and ascertain the proper operation of the three way valve. | Add Freon to the unit to establish an operating discharge pressure of 150 psig. | Change the rotation of the condenser fans. | Using an 'amp clamp', determine if the electric drip pan heaters are ungrounded and operating correctly. | RA-0018 |
| 11 | 3036 | A | When gas welding or burning, the acetylene working pressure must be kept below 15 psi to prevent a possible _____. | explosion | torch backfire | torch flameout | acetone fire | |
| 11 | 3037 | A | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 8 inch diameter cylinder, a 8 inch stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 263 gpm | 132 gpm | 66 gpm | 33 gpm | |
| 11 | 3038 | B | In the circle illustrated, the circumference is 75.36 inches. What is the area of the shaded portion? | 65.0 square inches | 41.1 square inches | 38.5 square inches | 77.0 square inches | GS-0134 |
| 11 | 3039 | A | The valve in the line, labeled "C" in the illustrated system, should be opened _____. | when filling the tank | when discharging the pulverized material after it has been fluidized and aerated. | after the tank is full to check the level of bulk material | when the tank is empty to prevent condensation from accumulating | GS-0163 |
| 11 | 3041 | C | The maximum diameter of the device illustrated is _____. | 1.275 inches | 1.522 inches | 1.749 inches | 3.752 inches | GS-0008 |
| 11 | 3042 | B | The section of flange illustrated and indicated as "D" is a _____. | van stone flange | socket weld flange | expansion flange | threaded flange | GS-0018 |
| 11 | 3044 | C | Which of the following statements describes the characteristics of precision manufactured roller bearings? | They are not capable of maintaining alignment over long periods of time. | They have a relatively high power loss due to friction. | They are well adapted to variable speed operation. | Their lubrication is complicated and requires constant attention. | |
| 11 | 3045 | B | Concerning the operation of refrigeration systems, frosting or sweating of a liquid line is usually indicative of _____. | high surrounding relative humidity | a refrigerant line restriction | water in the system | proper cooling taking place | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3046 | C | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 394 pound load stationary would be _____. | 70 lbs. | 82 lbs. | 99 lbs. | 131 lbs. | GS-0110 |
| 11 | 3048 | A | The hydraulic pump which would be mounted on the unit shown in the illustration, may begin to cavitate if _____. | "D" is not kept clean | "A" is allowed to remain open | "B" is over tightened | "H" were to be removed and the system operated for thirty minutes without it being replaced | GS-0118 |
| 11 | 3049 | D | Which of the listed conditions will occur if valve "14" of the unit shown in the illustration is secured while the unit is operating in the processing mode? | The water in the bilges will continue to be discharged. | The water in the bilges will rise until probe "6" activates the separator. | The water in the bilges will rise until probe "6" causes the automatically operated valve "5" to open. | The water in the bilges will continue to rise if no other pump is operated because the pump suction valve has been secured. | GS-0153 |
| 11 | 3050 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 68 gpm | 56 gpm | 34 gpm | 135 gpm | |
| 11 | 3051 | A | The backlash of the gear illustrated is represented by _____. | G | M | N | O | GS-0111 |
| 11 | 3052 | C | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 33 gpm | 50 gpm | 67 gpm | 17 gpm | |
| 11 | 3054 | A | Immediately before the actual charging process is started, refrigerant oil charging lines should be loosely connected and _____. | flushed with clean refrigerant oil | purged with refrigerant gas | washed with an ammonia and alcohol solution | grounded to the compressor | |
| 11 | 3055 | C | A noisy compressor in the system shown in the illustration may be caused by _____. | a normal pressure differential between the suction and discharge valve assemblies | retightened compressor foundation bolts | an excessive amount of oil in the crankcase | all of the above are correct | RA-0018 |
| 11 | 3058 | A | In the illustration, the item labeled as '30' is _____.<br>I. used to prime the pump at start-up<br>II. to supply sealing water to the stuffing box | I only | II only | Both I and II | Neither I nor II | GS-0012 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3059 | C | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 308 gpm | 491 gpm | 617 gpm | 1146 gpm | |
| 11 | 3060 | C | In the hydraulic anchor windlass system illustrated, pressure relief of the main pressure piping is provided by _____. | D | E | L | M | GS-0160 |
| 11 | 3062 | C | A 'P-tank' as used aboard oilfield supply boats is _____. | a pressure vessel designed to transport liquid drill mud | a pneumatically operated tank used transfer liquid drill mud | a pneumatically operated tank used to transfer dry, pulverized drilling materials | All of the above | |
| 11 | 3064 | B | With a service gage manifold connected to a refrigerant compressor as illustrated, which arrangement of the gage manifold valves and compressor service valves would allow for simultaneous reading of the compressor suction and discharge pressures? | Valves "A" and "B" open, valves "C" and "D" closed on their front seats. | Valves "A" and "B" closed, valves "C" and "D" open just off the back seats. | Valves "A" and "B" closed and, back seated valves "C" and "D" back seated. | Valves "A" and "B" open, valves "C" and "D" open in mid-position. | RA-0003 |
| 11 | 3065 | D | A noisy compressor, in a system similar to the installation shown in the illustration exhibits a high discharge pressure. This may be caused by _____. | the formation of ice at the expansion valve due to the presence of moisture in the system | the thermostatic expansion valve being restrained in a closed position | the formation of wax at the thermostatic expansion valve | all of the above are correct | RA-0018 |
| 11 | 3066 | B | In the illustration, line "F" is a/an _____. | assembly line | break line | cutting plane line | phantom line | GS-0006 |
| 11 | 3067 | C | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 134 gpm | 347 gpm | 267 gpm | 67 gpm | |
| 11 | 3068 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 196 gpm | 98 gpm | 137 gpm | 49 gpm | |
| 11 | 3069 | D | In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. According to 46 CFR Part 56, which of the following statements is correct if the vessels length between perpendiculars is 500 feet, and the thro | Valve 2A must be positive closing, in addition to the indicated automatic non-return valve feature. | Valve 2B must be positive closing, in addition to the indicated automatic non-return valve feature. | Both valves must be positive closing, in addition to the ability to provide the automatic non-return feature. | Only one valve is required, but must be positive closing and include the automatic non-return feature. | GS-0125 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3070 | A | If a hole were to form in the division plate between stages of a flash type evaporator _____.<br>I. vaporization of the feed water would continue<br>II. 2nd stage vacuum would increase | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3072 | A | The illustrated shaft has an overall length of 42 inches. If the diameter of "F" = 6" and "X" = 6", with an indicated radius of "R" = .125" and a taper per foot of "L" = 1.5"; then the small diameter "E" is _____. | 4.750 inches | 6.000 inches | 6.333 inches | 7.812 inches | GS-0133 |
| 11 | 3073 | B | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 33 gpm | 49 gpm | 49 gpm | 98 gpm | |
| 11 | 3074 | C | A V-belt that is too tight will cause excessive wear of both the belt and the _____. | shaft of the prime mover | compressor slave pulley | main bearing of the compressor | prime mover drive pulley | |
| 11 | 3075 | C | A refrigeration system similar to the one shown in the illustration will only operate correctly in the cooling mode. Which of the following statements indicates the most probable cause? | The thermostatic expansion valve is improperly adjusted. | A very large pressure drop is apparent between the condenser and the evaporator. | The pilot valve solenoid has failed to become energized due to an open in the electrical circuit. | An excessive amount of compressor surge due to an overcharge of refrigerant. | RA-0018 |
| 11 | 3076 | D | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 478 pound load stationary would be _____. | 82 lbs. | 111 lbs. | 115 lbs. | 120 lbs. | GS-0110 |
| 11 | 3078 | D | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 207 gpm | 483 gpm | 104 gpm | 414 gpm | |
| 11 | 3079 | C | In the circle illustrated, the circumference is 35.84 feet. What is the area of the shaded portion? | 2.7 square feet | 0.5 square feet | 9.3 square feet | 17.4 square feet | GS-0134 |
| 11 | 3080 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 244 gpm | 570 gpm | 122 gpm | 488 gpm | |
| 11 | 3081 | D | A valve connected to the vent line labeled "C" in the illustration should be opened _____. | when flushing the pressure tank with firemain water | by a pressure relief valve when the pressure exceeds the preset level, usually 42 psig (2.98 kg/cm2) | at all times, except when the tank is pressurized for discharging or aerating the bulk material | when filling the tank or to insure that the tank is not pressurized prior to entering for cleaning and inspection | GS-0163 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3082 | A | In the hydraulic anchor windlass system illustrated, pressurized fluid flow to provide rotation of the wildcat is produced by _____. | A | F | J | K | GS-0160 |
| 11 | 3083 | C | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 152 gpm | 67 gpm | 133 gpm | 267 gpm | |
| 11 | 3084 | B | To test for a suspected large refrigerant leak from a refrigeration system in an enclosed area, you should _____. | apply liquid ammonia to the suspected leak | apply a soap solution to the area of the suspected leak | a halide leak detector to all piping joints | apply a hydrostatic test with water | |
| 11 | 3085 | D | A low oil level maintained in an operating compressor, similar to the unit shown in the illustration, may be caused by _____. | an internal leak within the heat exchanger | an improperly operating filter/ drier | a properly operating filter/ drier | a worn piston or cylinder sleeve | RA-0018 |
| 11 | 3086 | D | When arc welding, you can reduce the chance of a dangerous electric shock by _____. | using insulated electrode holders | wearing dry welding gloves | avoiding wet or damp areas while using arc welding equipment | all of the above | |
| 11 | 3087 | B | The letter "H" of the illustrated gear, represents the _____. | tooth profile | tooth fillet | bottom land | top land | GS-0111 |
| 11 | 3088 | C | The reading on the micrometer scale shown in figure "C" in the illustration is _____. | 0.301 inch | 0.324 inch | 0.349 inch | 0.351 inch | GS-0013 |
| 11 | 3089 | A | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 267 gpm | 134 gpm | 347 gpm | 67 gpm | |
| 11 | 3090 | C | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 81 gpm | 54 gpm | 161 gpm | 40 gpm | |
| 11 | 3091 | A | The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 4.75" and "F" = 6", with an indicated radius of "R" = .125" and the length of "X" = 8"; then the TPF (taper per foot) is _____. | 1.125 TPF | 1.250 TPF | 1.500 TPF | 1.875 TPF | GS-0133 |
| 11 | 3092 | B | Operating pressure range for an oilfield supply boat 'P-tank' generally varies from _____. | 5-15 psi | 15-40 psi | 50-100 psi | 100-150 psi | |
| 11 | 3095 | C | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 75 gpm | 110 gpm | 150 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3096 | B | Before welding is permitted on a fuel tank, it must be certified or declared _____. | safe for personnel | safe for hot work | not safe for personnel | not safe for hot work | |
| 11 | 3098 | A | In the hydraulic anchor windlass system illustrated, pressurized fluid flow is provided to the main system for automatic replenishment and to _____. | provide fluid flow for the horsepower limiter unit operation | engage the spring brake | shift valve "L" to line up the fluid motor relief valve | move stored oil across the indicated filter to maintain the oil in a water free condition | GS-0160 |
| 11 | 3099 | B | In the circle illustrated, the circumference is 43.96 feet. What is the area of the shaded portion? | 10.5 square feet | 14.0 square feet | 2.4 square feet | 26.2 square feet | GS-0134 |
| 11 | 3102 | A | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 594 pound load stationary would be _____. | 149 lbs. | 160 lbs. | 198 lbs. | 238 lbs. | GS-0110 |
| 11 | 3103 | B | If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 99 gpm | 66 gpm | 33 gpm | 132 gpm | |
| 11 | 3104 | D | A room humidistat initiates the lowering of the humidity of the conditioned supply air to a space, while the actual process is accomplished by _____. | raising the cooling coil temperature and lowering the reheater temperature | raising both the cooling coil temperature and the reheater temperature | lowering both the cooling coil temperature and the reheater temperature | lowering the cooling coil temperature and raising the reheater temperature | |
| 11 | 3105 | A | The physical feature indicated for each of the smallest diameter ends of the device illustrated is that they are _____. | threaded | smooth surfaced with opposing machined flats | smoothed surfaced only | threaded with opposing machined flats | GS-0008 |
| 11 | 3106 | D | Safe welding practice requires _____. | checking the area for items that may catch fire | that a fire watch be posted | checking for explosive gases | all of the above | |
| 11 | 3107 | D | As shown in the illustration, the total number of materials indicated is _____. | one | three | four | five | GS-0018 |
| 11 | 3108 | A | In the circle illustrated, the circumference is 62.8 feet. What is the area of the shaded portion? | 28.5 square feet | 38.5 square feet | 15.1 square feet | 53.5 square feet | GS-0134 |
| 11 | 3109 | A | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 319 gpm | 159 gpm | 345 gpm | 80 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3111 | D | What would be the probable cause if a pump were unable to maintain necessary discharge pressure to a system?<br>I. failure of the coupling used on a close-coupled pump<br>II. fracture of one packing gland bolt | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3112 | C | In a typical hydraulic system, a baffle is installed in the reservoir to _____.<br>I. insure proper lubrication of the hydraulic pump<br>II. assist in the removal of solid contaminants entrained in the returning oil | I only | II only | Both I and II | Neither I and II | |
| 11 | 3113 | B | Supply air pressure to an oilfield supply boat 'P-tank' system should generally not be above _____. | 15 psi | 50 psi | 100 psi | 150 psi | |
| 11 | 3115 | C | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 35 gpm | 11 gpm | 21 gpm | 42 gpm | |
| 11 | 3116 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 104 gpm | 60 gpm | 30 gpm | 119 gpm | |
| 11 | 3117 | D | In the unit illustrated, the feedwater temperature is required to be increased to 165° F or greater and must exist at this temperature when leaving _____. | I | III | IV | V | GS-0053 |
| 11 | 3118 | A | If you have a duplex single acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 29 gpm | 49 gpm | 59 gpm | 113 gpm | |
| 11 | 3119 | A | Salinity cells are strategically installed in distilling units to indicate the _____.<br>I. location of a saltwater leak<br>II. size of the leak | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3120 | C | In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. According to 46 CFR Part 56, which of the following statements is correct if the length between perpendiculars of a vessel is 500 feet, and the through hull opening is eleven feet above the summer loadline? | Valve 2A must be positive closing, in addition to the indicated automatic non-return valve feature. | Valve 2B must be positive closing, in addition to the indicated automatic non-return valve feature. | Only one automatic non-return valve feature is required. | Both valves are correct as required and indicated in the illustration. | GS-0125 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3121 | C | In the hydraulic anchor windlass system illustrated, the main pressure relief valve opens as the load increases its strain on the system. The probable cause is the _____. | replenishing pump discharge check valves are continuously open | relief valve control shuttle has shifted to the wrong position during windlass operation | manual transfer valve is in the wrong position for the main pump being operated | spring set point "I" is set too high for normal loads | GS-0160 |
| 11 | 3122 | B | The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 2.50" and "F" = 3.750", with an indicated radius of "R" = .125" and the taper per foot, "L" = 1.5"; then the tapered length "X" is _____. | 5.000 inches | 6.000 inches | 8.000 inches | 10.00 inches | GS-0133 |
| 11 | 3123 | A | The gear clearance of the illustrated gear is represented by _____. | B | D | G | M | GS-0111 |
| 11 | 3124 | C | The thermostatic expansion valve is designed to maintain constant _____. | refrigerant flow | box temperature | coil outlet superheat | coil pressure | |
| 11 | 3125 | C | A valve attached to line "H" in the illustration, should be opened _____. | to backflush the pressure vessel with jet air | as a gravity discharge for the fluidized material if the discharge line becomes clogged | to drain moisture and dirt from the bottom of the tank | to precharge the bottom of the pressure vessel with dry nitrogen prior to discharging bulk material | GS-0163 |
| 11 | 3126 | A | Which statement describes the function of the filler material used in acetylene cylinders? | It reduces the danger of explosion. | It chemically reacts with acetone to produce acetylene. | It neutralizes the gas to render it harmless. | It is fire resistant and reduces fire hazards. | |
| 11 | 3127 | C | What would be the probable cause if a pump were unable to maintain necessary discharge pressure to a system?<br>I. failure of the internal parts of the pump<br>II. failure of the pump relief valve spring | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3128 | A | An air compressor is equipped with an intercooler to _____.<br>I. increase the efficiency of the compressor<br>II. reduce the low pressure cylinder designed operating temperature | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3129 | B | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 172 gpm | 343 gpm | 400 gpm | 86 gpm | |
| 11 | 3130 | B | The pitch radius of the gear illustrated is represented by _____. | D | E | L | P | GS-0111 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3132 | D | If you have a duplex single acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump? | 120 gpm | 34 gpm | 137 gpm | 68 gpm | |
| 11 | 3133 | C | In the illustration, the portion of the work piece which is indicated as being 7/8" in length, is an example of a _____. | uniform diameter | radius | taper | chamfer | GS-0016 |
| 11 | 3134 | C | In multi-box refrigeration systems, the sensing bulb of the thermostatic expansion valves used on refrigerated boxes with elevated temperatures should be located _____. | in the diffuser fan inlet air stream | in the diffuser fan outlet air stream | before the back pressure regulating valve | after the back pressure regulating valve | |
| 11 | 3135 | B | When the helm angle position is changed, the series of corresponding events of the steering gear will include _____.<br>I. rate of steering gear ram movement will be proportional to amount of helm angle input<br>II. degree of tilting plate (box) angle will be proportional to the amount of helm angle input | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3136 | A | A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____.<br>I. a high consumption of lube oil<br>II. higher than normal air pressure in the receiver | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3137 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 54 gpm | 65 gpm | 274 gpm | 109 gpm | |
| 11 | 3138 | B | A set point adjustment to a bourdon tube pressure gage is accomplished by _____.<br>I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum<br>II. adjusting the pointer position relative to the pi | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3140 | C | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 217 gpm | 403 gpm | 434 gpm | 108 gpm | |
| 11 | 3141 | A | If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots? | 13.8 tons | 11.5 tons | 10.7 tons | 9.5 tons | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3143 | C | A P-tank system _____. | is designed to transfer thick viscous liquids | is designed to pump chunks of cement | must be kept free of foreign objects | answers B and C above | |
| 11 | 3144 | C | Vapor seals used in the insulation on refrigerated spaces serve to _____. | prevent Freon vapor from saturating the insulation | hold water vapor on the cold side of the insulation | reduce the possibility of moisture laden warm air entering the insulation | reduce the possibility of moisture laden cold air from entering the insulation | |
| 11 | 3145 | B | If a block and tackle arrangement were rigged as shown in figure "G" in the illustration, the amount of force "P" required to hold the 642 pound load stationary would be _____. | 132 lbs. | 161 lbs. | 214 lbs. | 257 lbs. | GS-0110 |
| 11 | 3146 | A | If you have a duplex single acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 62 gpm | 108 gpm | 31 gpm | 123 gpm | |
| 11 | 3147 | A | The following results were obtained when an uncalibrated bourdon tube pressure gage was compared to a test pressure gage. Which adjustment(s) is/are necessary?<br>True Pressure / Indicated Pressure<br>20 / 35<br>30 / 45<br>40 / 55<br>50 / 65 | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3148 | B | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 37 gpm | 74 gpm | 123 gpm | 18 gpm | |
| 11 | 3149 | B | In a typical hydraulic system, a baffle is installed in the reservoir to _____.<br>I. provide a critical reduction in free surface effect of the hydraulic pump<br>II. retard flow of oil through reservoir to assist in heat removal | I only | II only | Both I and II | Neither I and II | |
| 11 | 3150 | C | The unloading of an air compressor may be provided by _____.<br>I. holding the intake valve off of its seat<br>II. temporarily relieving the intercooler to the atmosphere | I only | II only | Both I and II | Neither I nor II | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3151 | D | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 80 gpm | 27 gpm | 107 gpm | 53 gpm | |
| 11 | 3152 | B | Your ship has steamed 1786 miles at 17 knots using 515 tons of fuel oil. The distance remaining to your next port is 1922 miles. If you increase speed to 20 knots, how much fuel will be used to reach that port? | 652 tons | 767 tons | 858 tons | 902 tons | |
| 11 | 3154 | D | Which of the design features listed for a refrigeration valve are used to reduce the possibility of loss of refrigerant from the system? | Back seating | Valve caps | Packless diaphragms | All of the above. | |
| 11 | 3155 | A | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 27 gpm | 108 gpm | 54 gpm | 81 gpm | |
| 11 | 3156 | C | The effective temperature of air is dependent upon _____.<br>I. relative humidity<br>II. air velocity | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3157 | A | The illustrated shaft has an overall length of 42 inches. If the diameter of "F" = 3.75" and "X" = 6", with an indicated radius of "R" = .125" and a taper per foot, of "L" = 1.5"; then the small diameter "E" is _____. | 2.500 inches | 4.333 inches | 5.333 inches | 10.00 inches | GS-0133 |
| 11 | 3159 | C | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump? | 31 gpm | 55 gpm | 62 gpm | 16 gpm | |
| 11 | 3160 | D | Salinity cells are strategically installed in flash type distilling units to indicate the _____.<br>I. presence of leaks in the flash chambers<br>II. quantity of the distillate produced | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3162 | C | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 145 gpm | 349 gpm | 291 gpm | 73 gpm | |
| 11 | 3164 | C | The device which normally stops the refrigeration compressor before the relief valve starts to open is the _____. | low pressure cutout switch | back pressure cutout switch | high pressure cutout switch | relief valve bypass | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3165 | C | If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 19 knots? | 10.1 tons | 12.8 tons | 16.3 tons | 19.1 tons | |
| 11 | 3166 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 40 gpm | 80 gpm | 134 gpm | 20 gpm | |
| 11 | 3167 | A | When the helm angle position is changed in the wheel house, a series of corresponding events of the steering gear will occur and include the following:<br>I. The length of time the steering gear pump remains on stroke is proportional to helm angle input<br>II. System pressure will be higher when the vessel is operating "full astern" | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3168 | A | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 39 gpm | 25 gpm | 98 gpm | |
| 11 | 3169 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 206 gpm | 378 gpm | 103 gpm | 412 gpm | |
| 11 | 3171 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 21 gpm | 35 gpm | 11 gpm | 42 gpm | |
| 11 | 3172 | B | If high relative humidity is maintained in a cargo hold, there is a significant possibility that _____.<br>I. there will be an accumulation of static electricity<br>II. mold will grow and contaminate the cargo | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3173 | A | The proper valve alignment for circulating mud in the starboard forward tank in the illustration, is for valves _____. | "E", "F", "J" and "K" open, and all other valves closed | "E", "R", "J", "K" and "S" open and a weighted hose connecting "R" and "S" | "E", "F", "B" and "D" open and all other valves closed | "E", "F", "A", "B" and "D" open. all other valves closed | GS-0162 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3174 | A | A liquid line economizer or heat exchanger in a refrigeration system, using a reciprocating compressor, functions to _____. | reduce the possibility of liquid refrigerant slugging the compressor | raise the temperature of liquid refrigerant | cool the suction vapor returning to the compressor | raise the refrigerant saturation temperature in the evaporator | |
| 11 | 3176 | C | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 260 gpm | 608 gpm | 521 gpm | 130 gpm | |
| 11 | 3177 | D | Your ship has steamed 1856 miles at 18 knots using 545 tons of fuel oil. The distance remaining to your next port is 1978 miles. If you increase speed to 22 knots, how much fuel will be used to reach that port? | 690 tons | 710 tons | 772 tons | 868 tons | |
| 11 | 3178 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 52 gpm | 91 gpm | 104 gpm | 26 gpm | |
| 11 | 3179 | A | A proportional band or range adjustment to a bourdon tube pressure gage is accomplished by _____.<br>I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum<br>II. adjusting the pointer position relative to the pinion shaft upon which it is mounted | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3182 | D | The unit shown in the illustration is known as a/an _____. | bilge water conditioner | sludge processor | oily-water conditioner | oily-water separator | GS-0153 |
| 11 | 3183 | D | In order to achieve greater dehumidification, you would adjust the air conditioning system by _____.<br>I. reducing the chill water flow through the cooling coil<br>II. increasing the preheater temperature | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3184 | D | A refrigerant used in a mechanical refrigeration system should have which of the following characteristics? | High boiling point | High freezing point | Low specific heat | Low boiling point | |
| 11 | 3185 | A | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 104 gpm | 52 gpm | 91 gpm | 26 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3186 | B | A large evaporator coil has been determined to have a pressure drop of 5 psig and can be compensated for by _____.<br><br>I. adjusting the TXV spring compression and raising the super heat value<br>II. installing an externally equalized TXV | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3187 | A | If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 20 knots? | 19.0 tons | 21.7 tons | 22.4 tons | 27.0 tons | |
| 11 | 3188 | D | If you have a duplex double acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 29 gpm | 49 gpm | 15 gpm | 59 gpm | |
| 11 | 3191 | C | It is necessary to replace the defective thermal expansion valve in a refrigeration system. If the valve is improperly sized, this could result in _____.<br>I. starvation of the evaporator coil<br>II. constant hunting of the TXV and pressure surging | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3192 | B | Your ship has steamed 1940 miles at 21 knots using 635 tons of fuel oil. The distance remaining to your next port is 1833 miles. If you increase speed to 25 knots, how much fuel will be used to reach that port? | 714 tons | 850 tons | 1012 tons | 1214 tons | |
| 11 | 3194 | C | Which of the listed substances is used as an absorbing agent in the shipboard dehydration of refrigeration systems? | Ethylene glycol | Sodium bromide | Silica gel | Methyl glycol | |
| 11 | 3195 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 50 gpm | 75 gpm | 37 gpm | 150 gpm | |
| 11 | 3196 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 40 gpm | 80 gpm | 96 gpm | 160 gpm | |
| 11 | 3197 | C | In the illustration, line "B" is a/an _____. | hidden line | sectioning line | outline | phantom line | GS-0006 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3198 | A | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 54 gpm | 95 gpm | 27 gpm | |
| 11 | 3199 | C | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 81 gpm | 27 gpm | 54 gpm | 108 gpm | |
| 11 | 3201 | C | The illustrated shaft has an overall length of 42 inches. If the diameter of "E" = 2.5" and "F" = 6", with an indicated radius of "R" = .125" and the length of "X" = 8"; then the TPF (taper per foot) is _____. | 0.125 inches | 1.250 inches | 4.500 inches | 6.875 inches | GS-0133 |
| 11 | 3202 | D | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 141 gpm | 24 gpm | 94 gpm | 47 gpm | |
| 11 | 3203 | D | The base radius of the gear illustrated is represented by _____. | D | E | L | P | GS-0111 |
| 11 | 3204 | B | An evaporator pressure regulating valve (back pressure regulator) is installed in the evaporator coils of some refrigeration systems to _____. | prevent compressor overload | maintain a minimum evaporator pressure | control liquid refrigerant pressure | regulate refrigerant outlet superheat | |
| 11 | 3206 | B | Subcooling of the refrigerant to reduce the percent of flash gas is accomplished _____.<br>I. as the refrigerant passes through the expansion valve<br>II. in most water cooled condensers | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3207 | B | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 94 gpm | 59 gpm | 24 gpm | |
| 11 | 3208 | B | If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 21 knots? | 20.3 tons | 22.0 tons | 26.1 tons | 29.4 tons | |
| 11 | 3210 | B | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 64 gpm | 129 gpm | 77 gpm | 32 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3211 | D | The proper valve alignment for discharging liquid mud from the starboard forward tank, in the illustrated system, is for valves _____. | "E", "F", "J", "K" and "S" open, and all other valves closed | "E", "R", "J", "K" and "S" open with the discharge hose connected to "S" | "A", "B" and "D" open to pressure the tank with the discharge valve "R" open and the discharge hose connected to "R", and all other valves closed | "B", "D", "E" and "S" open with the discharge hose connected at "S", and all other valves closed | GS-0162 |
| 11 | 3212 | C | Following the withdrawal of the tail shaft, which non-destructive test could be used to locate cracks?<br>I. liquid penetrant dye<br>II. magnetic flux | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3213 | D | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 94 gpm | 125 gpm | 170 gpm | |
| 11 | 3214 | A | In a large refrigeration system having more than one evaporator, a king solenoid valve should be installed and located _____. | just after the receiver | before the condenser | between the condenser and receiver | before the back pressure regulating valve | |
| 11 | 3215 | D | A partially fouled liquid line strainer in the refrigeration system will cause _____.<br>I. an increase in the percent of flash gas<br>II. desirable subcooling of the liquid | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3216 | B | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 608 gpm | 260 gpm | 130 gpm | 521 gpm | |
| 11 | 3218 | C | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 21 gpm | 28 gpm | 43 gpm | 11 gpm | |
| 11 | 3219 | C | Your ship has steamed 1651 miles at 20 knots using 580 tons of fuel oil. The distance remaining to your next port is 1790 miles. If you increase speed to 25 knots, how much fuel will be used to reach that port? | 640 tons | 722 tons | 983 tons | 1060 tons | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3220 | A | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 352 gpm | 54 gpm | 216 gpm | |
| 11 | 3222 | C | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 18 gpm | 30 gpm | 36 gpm | 9 gpm | |
| 11 | 3223 | C | The presence of flash gas in the high pressure lines of a refrigeration system is undesirable because _____.<br>I. erosion of the TXV valve seat can be increased<br>II. refrigeration system capacity will be reduced | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3224 | B | The thermostat controlling a refrigerated cargo box two-way solenoid valve senses _____. | evaporator coil inlet temperature | the refrigerated box temperature | evaporator coil outlet temperature | degree of refrigerant superheat | |
| 11 | 3225 | A | If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 232 gpm | 114 gpm | 86 gpm | 57 gpm | |
| 11 | 3226 | C | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 327 gpm | 163 gpm | 82 gpm | 425 gpm | |
| 11 | 3228 | C | In the illustration shown, the last numeral in the notation 1/4-20 NC-2 indicates the _____. | thread is right hand | thread is left hand | class of thread fit | class of thread finish | GS-0036 |
| 11 | 3229 | D | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 104 gpm | 121 gpm | 52 gpm | 207 gpm | |
| 11 | 3230 | D | If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 22 knots? | 11.7 tons | 14.2 tons | 17.2 tons | 25.2 tons | |
| 11 | 3231 | C | In order to achieve greater dehumidification with an air conditioning system, you should _____.<br>I. reduce the cooling coil temperature<br>II. increase the reheater temperature | I only | II only | Both I and II | Neither I nor II | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3232 | C | A partially fouled liquid line strainer in the refrigeration system will cause _____.<br>I. a loss of refrigeration effect<br>II. the strainer outlet piping to be cooler than the inlet | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3233 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 249 gpm | 91 gpm | 45 gpm | 181 gpm | |
| 11 | 3234 | D | The output capacity of a centrifugal refrigeration compressor may be controlled manually by _____. | controlling the compressor speed | throttling the compressor suction | reducing condenser water flow | all of the above methods | |
| 11 | 3235 | C | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 262 pound load stationary would be _____. | 52.lbs. | 59 lbs. | 66 lbs. | 87 lbs. | GS-0110 |
| 11 | 3236 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 85 gpm | 119 gpm | 42 gpm | 170 gpm | |
| 11 | 3237 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 98 gpm | 39 gpm | 25 gpm | |
| 11 | 3238 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 45 gpm | 167 gpm | 23 gpm | |
| 11 | 3239 | C | The reading on the micrometer scale shown in figure "1" in the illustration is _____. | 0.800 inch | 0.820 inch | 0.850 inch | 0.875 inch | GS-0094 |
| 11 | 3240 | A | The reading on a vernier caliper scale is indicated as 1.500 inches. Which of the figures shown in the illustration represents this reading? | Figure A | Figure D | Figure F | Figure G | GS-0082 |
| 11 | 3241 | A | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke with 95% volumetric efficiency, what is the capacity of this pump? | 140 gpm | 87 gpm | 73 gpm | 44 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3242 | A | Your ship has steamed 1945 miles at 21 knots using 635 tons of fuel oil. The distance remaining to your next port is 1750 miles. If you decrease speed to 16 knots, how much fuel will be used to reach that port? | 332 tons | 435 tons | 522 tons | 1216 tons | |
| 11 | 3243 | C | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 856 gpm | 428 gpm | 214 gpm | 695 gpm | |
| 11 | 3244 | D | A thermostatic expansion valve is designed to respond to _____. | refrigerated space temperature | compressor suction pressure | vapor discharge pressure in the cooling coils | superheat in the tail coil | |
| 11 | 3245 | A | If the fixed material discharge piping between the P-tank and the on-deck outlet of the supply boat becomes clogged and cannot be cleared using normal system air pressure, the _____. | piping must be flushed with water | air should be directed through the jet air line | air pressure should be increased beyond the safety valve | piping must be disassembled and cleaned by hand | |
| 11 | 3246 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 202 gpm | 101 gpm | 84 gpm | 50 gpm | |
| 11 | 3247 | D | The chordal addendum of the illustrated gear is represented by _____. | A | C | D | L | GS-0111 |
| 11 | 3248 | D | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 26 gpm | 52 gpm | 103 gpm | |
| 11 | 3249 | D | Which of the screwdriver tips listed will fit screws with a four way or cross type slot? | Standard screwdriver | Phillips screwdriver | Reed and Prince screwdriver | Both B and C are correct | |
| 11 | 3250 | B | What is the distinguishing difference between the Phillips and the Reed and Prince type screwdrivers? | The diameter of the shanks. | The angle of the tip flukes. | The overall length of the screwdriver. | None of the above. | |
| 11 | 3252 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 94 gpm | 188 gpm | 78 gpm | 47 gpm | |
| 11 | 3253 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 412 gpm | 206 gpm | 378 gpm | 103 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3255 | B | If your ship burns 5 tons of fuel per hour at 23 knots, how many tons per hour will it burn at 18 knots? | 1.9 tons | 2.4 tons | 3.1 tons | 3.3 tons | |
| 11 | 3256 | B | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 216 gpm | 90 gpm | 54 gpm | |
| 11 | 3258 | A | If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 15 gpm | 62 gpm | 31 gpm | 52 gpm | |
| 11 | 3259 | A | Which of the following statements best describes the filtering ability of a fine mesh metal lube oil strainer? | A 200 wire mesh screen will prevent passage of smaller particles than a 100 wire mesh screen. | A 200 mesh screen has larger wires than a 100 mesh screen. | A 100 wire mesh screen will prevent passage of smaller particles than 200 wire mesh screen. | A 200 wire mesh screen and a 100 wire mesh screen both prevent passage of the same size particles, but each allows a different number of particles to pass through. | |
| 11 | 3260 | C | Why is a chemical covering applied to a welding stick electrode, rather than using a bare electrode? | Protect the welder from electric shock. | Prevent arc blow. | Shield the arc during the welding process to prevent oxidation. | Stabilize the electron emission rate and produce uniform temperatures in the heat affected zone. | |
| 11 | 3261 | B | The components labeled "T" in the illustration are arranged to _____. | take suction from all areas of the tank | never point at the bottom of the tank | prevent barite that settles to the bottom of the tank from re-entering the system and preserving the weight of the mud | introduce inert gas to all areas of the tank to prevent vapors from exceeding the lower explosive level | GS-0162 |
| 11 | 3262 | B | Three of the refrigerants covered under the low pressure system regulations are_____. | CFC-11, CFC-113 and R-502 | CFC-11, CFC-113 and HCFC-123 | CFC-11, R-502 and HCFC-123 | CFC-11, CFC-114 and R-502 | |
| 11 | 3263 | C | The device shown in the illustration is used to _____. | process sludge found on motor vessels | process sludge found on steam vessels | process oily-water mixtures present in the bilge water | condition reduction gear lube oil by removing the water | GS-0153 |
| 11 | 3265 | C | The tool used to prepare copper tubing for the installation of fittings is called a _____. | swaging tool | stretcher | flaring tool | spreader | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3266 | D | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 59 gpm | 71 gpm | 30 gpm | 113 gpm | |
| 11 | 3267 | C | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke with 93% volumetric efficiency, what is the capacity of this pump? | 59 gpm | 39 gpm | 118 gpm | 30 gpm | |
| 11 | 3268 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 98 gpm | 196 gpm | 137 gpm | 49 gpm | |
| 11 | 3269 | C | Your ship has steamed 2014 miles at 22 knots using 680 tons of fuel oil. The distance remaining to your next port is 1766 miles. If you decrease speed to 18 knots, how much fuel will be used to reach that port? | 327 tons | 488 tons | 399 tons | 1220 tons | |
| 11 | 3270 | C | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 64 gpm | 43 gpm | 129 gpm | 32 gpm | |
| 11 | 3271 | D | The depth of fuel oil in a double bottom tank is measured through the _____. | vent line | depth gage | manhole cover | sounding tube | |
| 11 | 3272 | A | When in the completely opened position, which of the listed types of valve will offer the least resistance to flow? | gate valve | globe valve | double-seat poppet valve | reed valve | |
| 11 | 3273 | C | If used for regulating fluid flow through a piping system, which of the valves listed could be damaged? | Plug valve | Globe valve | Gate valve | Needle valve | |
| 11 | 3274 | D | Which of the operations listed may be accomplished using connection "E" shown in the illustration? | Purging | Charging | Adding oil | All of the above | RA-0003 |
| 11 | 3275 | A | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 36 gpm | 45 gpm | 18 gpm | |
| 11 | 3276 | C | The difference between the pressure at a point being measured and that of a perfect vacuum is known as _____. | internal pressure | gauge pressure | absolute pressure | external pressure | |
| 11 | 3277 | A | The root opening of the weld, shown in the illustration, is indicated to be _____. | not more than 1/8" | a 60° minimum | 0 to 1/16' | not specified | GS-0076 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3278 | C | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 29 gpm | 57 gpm | 115 gpm | 230 gpm | |
| 11 | 3279 | D | If your ship burns 6 tons of fuel per hour at 22 knots, how many tons per hour will it burn at 17 knots? | 1.4 tons | 1.7 tons | 2.2 tons | 2.8 tons | |
| 11 | 3281 | C | Which of the valves listed below permits flow in only one direction? | Gate valve | Globe valve | Check valve | Plug cock | |
| 11 | 3282 | D | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 207 gpm | 236 gpm | 103 gpm | 414 gpm | |
| 11 | 3283 | A | Which of the listed welded joints represents the least amount of preparation? | 1B | 3A | 3B | 4A | GS-0077 |
| 11 | 3284 | B | When adding oil to a refrigeration system, precautions must be taken to ensure that _____. | the compressor suction pressure is not too high | all air is purged from the pump and charging fittings | the high pressure cutout switch is held open to prevent accidental starting | the condenser is completely shutdown first | |
| 11 | 3285 | D | A hazard associated with electric arc welding is _____. | the effects of radiation from the arc | flying sparks | electric shock | all of the above | |
| 11 | 3286 | C | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 210 gpm | 105 gpm | 52 gpm | 147 gpm | |
| 11 | 3287 | B | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 14 gpm | 28 gpm | 19 gpm | 7 gpm | |
| 11 | 3289 | A | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 118 gpm | 59 gpm | 133 gpm | 30 gpm | |
| 11 | 3290 | A | The tooth profile of the illustrated gear is represented by _____. | F | H | I | J | GS-0111 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3291 | A | Your ship has steamed 2061 miles at 24 knots using 850 tons of fuel oil. The distance remaining to your next port is 1645 miles. If you decrease speed to 19 knots, how much fuel will be used to reach that port? | 425 tons | 537 tons | 625 tons | 712 tons | |
| 11 | 3292 | A | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 157 gpm | 78 gpm | 176 gpm | 39 gpm | |
| 11 | 3293 | B | Figure "I" shown in the illustration is a diagram of a valve hand wheel, with S=8 inches and T=50 lbs. When an 24 inch cheater bar is used instead, and V=50 lbs., as shown in Figure "II", what value of additional torque is now being applied to the hand wheel valve stem? | 100% | 300% | 400% | 500% | GS-0109 |
| 11 | 3294 | B | The discharge valves used in a refrigeration compressor are leaking badly and _____. | the reeds should be reground | the reeds should be replaced | should continue to operate at minimum efficiency | the high pressure cut-out should be readjusted to operate efficiently | |
| 11 | 3295 | B | Which of the valves listed below is best suited for throttling service? | Plug | Globe | Gate | Butterfly | |
| 11 | 3296 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 161 gpm | 81 gpm | 54 gpm | 40 gpm | |
| 11 | 3297 | A | Which of the listed illustrated figures represents the use of a lathe finishing tool? | Figure P | Figure S | Figure T | Figure V | GS-0090 |
| 11 | 3298 | A | The branch circuits labeled "T" in the illustration are designed to _____. | equalize mud flow through all of the nozzles | flush all parts of the tank with seawater during wash down | comply with oil pollution prevention regulations | take suction 12' to 14' above the bottom of the tank | GS-0162 |
| 11 | 3299 | C | The valve illustrated is to be constructed so that the _____. | operating lever is parallel to the pipe center line when closed and perpendicular to the pipe center line when open | valve can have additional turns of packing added when there is pressure on either side of the valve disk | operating lever is parallel to the flow when open and perpendicular to the flow when closed | valve seat can be relapped as needed | GS-0055 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3300 | C | Which of the following statements is correct if the length of the vessel between perpendiculars is 500 feet, and the through hull opening is five feet above the summer loadline for the overboard discharge of the system illustrated? | The inboard valve only need be positive closing, in addition to being of the automatic non-return valve type. | The outboard valve only need be positive closing, in addition to being of the automatic non-return valve type. | Only one shutoff valve is required. | Two valves are required, and each must be of the automatic non-return type. | GS-0125 |
| 11 | 3301 | B | If your ship burns 4 tons of fuel per hour at 21 knots, how many tons per hour will it burn at 16 knots? | 2.3 tons | 1.8 tons | 1.3 tons | 1.1 tons | |
| 11 | 3302 | B | Which single illustrated lathe tool could be used to turn down the stock in figure II? | A | B | C | G | GS-0009 |
| 11 | 3303 | A | If item "1" shown in the illustration is a compound gage indicating zero psig and the water level in the bilges is one foot high, the unit is _____. | not turned on | in the oil discharge mode | processing the bilge water | damaged and should not be used | GS-0153 |
| 11 | 3304 | D | A reheater, as used in an air conditioning system, is designed to control the _____. | chilled water temperature | dew point temperature | primary air temperature | dry bulb room temperature | |
| 11 | 3305 | B | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 226 gpm | 249 gpm | 57 gpm | |
| 11 | 3306 | B | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 48 gpm | 96 gpm | 176 gpm | 24 gpm | |
| 11 | 3307 | C | The reading on a vernier caliper scale is indicated as 2.505 inches. Which of the figures shown in the illustration represents this reading? | Figure A | Figure B | Figure F | Figure G | GS-0082 |
| 11 | 3308 | A | If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 31 gpm | 52 gpm | 15 gpm | 62 gpm | |
| 11 | 3309 | C | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 86 gpm | 100 gpm | 172 gpm | 43 gpm | |
| 11 | 3310 | D | Gate valves should not be used for throttling as _____. | the pressure drop will be excessive | air binding will develop | the installation of an equalizing line will be necessary | wire drawing of the disc will result | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3311 | C | Your ship has steamed 1951 miles at 20 knots using 580 tons of fuel oil. The distance remaining to your next port is 1861 miles. If you increase speed to 24 knots, how much fuel will be used to reach that port? | 569 tons | 664 tons | 797 tons | 956 tons | |
| 11 | 3312 | B | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 27 gpm | 16 gpm | 8 gpm | 33 gpm | |
| 11 | 3313 | A | Which of the figures illustrated would be LEAST desirable for use as a set screw? | figure A | figure F | figure G | figure L | GS-0080 |
| 11 | 3314 | A | If the air temperature increases while atmospheric pressure remains constant, the air will _____. | have a greater capacity to absorb moisture | absorb less free atmospheric moisture | become supersaturated at high relative humidity | give up moisture as condensation | |
| 11 | 3315 | A | The lathe tool shown in the illustration as figure "P" is a _____. | round nose tool | universal tool | parting tool | right hand facing tool | GS-0090 |
| 11 | 3316 | C | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 48 gpm | 193 gpm | 97 gpm | 24 gpm | |
| 11 | 3317 | B | The device shown in the illustration is a/an _____. | diesel engine motor mount | vane type steering gear | oil scraper ring stuffing box for a crosshead engine | mechanical shaft seal | GS-0116 |
| 11 | 3318 | A | The reading on a vernier caliper scale is indicated as 3.380 inches. Which of the figures shown in the illustration represents this reading? | Figure B | Figure D | Figure E | Figure F | GS-0082 |
| 11 | 3319 | C | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 60 gpm | 104 gpm | 119 gpm | 30 gpm | |
| 11 | 3320 | B | In the illustrated mud tank system, valve "A" should be opened to _____. | provide cooling for the diesel driven pump | clean tanks once they are empty | thin the mud because the weight is excessive | fill tanks to improve stability by reducing free surface effect | GS-0162 |
| 11 | 3321 | D | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 123 gpm | 61 gpm | 51 gpm | 31 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3322 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 137 gpm | 98 gpm | 49 gpm | 196 gpm | |
| 11 | 3323 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 68 gpm | 56 gpm | 34 gpm | 134 gpm | |
| 11 | 3324 | A | The main purpose of the thermostatic expansion valve shown in the illustration is to _____. | maintain a constant degree of superheat in the gas leaving the evaporator coil | regulate refrigerant condensation rate | control the quantity of liquid refrigerant leaving the coil | control the operation of the solenoid valve | RA-0007 |
| 11 | 3325 | D | Operating the compressor and motor as shown in figure 5 of the illustration, will result in _____. | severely damaging the V-grooves of the pulley | a decrease in the axial load on the crankshaft | a decrease in the axial load on the motor shaft | a decrease in the normal life of the drive belts | GS-0159 |
| 11 | 3326 | D | If your ship burns 2.9 tons of fuel per hour at 20 knots, how many tons per hour will it burn at 15 knots? | 4.3 tons | 2.2 tons | 1.6 tons | 1.2 tons | |
| 11 | 3327 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 187 gpm | 312 gpm | 97 gpm | 375 gpm | |
| 11 | 3328 | C | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 67 gpm | 223 gpm | 135 gpm | 270 gpm | |
| 11 | 3329 | C | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 26 gpm | 52 gpm | 104 gpm | |
| 11 | 3330 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency,<br>what is the capacity of this pump? | 226 gpm | 113 gpm | 204 gpm | 57 gpm | |
| 11 | 3331 | A | The tool shown in the illustration is called a _____. | center gage | thread gage | crotch center | drill gage | GS-0072 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3332 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 214 gpm | 275 gpm | 107 gpm | 427 gpm | |
| 11 | 3333 | A | If your ship burns 3 tons of fuel per hour at 19 knots, how many tons per hour will it burn at 15 knots? | 1.5 tons | 1.9 tons | 2.4 tons | 5.3 tons | |
| 11 | 3334 | C | Which of the statements listed is applicable to the thermostatic expansion valve shown in the illustration? | It regulates the amount of superheat at the solenoid valve. | It regulates the temperature of the refrigerated space. | The control bulb is located on the evaporator outlet coil. | The external equalizing pipe is connected to the liquid receiver. | RA-0007 |
| 11 | 3335 | A | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 140 gpm | 186 gpm | 70 gpm | 279 gpm | |
| 11 | 3336 | C | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 163 gpm | 425 gpm | 327 gpm | 82 gpm | |
| 11 | 3337 | A | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 135 gpm | 68 gpm | 56 gpm | 34 gpm | |
| 11 | 3338 | D | If you have a simplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 10 gpm | 39 gpm | 61 gpm | 123 gpm | |
| 11 | 3339 | B | Which of the figures illustrated is not suitable for use as a hex head set screw? | figure C | figure D | figure G | figure L | GS-0080 |
| 11 | 3340 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 119 gpm | 262 gpm | 60 gpm | 238 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3341 | B | Item "J" in the pump illustration _____. | should be replaced by a grease fitting for semi-annual lubrication | will need to be piped to a fitting installed in place of the plug (in area "C") when the pump is used for hot water circulation | will need to be piped to a fitting installed in place of the plug (in area "C") when the pump is used for cool potable water | is provided to vent the pump of collected non-condensable gases | GS-0129 |
| 11 | 3342 | A | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 35 gpm | 140 gpm | 70 gpm | 47 gpm | |
| 11 | 3344 | B | Refrigeration isolation valves are of the double seated type in order to _____. | allow for operation as a suction or discharge valve | permit repacking under pressure | conserve space | allow for removal or replacement without shutting down | |
| 11 | 3345 | D | The illustrated valve is _____. | opened or closed by moving the control lever through one or more complete turns | required to be closed by moving the control handle counter clockwise | quickly opened when the control lever is rotated one full turn | quickly opened by moving the control lever by one-quarter of a turn | GS-0055 |
| 11 | 3347 | A | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 453 gpm | 227 gpm | 491 gpm | 113 gpm | |
| 11 | 3348 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 426 gpm | 271 gpm | 136 gpm | 542 gpm | |
| 11 | 3349 | B | If you have a simplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 81 gpm | 161 gpm | 268 gpm | 322 gpm | |
| 11 | 3350 | C | If you have a simplex double acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 33 gpm | 27 gpm | 16 gpm | 8 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3351 | B | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 133 gpm | 59 gpm | 30 gpm | 118 gpm | |
| 11 | 3352 | D | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 26 gpm | 104 gpm | 52 gpm | |
| 11 | 3353 | B | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 98 gpm | 33 gpm | 25 gpm | |
| 11 | 3354 | A | The purpose of the water failure switch in a refrigeration system is to react to a loss of cooling water by _____. | stopping the compressor | bypassing refrigerant to the receiver | closing the high pressure cutout switch | opening the high pressure cutout switch | |
| 11 | 3355 | B | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 400 pound load stationary would be _____. | 80 lbs. | 100 lbs. | 133 lbs. | 200 lbs. | GS-0110 |
| 11 | 3356 | B | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 89 gpm | 178 gpm | 266 gpm | |
| 11 | 3357 | A | You should never watch the arc generated during electric arc welder with the naked eye because _____. | serious flash burns will result | arc blow will burn your face | the fumes are highly toxic | slag and metal splatter will get in your eyes | |
| 11 | 3358 | C | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 695 gpm | 214 gpm | 428 gpm | 856 gpm | |
| 11 | 3359 | D | What is the reading of the vernier micrometer caliper scale shown in figure "A" in the illustration? | 0.2513 inch | 0.2517 inch | 0.2610 inch | 0.2613 inch | GS-0083 |
| 11 | 3360 | A | The valve labeled "A" in the illustrated system should be opened to_____. (See illustration GS-0162) | clean tanks once they are empty | thin the mud to reduce its weight | provide cooling for the diesel driven pump | all the above | GS-0162 |
| 11 | 3361 | B | If you have a simplex double acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 71 gpm | 36 gpm | 28 gpm | 18 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3362 | A | The lathe tool shown as figure "U" in the illustration is commonly known as a/an _____. | cutting-off tool | left cut side-facing tool | right side end facing tool | universal turning tool | GS-0090 |
| 11 | 3364 | A | Evaporators and condensers are two forms of _____. | heat exchangers | liquid receivers | storage receptacles | flow inhibitors | |
| 11 | 3365 | A | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 341 gpm | 469 gpm | 170 gpm | 682 gpm | |
| 11 | 3366 | D | Which of the listed illustrated figures would not normally be used for rough or finish turning operations? | Figure T | Figure S | Figure P | Figure U | GS-0090 |
| 11 | 3367 | A | Which of the illustrated lathe tools would be used to produce a smooth finish cut for figure I? | A | D | F | G | GS-0009 |
| 11 | 3368 | A | The lathe tool shown as figure "A" in the illustration is called a _____. | left cut finishing tool | round nose turning tool | right hand facing tool | right hand turning tool | GS-0009 |
| 11 | 3369 | C | The lathe tool shown as figure "R" in the illustration would best be used to _____. | perform a right-cut rough turning operation | form a left-cut groove | form a right-cut square shoulder | perform a left-cut rough turning operation | GS-0090 |
| 11 | 3370 | C | Which of the illustrated lathe tools would be used to produce a rough cut for figure I? | B | C | F | G | GS-0009 |
| 11 | 3371 | D | Which of the listed illustrated figures represents the lathe tool used for facing figure VI? | A | B | C | F | GS-0009 |
| 11 | 3372 | D | Which of the listed illustrated figures represents the lathe tool used for facing figure VI? | A | B | C | F | GS-0009 |
| 11 | 3373 | D | The lathe tool shown as figure "S" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut side-facing tool | right-cut side-facing tool | left-cut roughing tool | GS-0090 |
| 11 | 3374 | B | A secondary refrigerant commonly used in shipboard air conditioning systems is _____. | methyl chloride | water | carbon dioxide | trichloroethylene | |
| 11 | 3375 | C | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 133 gpm | 152 gpm | 267 gpm | 67 gpm | |
| 11 | 3376 | A | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 157 gpm | 78 gpm | 110 gpm | |
| 11 | 3377 | D | While carrying out electric arc welding, there is always the danger of _____. | developing burns to the retina of the eye | fire | electric shock | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3378 | C | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 262 gpm | 60 gpm | 119 gpm | 238 gpm | |
| 11 | 3381 | D | A lubricating oil with a high viscosity index number is most effectively used _____. | in only very high temperature installations | as an additive to depress pour point | as an additive to slow oxidation | where a wide variation range in temperature exist | |
| 11 | 3382 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 216 gpm | 108 gpm | 352 gpm | 54 gpm | |
| 11 | 3383 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 38 gpm | 76 gpm | 80 gpm | 169 gpm | |
| 11 | 3384 | C | The dehydrating agent normally used in a refrigeration system is _____. | slaked lime | sodium chloride | activated alumina | calcium chloride | |
| 11 | 3385 | B | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 398 pound load stationary would be _____. | 97.8 lbs. | 99.5 lbs. | 104.5 lbs. | 109.5 lbs. | GS-0110 |
| 11 | 3386 | D | Coast Guard Regulations (46 CFR) require small electric storage tank-type hot water boilers, rated at no more than 600 volts, must be fitted with a temperature limiting device to prevent the water in the upper 25% of the tank from attaining a temperature | 210° C | 166° C | 125° C | 99° C | |
| 11 | 3387 | A | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 35 gpm | 44 gpm | 87 gpm | 73 gpm | |
| 11 | 3388 | D | Which of the illustrated lathe tools would be used to produce a rough cut to the left for the stock in figure IV? | C | D | E | F | GS-0009 |
| 11 | 3389 | A | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 45 gpm | 167 gpm | 23 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3390 | C | The component labeled "B" in the illustration is the _____. | suction line | vent | fill line | fresh water sprinkler for fluidizing of pulverized material | GS-0163 |
| 11 | 3391 | C | The illustration is drawn to a scale of 1/16 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"? | 1.625 inches | 0.359 inches | 26.00 inches | 92.00 inches | GS-0007 |
| 11 | 3392 | D | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 76 gpm | 151 gpm | 193 gpm | 221 gpm | |
| 11 | 3393 | D | If item "1" shown in the illustration is a compound gage indicating zero psig while processed water is known to be discharging overboard, the _____. | unit is fouled and should be cleaned | unit is operating correctly | unit is in the oil discharge mode | compound gage needs to be replaced | GS-0153 |
| 11 | 3394 | D | Which of the listed components for a refrigeration system is required for a two box system, but not for a one box system? | Hand expansion valve | Automatic expansion valve | High pressure cutout switch | Liquid line solenoid valve | |
| 11 | 3395 | C | The lathe tool shown as figure "L" in the illustration is commonly known as a/an _____. | boring tool | external threading tool | internal threading tool | universal turning tool | GS-0090 |
| 11 | 3396 | A | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 98 gpm | 49 gpm | 181 gpm | |
| 11 | 3397 | D | If the distilling plant first stage absolute pressure is higher than normal, while the second stage absolute pressure remains satisfactory, the probable fault is due to _____. | loss of the distillate loop seal between the stages | priming in the second stage | failure of the brine pump | an air leak through a vacuum gage line in the first stage | |
| 11 | 3398 | C | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 129 gpm | 64 gpm | 32 gpm | 43 gpm | |
| 11 | 3399 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 54 gpm | 217 gpm | 27 gpm | |
| 11 | 3400 | D | Which of the illustrated lathe tools would be used to produce a rough cut to the left for the stock in figure IV? | C | D | E | F | GS-0009 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3401 | C | The lathe tool shown as figure "R" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut side-facing tool | right-cut side-facing tool | left-cut roughing tool | GS-0090 |
| 11 | 3402 | D | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 163 gpm | 33 gpm | 131 gpm | 65 gpm | |
| 11 | 3403 | A | The lathe tool shown as figure "T" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut side-facing tool | right-cut side-facing tool | left-cut knurling tool | GS-0090 |
| 11 | 3404 | A | The purpose of heating the oil in the sump of a secured refrigeration compressor is to _____. | reduce the absorption of refrigerant by the lubricating oil | prevent acidic pitting | remove entrained water | remove wax and gum | |
| 11 | 3405 | A | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 479 gpm | 240 gpm | 329 gpm | 120 gpm | |
| 11 | 3406 | D | If you have a simplex single acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 78 gpm | 39 gpm | 52 gpm | 19 gpm | |
| 11 | 3407 | A | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 188 gpm | 94 gpm | 78 gpm | |
| 11 | 3408 | A | Prior to testing the pyrometer circuit wiring for continuity with a multimeter, you should disconnect the pyrometer because _____. | the driving voltage of the meter batteries can damage the circuit meter | the pyrometer total resistance can damage the ohmmeter | the reactance of the pyrometer will give a false meter reading | meter current running through the pyrometer will permanently magnetize the pyrometer's pointer | |
| 11 | 3409 | D | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 414 gpm | 207 gpm | 236 gpm | 103 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3410 | B | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 119 gpm | 30 gpm | 60 gpm | 104 gpm | |
| 11 | 3411 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 12 gpm | 24 gpm | 40 gpm | 48 gpm | |
| 11 | 3412 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 19 gpm | 38 gpm | 66 gpm | 76 gpm | |
| 11 | 3413 | D | The illustration is drawn to a scale of 1/8 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"? | 1.625 inches | 0.719 inches | 46.00 inches | 13.00 inches | GS-0007 |
| 11 | 3414 | B | When the solenoid valves in a refrigeration system have closed, the compressor will be stopped by the _____. | low water cutout | low pressure cutout | high pressure cutout | spring-loaded relief valve | |
| 11 | 3415 | D | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 468 pound load stationary would be _____. | 103 lbs. | 109 lbs. | 113 lbs. | 117 lbs. | GS-0110 |
| 11 | 3416 | B | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 105 gpm | 210 gpm | 147 gpm | 52 gpm | |
| 11 | 3417 | A | The component labeled "F" in the illustration is a _____. | differential valve | fill connection | pneumercator | support stanchion | GS-0163 |
| 11 | 3418 | B | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 225 gpm | 270 gpm | 56 gpm | |
| 11 | 3419 | A | The lathe tools shown as figure "M" in the illustration are commonly known as _____. | form tools | curvature cutting tools | parting tools | universal turning tools | GS-0090 |
| 11 | 3420 | A | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 18 gpm | 72 gpm | 36 gpm | 109 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3421 | D | The lathe tool shown as figure "N" in the illustration is commonly known as a/an _____. | hurling tool | curling tool | furling tool | knurling tool | GS-0090 |
| 11 | 3422 | B | If you have a simplex single acting reciprocating pump making 220 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 59 gpm | 15 gpm | 29 gpm | 49 gpm | |
| 11 | 3423 | D | The lathe tool shown as figure "O" in the illustration is commonly used for _____. | cutting-off | left hand side facing | right hand turning | grooving | GS-0090 |
| 11 | 3425 | C | The rudder shown in the illustration is correctly termed a/an _____. | balanced rudder | unbalanced rudder | semi-balanced rudder | contra-guided rudder | GS-0131 |
| 11 | 3426 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 170 gpm | 85 gpm | 42 gpm | 119 gpm | |
| 11 | 3427 | C | Which of the following statements would apply to the principle of operation of the device shown in the illustration? | The pressure in chamber "I" is greater than the pressure in chamber "II", causing part "A" to close off, and force "C" into a closed position. | Continuing to hold down "E" will hold "A" off of its seat, allowing water to continuously flow from chamber "I" to chamber "III" via chamber "II". | Once "A" is reseated, the total force developed in chamber "I" will gradually rise to exceed the total force in chamber "II" and reseat "C" to stop water flow through unit. | "D" will be physically and directly raised by the movement of "E", forcing "C" to become unseated. | GS-0155 |
| 11 | 3428 | C | A P-type trap and drain is used _____. | for all lavatory sink installations, as no other drain type is useable | whenever the 'gray' water drain system connection is mounted on the deck | whenever the 'gray' water drain system connection is mounted on the bulkhead | as a condensate drain for superheaters | |
| 11 | 3429 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 18.2 gpm | 19.2 gpm | 20.2 gpm | 21.2 gpm | |
| 11 | 3430 | C | In the diagram, shown in the illustration, the swing-check valve is represented by the item numbered _____. | 1 | 2 | 3 | 4 | GS-0125 |
| 11 | 3431 | B | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 157 gpm | 39 gpm | 79 gpm | 217 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3432 | D | The drains of lavatory sinks are fitted with P-type or S-type traps to _____. | reduce water velocity and minimize erosion | create a strong siphon effect | provide a cushion of water to reduce the effects of water hammer | provide a seal against sewer gas rising into the compartment | |
| 11 | 3433 | C | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 71 gpm | 30 gpm | 59 gpm | 119 gpm | |
| 11 | 3434 | A | Refrigerant flow through a thermostatic expansion valve is greatest when the _____. | evaporator is warm and empty of refrigerant | evaporator is cold and empty of refrigerant | low side and high side pressures are equal | low side pressure and thermal element pressure equalize | |
| 11 | 3436 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 54 gpm | 27 gpm | 95 gpm | |
| 11 | 3437 | D | In the diagram shown in the illustration, item "3" represents a _____. | relief valve | stop valve | gate valve | check valve | GS-0125 |
| 11 | 3438 | A | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 37 gpm | 150 gpm | 75 gpm | 50 gpm | |
| 11 | 3439 | B | The purpose of the component labeled "F" in the illustration is to _____. | determine the level of remaining pulverized material | prevent damage to the slope sheets | bleed excess air from the top of the tank | maintain a minimum of 15 psia difference between the aeration unit and the top head | GS-0163 |
| 11 | 3440 | B | Sewage treatment systems aboard U.S. inspected vessels must be approved by the _____. | Environmental Protection Agency | U.S. Coast Guard | American Bureau of Shipping | Underwriter's Laboratories | |
| 11 | 3442 | C | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 570 gpm | 285 gpm | 142 gpm | 488 gpm | |
| 11 | 3443 | D | Which of the illustrated lathe tools should be used to produce the groove in the stock in figure VII? | B | D | E | G | GS-0009 |
| 11 | 3444 | C | Prior to making repairs on an evaporator located in a large, multi-box refrigeration system, you should remove the refrigerant by _____. | pumping it from the system to a clean empty drum | draining the system through the purge valve connection | pumping all refrigerant to the receiver | exhausting it to the atmosphere | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3445 | B | What type of valve is shown in the illustration? | Globe valve | Gate valve | Check valve | Butterfly valve | GS-0047 |
| 11 | 3446 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 10 gpm | 23 gpm | 39 gpm | 44 gpm | |
| 11 | 3447 | C | A vacuum differential is maintained in the distillate circuit between any two stages of a multiple stage distilling plant by the use of a/an _____. | steam trap | butterfly valve | loop seal | adjustable controller | |
| 11 | 3448 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 147 gpm | 105 gpm | 52 gpm | 210 gpm | |
| 11 | 3449 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 37 gpm | 47 gpm | 57 gpm | 67 gpm | |
| 11 | 3450 | D | Sacrificial zinc anodes are used on the saltwater side of heat exchangers to _____. | keep heat transfer surfaces shiny and clean | prevent rapid accumulation of marine growth | provide a protective coating on heat exchanger surfaces | reduce electrolytic action on heat exchanger metals | |
| 11 | 3451 | C | If the orifice in the loop seal of a flash evaporator were to become significantly enlarged through erosion, the _____. | distillate produced in the second stage would flow towards the first stage | evaporator absolute pressure would eventually equalize in both stages to that of the first stage | evaporator absolute pressure could eventually equalize in both stages to that of the second stage | salt water feed heater absolute pressure would increase to that of the evaporator second stage | |
| 11 | 3452 | D | An automatic solenoid dump valve should be set to trip if the evaporator produces distillate with salt content exceeding _____. | .05 gpg | .15 gpg | .20 gpg | .25 gpg | |
| 11 | 3453 | D | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 105 gpm | 52 gpm | 227 gpm | 26 gpm | |
| 11 | 3454 | D | In a refrigeration system, air is purged at the _____. | expansion valve | filter/drier | evaporator | condenser | |
| 11 | 3455 | B | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 75 gpm | 150 gpm | 50 gpm | 37 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3456 | A | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 32 gpm | 129 gpm | 64 gpm | 77 gpm | |
| 11 | 3457 | D | Regarding the oily water separator shown in the illustration, what mode of operation is occurring if item "1" indicates a positive pressure? | The unit is operating in the processing mode and is currently separating emulsified bilge water. | The unit is operating in the bilge water removal mode separating the oil from the water as it flows through the unit. | The unit is operating in the purge mode and is only removing air from the upper level of the tank. | The unit is operating in the backflush mode causing any oil or air to be discharged to the oil slop tank. | GS-0153 |
| 11 | 3458 | C | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 352 gpm | 216 gpm | 54 gpm | |
| 11 | 3459 | A | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 42 gpm | 170 gpm | 85 gpm | 119 gpm | |
| 11 | 3460 | C | The function of item "6", as shown in the illustration, is to _____. | terminate the oil discharge mode | determine when backflushing is necessary | initiate the oil discharge mode | sense discharge temperature to control the operation of the internal heater | GS-0153 |
| 11 | 3461 | B | Coast Guard Regulations (46 CFR Part 56) for bilge and ballast piping require that _____. | all oil and water tanks be connected to the bilge system | the bilge pumping system be operable under all practicable conditions | peak tanks and chain lockers have separate electric pumps | all of the above | |
| 11 | 3462 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 30 gpm | 120 gpm | 60 gpm | 150 gpm | |
| 11 | 3463 | B | The illustration is drawn to a scale of 3/16 inch = 1 inch. What is the full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8"', and "H" = 5 3/4"? | 1.078 inches | 8.667 inches | 30.667 inches | 1.625 inches | GS-0007 |
| 11 | 3464 | C | The safest and quickest method of adding refrigerant to a refrigeration system is to add the refrigerant through the _____. | discharge service valve as a vapor | suction service valves as a liquid | charging valve as a liquid | condenser relief valve as a vapor | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3465 | B | The component labeled "E" in the illustration is a _____. | high level alarm/shutdown | equalization line with filter | differential safety line with a pressure regulating valve set for approximately 10.5 psig | fresh water inlet to fluidize the pulverized material | GS-0163 |
| 11 | 3466 | B | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 186 gpm | 47 gpm | 93 gpm | 302 gpm | |
| 11 | 3467 | C | If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 75 gpm | 132 gpm | 150 gpm | 38 gpm | |
| 11 | 3468 | D | If you have a duplex double acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 52 gpm | 19 gpm | 78 gpm | |
| 11 | 3469 | B | A solenoid operated distillate bypass valve is installed in the discharge line between a distilling plant and the potable water tanks to prevent _____. | excessively warm distillate from entering the potable tanks | salty distillate from reaching the potable tanks | overfilling and overflowing the potable tanks | contaminated water from leaving the potable tanks | |
| 11 | 3470 | D | If the distillate temperature is 150° F and the distillate salinity is 0.35 grains per gallon, the three-way solenoid trip valve should direct the distillate to the _____. | freshwater tanks | reserve feed tank | distilled water tank | bilge | |
| 11 | 3471 | B | Which of the following statements represents the basic principle of operation of an electrical salinity indicator? | Measures the hydrogen ion concentration. | Measures the electrical resistance of the water. | Determines the conductivity of the dissolved oxygen. | Measures the voltage of the chloride ions. | |
| 11 | 3472 | D | In a submerged tube evaporator, the automatic solenoid dump valve will trip if the salinity exceeds _____. | 0.10 grains per gallon | 0.15 grains per gallon | 0.20 grains per gallon | 0.25 grains per gallon | |
| 11 | 3473 | C | The compound gage shown in the illustration and labeled as item "1" indicates a slight vacuum while the unit is in the oil discharge mode. The separator is _____. | operating correctly without the need for any modification | fouled and needs cleaning | operating correctly, but requires the gage to be replaced | not operating correctly and also needs the gage to be replaced | GS-0153 |
| 11 | 3474 | B | The best time to check the oil level in the compressor in a typical refrigeration system is when the compressor is stopped after a long period of running. This is because the _____. | oil has had time to mix properly with the refrigerant | refrigerant has had time to separate from the oil | oil trap has been able to return sufficient oil to the sump | oil heaters are secured; thereby, ensuring that a false level is not read | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3475 | C | In the operation of a two-stage flash-type distilling plant, which of the pumps listed should be vented to the second stage shell in order to remove vapors from the pump suction? | Condenser circulating water pump | Feedwater heater drain pump | Distillate pump | Air ejector condenser drain pump | |
| 11 | 3476 | A | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 206 gpm | 378 gpm | 103 gpm | 412 gpm | |
| 11 | 3477 | C | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 291 gpm | 145 gpm | 73 gpm | 349 gpm | |
| 11 | 3478 | B | The first stage feedwater temperature and shell absolute pressure in a multistage flash evaporator is _____. | equal to the second stage feedwater temperature and shell absolute pressure | higher than the second stage feedwater temperature and shell absolute pressure | lower than the feedwater temperature and shell absolute pressure in the second stage | higher than the second stage feedwater temperature but at a lower shell absolute pressure | |
| 11 | 3479 | D | In a two stage flash evaporator, operating conditions in the second stage, as compared to the first stage, are _____. | higher temperature and higher absolute pressure | higher temperature and lower absolute pressure | lower temperature and higher absolute pressure | lower temperature and lower absolute pressure | |
| 11 | 3480 | D | In a flash evaporator, heated water under pressure is converted into vapor by suddenly _____. | increasing its temperature | increasing its velocity | decreasing its density | decreasing its pressure | |
| 11 | 3481 | D | Vapor is produced in a flash evaporator by introducing _____. | steam through heating coils | steam through cooling coils | heated water into a high pressure area | heated water into a low pressure area | |
| 11 | 3482 | A | Feedwater supplied to a flash type distilling plant will flash to vapor in the first-stage due to the flash chamber _____. | pressure being lower than the saturation pressure corresponding to the feedwater temperature | temperature being higher than the evaporation temperature of the supplied feedwater | heat exchange surfaces being directly in the path of the entering feedwater | orifices finely atomizing the heated feedwater entering the flash chamber | |
| 11 | 3483 | A | A flash type distilling plant is more efficient than a high pressure evaporator as _____.<br>I. vaporization of the feed water occurs in a vacuum<br>II. boiling of feed water occurs only once on the tube surfaces | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3484 | B | When one belt of a multiple V-belt compressor drive requires replacement, all of the belts must be replaced, because _____. | the old belts would otherwise carry all the load | new belts are shorter than old belts | new belts have a tendency to slip | all the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3486 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 388 gpm | 149 gpm | 75 gpm | 298 gpm | |
| 11 | 3487 | C | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 38 gpm | 19 gpm | 9 gpm | 25 gpm | |
| 11 | 3488 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 217 gpm | 39 gpm | 157 gpm | 79 gpm | |
| 11 | 3489 | D | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 67 gpm | 33 gpm | 50 gpm | 17 gpm | |
| 11 | 3490 | B | In a double-effect submerged tube evaporator, the brine density should be prevented from falling below 1.5/32nds to minimize _____. | scale formation on the tube nests | loss in capacity and economy | corrosion in the evaporator | carryover in the evaporator | |
| 11 | 3491 | B | In a double-effect submerged tube evaporator, the brine density should be prevented from falling below 1.5/32nds to minimize _____. | scale formation on the tube nests | loss in capacity and maintain plant efficiency | corrosion in the evaporator | carryover in the evaporator | |
| 11 | 3492 | D | In the operation of a two-stage flash type distilling plant, the rate of scale formation is greatly reduced by _____. | operating the unit at its rated capacity | maintaining a relatively high feedwater temperature | the fact that the first-stage regulator keeps the heater shell at a constant pressure | the fact that no boiling occurs on heat transfer surfaces anywhere in the unit | |
| 11 | 3493 | C | The rate of scale formation in a flash type distilling plant is greatly reduced by _____. | operating the unit at its rated capacity | maintaining a relatively high feedwater temperature | water flashing into vapor rather than boiling on the heat transfer surfaces | operating the first-stage regulator to maintain a constant shell pressure | |
| 11 | 3494 | B | A common secondary refrigerant used in air conditioning systems aboard ship is _____. | R-123 | water | nitrogen | hydrogen | |
| 11 | 3495 | D | A high reading is indicated at the salinity cells labeled "Y", "Q", and "6" shown in the illustration. This would be the probable result of _____. | a leak in item "I" | faulty cells at each location | erosion of item "2" | carryover in first effect shell | GS-0053 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3496 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 57 gpm | 28 gpm | 246 gpm | |
| 11 | 3497 | B | A high reading is only indicated at the salinity cells labeled "W" and "6" shown in the illustration. This would be the probable result of _____. | a tube leak in item 'IV', which contributes to a surging absolute pressure in "III" | a faulty cell at location "6" and a tube leak in item 'IV' | erosion of item "3" or the valve opened too wide if used | carryover from "III" | GS-0053 |
| 11 | 3498 | D | Scale accumulation on evaporator heating surfaces will cause _____. | immediate loss of vacuum | increased distillate quality | immediate tube failure | reduced evaporator capacity | |
| 11 | 3499 | A | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 285 gpm | 488 gpm | 142 gpm | 570 gpm | |
| 11 | 3500 | D | If the rated distillate production of a submerged tube type evaporator cannot be maintained with the supplied maximum steam flow rate, the evaporator _____. | chemical feed must be increased | has a serious brine leak | temperature switch is defective | heating surfaces are scaled | |
| 11 | 3501 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 189 gpm | 95 gpm | 110 gpm | 47 gpm | |
| 11 | 3502 | D | The purpose of the component labeled "E" in the illustration is to _____. | determine the level of pulverized material | relieve pressure if the compressed air flow rate exceeds 600 CFM | equalize the pressure between the top of the tank and the aeration device when discharging material | equalize pressure on either side of the slope sheet when filling tank | GS-0163 |
| 11 | 3503 | C | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 41 gpm | 164 gpm | 82 gpm | 55 gpm | |
| 11 | 3505 | C | When any low pressure distilling plant is operated at less than the designed vacuum, the _____. | heat level drops | capacity increases | scale formation increases | distillate purity increases | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3506 | D | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 281 gpm | 141 gpm | 281 gpm | 70 gpm | |
| 11 | 3507 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 56.6 gpm | 59.6 gpm | 68.5 gpm | 119.2 gpm | |
| 11 | 3508 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 167 gpm | 43 gpm | 82 gpm | 229 gpm | |
| 11 | 3510 | A | While the illustrated system is operated using the steam supply through "F" the strainer in line "4" becomes fouled, this will result in _____. | a reduction in distillate production | pump "K" becoming vapor bound | the temperature regulated by "L" difficult to maintain | nothing unusual for the type of operation indicated as this line was unnecessary in the installation | GS-0053 |
| 11 | 3511 | B | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 227 gpm | 52 gpm | 26 gpm | 105 gpm | |
| 11 | 3512 | C | An excessively high brine level in a flash evaporator can be caused by _____. | excessive brine pump motor speed | an excessive brine blowdown rate | failure of the brine pump | excessive distillate pump speed | |
| 11 | 3513 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 83% volumetric efficiency, what is the capacity of this pump? | 19 gpm | 38 gpm | 66 gpm | 76 gpm | |
| 11 | 3514 | D | The refrigeration system valve shown in the illustration is used to control the _____. | box temperature | coil back pressure | 'on-off' cycle of the compressor | superheat at the coil outlet | RA-0007 |
| 11 | 3515 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 34 gpm | 135 gpm | 68 gpm | 56 gpm | |
| 11 | 3516 | A | If you have a simplex single acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump? | 34 gpm | 137 gpm | 68 gpm | 120 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3517 | A | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 45 gpm | 181 gpm | 91 gpm | 249 gpm | |
| 11 | 3518 | C | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 375 gpm | 187 gpm | 94 gpm | 312 gpm | |
| 11 | 3519 | D | In a shell-and-tube type heat exchanger, the most common cause of decreased performance is _____. | loose tube bundle baffle plates | failure of the baffle plate | rupture of the tube bundle | fouling on the seawater side | |
| 11 | 3520 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 428 gpm | 856 gpm | 695 gpm | 214 gpm | |
| 11 | 3521 | D | Demulsibility of lube oil is defined as _____. | the temperature at which oil flows rapidly | a measure of the water in a lube oil system | an emulsion of grades of oil | the ability of oil to separate from an oil and water emulsion | |
| 11 | 3522 | C | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 526 gpm | 113 gpm | 226 gpm | 451 gpm | |
| 11 | 3523 | C | What precaution should be taken when transporting oil based mud, with the system illustrated, as compared to water based mud? | The recirculation nozzles "T" need to be changed over to oil based nozzles. | The sea chest valve "A" should be closed to prevent the oil from entering the water. | A spill containment area must be provided under the tank vent. | The tank must be provided with a protective coating no less than 20 mil thick. | GS-0162 |
| 11 | 3524 | A | In a refrigeration system, the thermal expansion valve sensing bulb is located _____. | near the evaporator coil outlet | near the evaporator coil inlet | on the liquid line strainer | at the solenoid valve outlet | |
| 11 | 3525 | D | Some of the hazards of working with electric power tools may be avoided if the operator insures that _____. | they are properly grounded | eye shields and gloves are worn | loose clothing and jewelry are not worn | all of the above | |
| 11 | 3526 | B | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 85 gpm | 170 gpm | 119 gpm | 42 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3527 | C | If a bolt or stud were to break off flush at the surface, which of the listed actions would probably be the best first step to begin the process of its removal? | Tap the bolt with a starting punch extractor. | Heat the bolt with an oxyacetylene torch. | Drill a hole in the center of the broken stud. | Use a tapered screw extractor only. | |
| 11 | 3528 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 157 gpm | 78 gpm | 176 gpm | 39 gpm | |
| 11 | 3529 | A | When using a portable droplight, you should always insure that _____. | the bulb is protected by a shield or guard | the extension cord is yellow and clearly marked | the bulb capacity does not exceed 75 watts | all of the above | |
| 11 | 3530 | C | To properly use a lathe crotch center to drill an oil hole in a bushing, you would mount the crotch center in the _____. | compound rest | headstock | tailstock | chuck | |
| 11 | 3531 | B | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 27 gpm | 54 gpm | 36 gpm | |
| 11 | 3532 | B | When machining a long piece of work between centers, you must _____. | make sure that the lathe dog is securely jammed in the slot of the face plate | correct for expansion of the work by readjusting the tailstock center | make sure that the work is only supported by the headstock center | make sure the tailstock is tight against the work | |
| 11 | 3533 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 302 gpm | 47 gpm | 186 gpm | 93 gpm | |
| 11 | 3534 | C | In a direct expansion refrigeration evaporator, the coils are _____. | covered with insulation | half covered with insulation | surrounded by air | surrounded by Freon | |
| 11 | 3535 | C | To ensure the stock is running true in a lathe, you should use a _____. | center gage | gage block | dial indicator | micrometer | |
| 11 | 3536 | C | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 216 gpm | 108 gpm | 54 gpm | 90 gpm | |
| 11 | 3537 | C | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 160 gpm | 352 gpm | 320 gpm | 80 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3538 | A | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 75 gpm | 300 gpm | 150 gpm | 225 gpm | |
| 11 | 3539 | A | To properly cut even numbered threads using the lathe thread dial indicator shown in the illustration, you should close the lathe split or half-nut on _____. | any line on the dial | even numbered lines only | odd numbered lines only | any unnumbered half line | GS-0084 |
| 11 | 3540 | B | To properly cut an odd numbered thread with a lathe using the thread dial indicator illustrated, you should close the lathe feed half-nut on _____. | any line on the dial | any numbered line on the dial | odd numbered lines only | even numbered lines only | GS-0084 |
| 11 | 3541 | D | When using a wheel dressing tool to true up a grinding wheel, you should always _____. | lubricate the dressing tool | operate the grinder in neutral | remove the tool rest from the grinder | wear goggles to protect your eyes | |
| 11 | 3542 | C | The operation of machining a uniformly roughened or checked surface on round stock in a lathe is called _____. | checkering | crosshatching | knurling | swaging | |
| 11 | 3543 | C | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 115 gpm | 57 gpm | 28 gpm | 115 gpm | |
| 11 | 3544 | B | A device used to hold open the refrigeration compressor suction valve during starting is called a _____. | discharge line bypass | cylinder unloader | suction line bypass | relief valve | |
| 11 | 3545 | B | If the point angle of a drill is less than 59°, the _____. | hole will be drilled too large | hole will take longer to drill | drill will not center properly | drill will cut undersized | |
| 11 | 3546 | A | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 145 gpm | 349 gpm | 73 gpm | 291 gpm | |
| 11 | 3547 | D | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 246 gpm | 28 gpm | 113 gpm | 57 gpm | |
| 11 | 3548 | C | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 35 gpm | 70 gpm | 139 gpm | 280 gpm | - |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3549 | B | As the drill bit is being fed into a metal work piece, a squeaking sound from the tip of the bit indicates _____. | the bit is too large for the hole | the bit tip has not been properly ground | insufficient force has been applied on the drill bit | a continuous chip is being taken by the drill bit | |
| 11 | 3550 | A | In the illustration, line "D" is a/an _____. | hidden line | sectioning line | outline | phantom line | GS-0006 |
| 11 | 3551 | B | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 32 gpm | 64 gpm | 77 gpm | 129 gpm | |
| 11 | 3552 | D | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 164 gpm | 82 gpm | 55 gpm | 41 gpm | |
| 11 | 3553 | D | What does "G" represent in the illustration? | The type of material used for the piece. | A dimension tabulated elsewhere. | A reference note shown elsewhere. | The surfaces to be ground. | GS-0017 |
| 11 | 3554 | C | The refrigeration piping component shown in the illustration is primarily used to _____. | prevent vibration of the compressor | connect refrigeration machinery and associated piping when there is a misalignment problem | reduce noise and vibration from traveling along the piping which could ultimately damage distant downstream equipment | all of the above | RA-0002 |
| 11 | 3555 | D | Which of the following problems will cause a twist drill to cut improperly? | Improper lip clearance | Improper cutting angle | Improper clearance angle | All of the above | |
| 11 | 3556 | B | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 226 gpm | 57 gpm | 113 gpm | 204 gpm | |
| 11 | 3557 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 48 gpm | 40 gpm | 24 gpm | 12 gpm | |
| 11 | 3558 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 169 gpm | 84 gpm | 152 gpm | 42 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3559 | C | A dimension line, as used in a drawing or blueprint, is represented by which of the figures shown in the illustration? | A | B | C | D | GS-0031 |
| 11 | 3560 | B | The illustrated shaft has an overall length of 18 inches. If the diameter of "E" = 2.5" and "F" = 3.5", with an indicated radius of "R" = .125" and the length of the tapered section "X" is to be 8"; then the amount of tailstock offset should be _____. | 0.1110" | 0.5625" | 0.6250" | 1.1250" | GS-0133 |
| 11 | 3561 | C | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 270 gpm | 246 gpm | 123 gpm | 62 gpm | |
| 11 | 3562 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 295 gpm | 147 gpm | 354 gpm | 74 gpm | |
| 11 | 3564 | B | Which of the fluids listed is suitable for use as a secondary refrigerant? | Methyl alcohol | Brine | Carbon dioxide | Cuprous chloride | |
| 11 | 3566 | C | The crosshatch design on the end of piece "3" in the illustration shown indicates that _____. | the piece is screwed into piece #2 | the piece is made of mild carbon steel | piece #3 is knurled in that area | piece #3 is made of stainless steel | GS-0020 |
| 11 | 3567 | C | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 30 gpm | 119 gpm | 60 gpm | 104 gpm | |
| 11 | 3568 | C | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 268 gpm | 81 gpm | 161 gpm | 322 gpm | |
| 11 | 3569 | A | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 45 gpm | 167 gpm | 23 gpm | 91 gpm | |
| 11 | 3570 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 74 gpm | 297 gpm | 149 gpm | 273 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3571 | B | Baffles are provided in the main lube oil sump tank of the pressurized lube oil system, shown in the illustration, to _____. | create a dam effect to concentrate heavily contaminated oil in one area making it much easier to clean | allow more time for particulate matter to settle out of the oil before being pumped | remove all water entrained in the returning oil stream | maintain a constant viscosity source of oil at the pump suction | SE-0011 |
| 11 | 3572 | B | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 42 gpm | 85 gpm | 119 gpm | 170 gpm | |
| 11 | 3573 | B | What precaution should be taken when transporting oil based mud, with the system illustrated, when compared to water based mud? | The recirculation nozzles "T" need to be changed over to oil based nozzles. | All tank cleaning and disposal must be done at an approved disposal pit. | The seal cage line valve "C" must be shifted to fresh water to prevent damage to the pump seal. | The tank must be coated with a protective covering no less than 20 mil thick. | GS-0162 |
| 11 | 3574 | B | In a refrigeration system, silica gel is used in the _____. | condenser | dehydrator | liquid strainer | hygrometer | |
| 11 | 3575 | D | In the illustration shown, which of the lines are considered as 'visible lines' in blueprint reading? | The line indicated by letter "A" only. | The line indicated by letter "B" only. | The lines indicated by the letters "B" and "D". | The lines indicated by the letters "A" and "D". | GS-0033 |
| 11 | 3576 | A | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 453 gpm | 227 gpm | 491 gpm | |
| 11 | 3577 | D | Hidden edges in objects are represented in blueprints by _____. | a thin solid line | a thick solid line | dashed lines having alternating long and short dashes | dashed lines having approximately equal length dashes | |
| 11 | 3578 | D | If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump? | 62 gpm | 31 gpm | 55 gpm | 16 gpm | |
| 11 | 3580 | D | Line "C" as shown in the illustration represents _____. | the diameter of the hole | a mechanical connection between the two items illustrated | a hidden line | the center of the items illustrated | GS-0033 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3581 | B | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 298 gpm | 75 gpm | 149 gpm | 388 gpm | |
| 11 | 3582 | B | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 158 gpm | 39 gpm | 79 gpm | 237 gpm | |
| 11 | 3583 | D | In a schematic drawing, when an edge of a component is indicated as being located inside an enclosure, which line should be used? | A | B | C | D | GS-0031 |
| 11 | 3584 | A | The primary purpose of a thermostatic controlled solenoid valve used in a multi-box refrigeration system is to _____. | control the refrigerated compartment temperature | bypass refrigerant flow to the evaporator | maintain the proper refrigerant superheat | stop the compressor when the evaporator reaches the proper temperature | |
| 11 | 3585 | A | The illustration shown represents a blueprint of a metal _____. | rod with a conventional break | tube with a broken out section | pipe with a missing center section | bar with a sawn out section | GS-0028 |
| 11 | 3586 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 526 gpm | 132 gpm | 263 gpm | 614 gpm | |
| 11 | 3588 | A | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 12 gpm | 48 gpm | 24 gpm | 40 gpm | |
| 11 | 3589 | B | A 'centerline' depicted in a drawing or blueprint is represented by which of the figures shown in the illustration? | A | E | D | C | GS-0031 |
| 11 | 3590 | B | Cracks may be prevented from developing at the corners of welded plate inserts by _____. | squaring the corners | rounding the corners | plug welding the corners | slot welding the corners | |
| 11 | 3591 | B | The exploded drawing shown in the illustration is intended to show the _____. | total number of parts in the assembled component | parts aligned for the correct order of reassembly | disassembled component in a one point perspective view | parts without using hidden lines | GS-0025 |
| 11 | 3592 | B | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 57 gpm | 113 gpm | 246 gpm | 28 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3593 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 320 gpm | 160 gpm | 80 gpm | 352 gpm | |
| 11 | 3594 | B | The purpose of running a refrigeration compressor motor in short intermittent spurts when starting the system after a prolonged shutdown is to _____. | allow refrigerant vapor cycling time | insure proper operation of the compressor | let the refrigerated compartment cool gradually | determine actual compressor oil level | |
| 11 | 3596 | C | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 603 gpm | 301 gpm | 151 gpm | 560 gpm | |
| 11 | 3597 | C | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 20 gpm | 29 gpm | 39 gpm | 50 gpm | |
| 11 | 3598 | B | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 119 gpm | 30 gpm | 60 gpm | 104 gpm | |
| 11 | 3599 | D | A hidden line in a drawing, or blueprint is represented in the illustration by which of the labeled lines? | A | B | C | D | GS-0031 |
| 11 | 3601 | A | In the illustration, line "C" is a _____. | dimension line | leader line | cutting plane line | phantom line | GS-0006 |
| 11 | 3602 | C | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 54 gpm | 27 gpm | 65 gpm | |
| 11 | 3603 | D | By which of the listed methods may heat be transferred from one body to another? | Radiation | Convection | Conduction | All of the above | |
| 11 | 3604 | C | If only the chill box solenoid valve remains open, the refrigeration compressor will eventually be stopped by _____. | chill box thermostatic temperature switch | low water cutout switch | low pressure cutout switch | high pressure cutout switch | |
| 11 | 3606 | D | Careful handling of compressed gas bottles should include _____. | stowing, to avoid them from crashing into one another | keeping them away from flame, high heat, and direct sunlight | keeping the valve protection caps in place | all of the above | |
| 11 | 3607 | D | Heat may be transferred by _____. | conduction | convection | radiation | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3608 | C | How many BTUs must be added to one pound of water at 32° F to raise the temperature to 212° F? | 16 BTU's | 144 BTU's | 180 BTU's | 970 BTU's | |
| 11 | 3609 | D | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 26.7 gpm | 53.4 gpm | 80.1 gpm | 106.8 gpm | |
| 11 | 3611 | A | While reaming a hole, the reamer should not be turned backwards if the hole has not been fully reamed because _____. | the cutting edges may be damaged | turning in the wrong direction will cause chatter | the shank will loosen in the tap wrench | reverse rotation will make the hole oversize | |
| 11 | 3612 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 378 gpm | 189 gpm | 441 gpm | 95 gpm | |
| 11 | 3613 | B | If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 18 knots? | 9.6 tons | 13.8 tons | 9.5 tons | 11.5 tons | |
| 11 | 3614 | B | When two refrigerated spaces in a refrigeration system are served by a single compressor and condenser, yet are maintained at different temperatures, a back pressure regulating valve serves to provide _____. | a higher pressure in the evaporator coil in the colder box | a higher pressure in the evaporator coil in the warmer box | a lower pressure in the evaporator coil in the warmer box | equal pressures in the evaporator coils of both boxes | |
| 11 | 3615 | C | Which of the following conditions must be carried out before the superheating of saturated vapor can occur? | The evaporation rate must be increased. | The flow of liquid to the unfired pressure vessel must be increased. | The vapor must be removed from contact with the liquid from which it was generated. | The operating pressure must be raised. | |
| 11 | 3616 | C | Which of the following practices is considered to be safe for the handling and use of compressed gas cylinders? | Using oxygen as a substitute for compressed air for pneumatic tools. | Routinely greasing or lubricating the valves on oxygen cylinders. | The storage of the cylinders in a well ventilated compartment. | Cracking the valve on a hydrogen cylinder to clear dust and dirt. | |
| 11 | 3617 | D | After a piece of pipe has been cut, a good shop practice to ream out the burr left in the pipe. This is done to _____. | make a taper for starting the threading die | make the taper required for pipe threads | remove tool marks which could interfere with flow | prevent the burr from restricting flow in the pipe | |
| 11 | 3618 | C | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 106 gpm | 170 gpm | 213 gpm | 53 gpm | |
| 11 | 3619 | A | An eroded globe valve disk can be repaired by _____. | taking a light cut in a lathe | sandblasting with light weight grit | dressing the seat with crocus cloth | scraping with a bastard file | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3620 | B | A graphite additive type grease is best suited for _____.<br>I. low temperature applications<br>II. high temperature applications | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3621 | A | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 508 pound load stationary would be _____. | 127 lbs. | 145 lbs. | 169 lbs. | 203 lbs. | GS-0110 |
| 11 | 3622 | B | The proper tool used for cutting new external threads is called a thread _____. | chaser | die | broach | tap | |
| 11 | 3623 | C | Which of the figures illustrated is known as an Allen head set screw? | figure B | figure C | figure F | figure G | GS-0080 |
| 11 | 3624 | D | In a vapor compression type refrigeration cycle, the refrigerant temperature decreases the most when passing through the _____. | evaporator | condenser receiver | compressor | expansion valve | |
| 11 | 3625 | A | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 8 diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 156 gpm | 625 gpm | 312 gpm | 507 gpm | |
| 11 | 3626 | A | Oxygen and acetylene cylinders should always be stored _____. | upright with the cylinder caps screwed on | horizontal with the cylinder caps screwed on | upright with the cylinder caps off | horizontal with the cylinder caps off | |
| 11 | 3627 | A | When internal threading for piping where the work permits the tap to be run entirely through you can begin and end the tapping of the hole by using a _____. | taper tap | plug tap | bottoming tap | finishing tap | |
| 11 | 3628 | D | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 352 gpm | 80 gpm | 320 gpm | 160 gpm | |
| 11 | 3630 | D | When referring to greases, penetration number is _____. | how many seconds was required for a cone to penetrate the sample | the temperature at which a cone would begin to penetrate the sample | the temperature at which the grease would become sufficiently fluid to fill the voids of a standard ball bearing | the depth to which a cone would penetrate a sample of grease in 5 seconds | |
| 11 | 3631 | A | The working depth of the gear illustrated is represented by _____. | A | B | C | I | GS-0111 |
| 11 | 3632 | D | The purpose of the wearing ring used in the illustrated pump is to _____. | support the suction end of the impeller | provide an interference fit for the impeller | provide a replaceable wear surface for the shaft | provide a replaceable wear surface for the pump housing | GS-0012 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3633 | D | The function of seal cages, or lantern rings installed in the centrifugal pump stuffing boxes, is to _____. | cool the shaft | lubricate the packing | seal air from entering along the shaft | distribute the sealing liquid within the stuffing box | |
| 11 | 3634 | D | If the compressor is heard to knock while pumping down the low side for repairs, this is an indication of _____. | worn piston rings | faulty bearings | air being introduced to the system | foaming of the crankcase oil | |
| 11 | 3635 | C | Internal pipe threads are cut with _____. | dies | reamers | taps | tap drills | |
| 11 | 3637 | C | When using a hand die to cut threads on brass stock, the threads can be dry cut or may be lubricated with _____. | graphite and oil | white lead | lard oil | kerosene | |
| 11 | 3638 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 282 gpm | 94 gpm | 47 gpm | 188 gpm | |
| 11 | 3639 | B | If you have a simplex single acting reciprocating pump making 120 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 144 gpm | 36 gpm | 72 gpm | 216 gpm | |
| 11 | 3640 | D | When pipe is properly screwed into a tapped hole, it will give the correct fit when _____. | the pipe cannot be turned | all the threads are covered | half of the threads are covered | all but two or three threads are covered | |
| 11 | 3641 | D | A centrifugal pump designed to handle a liquid with a temperature of 250° F or greater must be provided with _____. | a semi-mechanical seal | helical grooved wearing rings | self adjusting packing | a liquid seal line | |
| 11 | 3642 | A | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 103 gpm | 336 gpm | 52 gpm | 207 gpm | |
| 11 | 3643 | B | The primary function of a centrifugal pump volute is to _____. | develop a high velocity liquid | convert velocity to pressure | limit hydraulic end thrust | initiate flow | |
| 11 | 3644 | A | In the refrigeration system shown in the illustration, which of the valves indicated should be used to purge the system? | A | B | C | D | RA-0012 |
| 11 | 3645 | A | A centrifugal pump with a double volute casing operated at greater than design capacity, will _____. | be less susceptible to shaft deflection than a similar pump with a single volute casing operated under the same conditions | be more susceptible to shaft deflection than a similar pump with a single volute casing operated under the same conditions | develop excessive radial thrust and resultant shaft deflection | develop excessive radial thrust and resultant impeller deflection | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3646 | C | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 491 gpm | 113 gpm | 227 gpm | 453 gpm | |
| 11 | 3647 | C | In the illustration, a hole is shown in the block. The shape of the hole is indicated as a _____. | blind hole with a 3/4" depth | tapered hole | 1.5 inch diameter fully bored hole | hole laid out for boring, but not completed until needed | GS-0021 |
| 11 | 3648 | C | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 28 gpm | 18 gpm | 36 gpm | 71 gpm | |
| 11 | 3649 | B | When repacking a reciprocating pump with more than four rings of packing, the packing is cut square, installed with the ends abutted, and each succeeding ring staggered with the butted ends _____. | 45° apart | 90° apart | 120° apart | 180° apart | |
| 11 | 3650 | B | Which of the following problems will occur when the suction valve is throttled on a centrifugal pump not designed to operate in this manner? | The pump will immediately overheat and seize. | Pump efficiency is reduced and cavitation will be induced. | The pump packing will fail causing irreparable damage to the pump shaft. | Pump capacity is reduced and overall efficiency will be increased. | |
| 11 | 3651 | D | If you heard a 'crackling' sound occurring within a centrifugal pump, the most probable source of the noise would be the _____. | shaft sleeves | discharge volutes | wearing rings | pump suction | |
| 11 | 3652 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 273 gpm | 74 gpm | 149 gpm | 297 gpm | |
| 11 | 3653 | D | If the flow of water from a centrifugal pump is allowed to be stopped by closing the discharge valve while the pump continues to run for an indefinite period, the _____. | relief valve will open | water pressure will lower continually to shut off head | water pressure will tend to rise continuously | liquid may overheat and vaporize | |
| 11 | 3654 | B | Which of the valves listed is normally closed when charging the refrigeration system through the high side? | Dehydrator inlet valve | Liquid line king valve | Suction line valve | Thermal expansion valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3655 | C | The illustrated device is in operation when _____. | the output at "B" is providing negative feedback of the manipulated variable to the pressure differential relay | the output at "B" is providing positive feedback of the manipulated variable to the force balance relay | suction of the transferred liquid occurs at "G" and discharge at "B" | suction of the transferred liquid occurs at "B" and discharge at "G" | GS-0061 |
| 11 | 3656 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 110 gpm | 39 gpm | 157 gpm | 78 gpm | |
| 11 | 3658 | D | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 614 gpm | 132 gpm | 526 gpm | 263 gpm | |
| 11 | 3660 | B | As demand on the device shown in the illustration fluctuates in the pressure range of 100 to 110 psi, the output of the unit is controlled by _____. | complete shut down until the lower pressure limit is reached causing it to restart | the modulation of the opening of a butterfly valve located in the air intake | change in control pressure to modulate the discharge of compressed air to the atmosphere | proportional modulation of the compressor speed | GS-0119 |
| 11 | 3661 | B | Referring to the device shown in the illustration, the coiled sensing lines "A" and "B", are used simultaneously when the pilot is used _____. | to maintain a level in a tank vented to the atmosphere, pressurized, or operating under a vacuum | to maintain a tank level where there exists a variable vapor pressure atmosphere | as a square root extractor when variable ratios are present in the processing system | to maintain a constant flow differential across a turbine- driven, centrifugal pump | GS-0052 |
| 11 | 3662 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4 diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 237 gpm | 39 gpm | 158 gpm | 79 gpm | |
| 11 | 3663 | D | If a centrifugal pump is driven by a constant speed prime mover and produces a flow rate less than the designed specifications, the cause could be _____. | suction absolute pressure greatly exceeds corresponding vapor pressure of liquid being pumped | excessive suction head pressure | pump packing gland misalignment | worn wearing rings | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3664 | A | With a service gage manifold connected to a refrigeration compressor as illustrated, which arrangement of gage manifold valves and compressor service valves will allow compressor suction and discharge pressures to be read simultaneously? | Valves "A" and "B" closed, valves "C" and "D" open just off the back seats | Valves "A" and "B" open, valves "C" and "D" closed on their front seats | Valves "A" and "B" open and back seated, valves "C" and "D" back seated | Valves "A" and "B" open, valves "C" and "D" open in the midposition | RA-0003 |
| 11 | 3665 | A | You suspect a problem with the centrifugal fire pump on your ship, and begin to slowly close the discharge valve. Your suspicion is confirmed when the _____. | discharge valve is closed off and there is no change in the discharge pressure | discharge valve is 80% closed and the relief valve lifts | suction valve is closed off, and the discharge pressure begins to decrease | suction valve is closed off, yet the relief valve does not lift | |
| 11 | 3666 | A | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 301 gpm | 560 gpm | 151 gpm | 603 gpm | |
| 11 | 3667 | A | The reset process control mode is also considered to be the same as _____.<br>I. proportional speed floating control<br>II. derivative control | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3668 | A | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 94 gpm | 78 gpm | 47 gpm | 188 gpm | |
| 11 | 3669 | D | The heat of compression is partially removed from compressed air by _____. | intercoolers | aftercoolers | compressor water jackets | all of the above | |
| 11 | 3670 | A | In the operation of a proportional-plus-reset controller, the proportional action _____.<br>I. aids the reset action during increasing error transients<br>II. and the reset action are completely independent of one another | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3671 | B | The working components of a Bourdon tube pressure gage are shown in the illustration. When pressure is applied, the tube element will _____. | curl towards the center | uncurl from the center | expand only in a linear direction | contract along its linear axis | GS-0114 |
| 11 | 3672 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 217 gpm | 54 gpm | 27 gpm | 109 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3673 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4 diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 78 gpm | 254 gpm | 39 gpm | 156 gpm | |
| 11 | 3674 | D | When one belt of a multiple V-belt drive requires replacing, it will be necessary to _____. | ensure the proper belt dressing is applied | ensure the seasoned belts are reinstalled in their proper sequence | season the new belt prior to installation | replace the entire belt set | |
| 11 | 3675 | D | Intercooling of a multistage air compressor provides the advantages of reducing the work of compression on the succeeding stages, and _____. | condensing part of the original water vapor content | reducing the maximum piston loads | increasing the volumetric efficiency | all of the above | |
| 11 | 3677 | B | If the intercooler of a low pressure air compressor becomes fouled either internally or externally, the _____. | total capacity will be reduced | volumetric efficiency will be decreased | discharge pressure will decrease | normal running time will be decreased | |
| 11 | 3678 | B | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 43 gpm | 64 gpm | 32 gpm | 129 gpm | |
| 11 | 3679 | A | As a general rule of thumb, the reservoir used in a hydraulic system should have a capacity, when at the normal level, approximately equal to _____. | two to three times the normal flow rate through the system | the flow rate through the system | ten times the flow rate through the system | the pump gpm | |
| 11 | 3680 | D | Hydraulic system reservoirs should be maintained at recommended normal levels to reduce _____. | condensation on inside walls | heat retention of working fluid | frequency of fluid changeover | all of the above | |
| 11 | 3681 | B | The approximate quantity of hydraulic oil available to the system can be determined by _____. | removing "G" and measuring the level in the sump | observing the color change of "J" | removing "D" and measuring the height of the remaining liquid | removing the cap from "A" and measuring the height of the hydraulic oil | GS-0118 |
| 11 | 3682 | B | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 519 gpm | 130 gpm | 259 gpm | 605 gpm | |
| 11 | 3683 | B | One of the functions of the component labeled "E", shown in the illustration, is to _____. | act solely as a heat exchanger | act as a lube oil sump | provide storage for compressed cryogenic gases | act as a cyclonic oil separator | GS-0119 |
| 11 | 3684 | B | The refrigeration system valve illustrated has a 'back seat', indicated by the part labeled _____. | B | C | E | G | RA-0008 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3685 | B | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6 diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 441 gpm | 189 gpm | 95 gpm | 378 gpm | |
| 11 | 3686 | C | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 229 gpm | 42 gpm | 83 gpm | 167 gpm | |
| 11 | 3687 | D | The volumetric efficiency of a reciprocating air compressor, is the ratio of the _____. | adiabatic work of compression to the indicated horsepower | work of isothermal compression to the brake horsepower of the motor | air indicated horsepower from indicator cards to the brake horsepower input | actual amount of air discharged by the compressor, to the theoretical volume swept by the movement of the compressor piston | |
| 11 | 3688 | C | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 8" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 236 gpm | 103 gpm | 207 gpm | 141 gpm | |
| 11 | 3689 | A | The trap illustrated operates as a _____. | thermostatic bellows type steam trap | thermodynamic bellows type steam trap | thermostatic bi-metallic bellows type steam trap | thermodynamic float type steam trap type steam trap | GS-0005 |
| 11 | 3690 | A | The position of the controlling diaphragm "E", shown in the illustration of the spring-loaded reducing valve, is determined by the _____. | downward force of the adjusting spring "F" and the upward force of the reduced steam pressure acting on diaphragm "E" | adjusting screw "G" force exerted on the adjusting spring "F" and the auxiliary valve "D" only | amount of high pressure steam admitted beneath the diaphragm "E" by the auxiliary valve "D" | equalizing pressures exerted on auxiliary valve "D" by high pressure steam and reduced pressure steam flow | GS-0044 |
| 11 | 3691 | A | In a typical hydraulic system, return lines to the reservoir are terminated below the normal oil level to prevent _____.<br>I. foaming of the oil<br>II. condensation of warm oil vapors upon return | I only | II only | Both I and II | Neither I and II | |
| 11 | 3692 | D | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 45 gpm | 79 gpm | 23 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3693 | C | The valve shown in the illustration is typically used for temperature control of a liquid being heated. Which of the following changes to this unit would be useful in converting the valve for use in controlling the temperature of a cooling system? | Change out parts "B" and "J". | Remove parts "D" and "I". | Exchange part "L" for one that is upward seated. | Exchange part "G" for a heavier force. | GS-0043 |
| 11 | 3694 | C | In an atmosphere of 100% relative humidity, the wet bulb thermometer would register a temperature _____. | above the dry bulb temperature | below the dry bulb temperature | the same as the dry bulb temperature | above the dry bulb temperature, but below the saturation temperature | |
| 11 | 3695 | B | In a typical hydraulic system, return lines to the reservoir are _____.<br>I. terminated at or just above the normal level<br>II. placed as far from the pump suction as possible | I only | II only | Both I and II | Neither I and II | |
| 11 | 3696 | D | When pressure is released from a Bourdon tube-type pressure gage, it will begin to recoil. The reason for this action is due to the _____. | pressure on the arc AB | pressure on the arc DC | indicated spring tension | resiliency of the tube material | GS-0114 |
| 11 | 3697 | A | The mandatory operating characteristic of a pure amplifier is the _____.<br>I. form of the input and output energy must be the same<br>II. ratio of the output change to input change must be a value greater than 1 (one) | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3698 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 8-inch diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 507 gpm | 156 gpm | 312 gpm | 625 gpm | |
| 11 | 3699 | A | The characteristic of 'offset' is inherent with which mode of control?<br>I. proportional control<br>II. reset control | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3700 | B | In the operation of a proportional-plus-reset controller, the proportional action _____.<br>I. and the reset action are completely independent of one another<br>II. opposes reset action during decreasing error transients | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3701 | A | A pneumercator measures the liquid level in a tank by sensing _____.<br>I. head pressure<br>II. liquid density | I only | II only | both I and II | neither I nor II | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3702 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 18 gpm | 72 gpm | 36 gpm | |
| 11 | 3703 | C | In the operation of a proportional-plus-reset controller, the proportional action _____.<br>I. opposes the reset action during decreasing error transients<br>II. aids the reset action during increasing error transients | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3704 | A | Which of the methods listed is most frequently used to control evaporator refrigerant flow rate in a shipboard refrigeration system? | Direct expansion through a TXV with constant superheat | Indirect expansion with constant superheat | Low side float control | High side float control | |
| 11 | 3705 | C | Reset control is considered to be the same as _____.<br>I. proportional speed floating control<br>II. integral control | I only | II only | Both I and II | Neither I nor II | |
| 11 | 3706 | A | If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 17 gpm | 68 gpm | 34 gpm | 57 gpm | |
| 11 | 3708 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 94 gpm | 47 gpm | 24 gpm | 141 gpm | |
| 11 | 3709 | D | A compound Bourdon tube type pressure gage is capable of measuring _____. | temperature and pressure | wet bulb and dry bulb temperatures | humidity and temperature | pressure and vacuum | |
| 11 | 3711 | D | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4-inch diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 216 gpm | 36 gpm | 144 gpm | 72 gpm | |
| 11 | 3712 | D | The illustrated device is normally used to _____. | control the flow rate of liquid being removed from the tank | control the flow rate of liquid being discharged to the tank | regulate the pressure of the liquid being stored in the tank | provide a remote reading of the liquid stored in the tank | GS-0066 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3713 | B | In order for the hydraulic system to operate with fewer contaminants from the system's operating fluid, the illustrated device may _____. | be increased in height with all other dimensions remaining the same | have additional baffles installed | have the horizontal submerged section of the suction line lengthened | be increased in length and have the width narrowed | GS-0118 |
| 11 | 3714 | D | When the sensing bulb of a thermostatic expansion valve is charged with a fluid different from the charge used in the system, it is said to be _____. | blended charged | straight charged | mixed charged | cross charged | |
| 11 | 3715 | A | Energy imparted to the hydraulic fluid in an operating hydraulic system is stored in the _____. | accumulator | actuator | ram | reservoir | |
| 11 | 3716 | D | The baffle plates installed in the oil reservoir of a hydraulic system serve to _____. | reduce fluid turbulence at the pump suction | minimizes the chance of return line contamination deposits from entering the pump suction | minimizes the probability of air being drawn into the pump suction | all of the above | |
| 11 | 3717 | B | In order for the hydraulic pump installed in a constant flow system to maintain adequate flow, the pump suction should _____. | be taken directly off the reservoir bottom without regard to filters or strainers | be arranged to develop a maximum vacuum of approximately 10" of mercury | be arranged to develop the theoretically maximum attainable vacuum | be provided with three to five 1/2 inch holes in the vertical, suction line to prevent pump starvation should the strainer become fouled | |
| 11 | 3718 | A | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 105 gpm | 52 gpm | 227 gpm | 26 gpm | |
| 11 | 3719 | D | The instrument used to indicate the level of a fluid in a tank is called a _____. | fluid meter | calorimeter | viscosimeter | pneumercator | |
| 11 | 3720 | B | If you have a simplex single acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 123 gpm | 31 gpm | 62 gpm | 108 gpm | |
| 11 | 3721 | B | Figure "C" in the illustration, is an improperly installed hose, with the restriction developed at the _____. | right hand fitting being small than required | center of the hose | sharp bend formed at the left | 90° bend as required of the installation | GS-0063 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3722 | D | If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 150 gpm | 75 gpm | 132 gpm | 38 gpm | |
| 11 | 3723 | A | A hydraulic accumulator, used in a hydraulic system aboard a MODU, is designed to _____. | store fluid under pressure | act as the main fluid reservoir | provide the only means of overpressure relief | act as the singular source of fluid replenishment to a system | |
| 11 | 3724 | A | Regarding the refrigeration valve illustrated, part "C" is the _____. | back seat | front seat | seal cap | normal discharge | RA-0008 |
| 11 | 3725 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 149 gpm | 273 gpm | 149 gpm | 273 gpm | |
| 11 | 3726 | B | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 226 gpm | 451 gpm | 526 gpm | 113 gpm | |
| 11 | 3727 | B | The component used in a hydraulic system to store potential energy in the form of hydraulic fluid under pressure, is the _____. | ram | accumulator | piping | pump | |
| 11 | 3728 | D | A reservoir is used in a hydraulic system to _____. | store fluid until required by the system | provide a place for air to separate out of the fluid | provide a place for contaminants to settle out | all of the above | |
| 11 | 3729 | C | Which of the devices listed is considered to be a hydraulic system directional control valve? | Unloading valve | Counterbalance valve | Detented position valve | Sequencing valve | |
| 11 | 3730 | B | Which of the devices listed would be considered a hydraulic system directional control valve? | Counterbalance valve | Offset, two position valve | Sequencing valve | Unloading valve | |
| 11 | 3731 | A | Which of the devices listed would be considered a hydraulic system directional control valve? | three-position valve | sequencing valve | unloading valve | counterbalance valve | |
| 11 | 3732 | C | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 93 gpm | 302 gpm | 186 gpm | 47 gpm | |
| 11 | 3733 | C | A valve installed in a hydraulic system to manipulate the reversal of fluid flow, is called a _____. | relief valve | reservoir valve | directional control valve | regenative valve | |
| 11 | 3734 | D | Which of the lettered components shown in the illustration indicates a thermostatic control switch? | H | I | J | K | RA-0005 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3735 | C | A valve installed in a hydraulic system to control the reversal of fluid flow is called a _____. | relief valve | reservoir valve | directional control valve | power valve | |
| 11 | 3737 | B | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 150 gpm | 60 gpm | 30 gpm | 120 gpm | |
| 11 | 3738 | A | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 205 gpm | 102 gpm | 85 gpm | 51 gpm | |
| 11 | 3739 | D | Which of the valves listed is not considered to be a hydraulic system directional control valve? | Two-position valve | Three-position valve | Detented-position valve | Counterbalance valve | |
| 11 | 3740 | D | If the operator releases the handle of the illustrated device while the system output is in motion, the valve will _____. | drift to an extreme position and the output speed will increase to maximum | drift to an extreme position and the output speed will drop to zero | return to its centered position and the output will increase to maximum | return to its centered position and the output speed will drop to zero | GS-0032 |
| 11 | 3741 | D | The device shown in the illustration is typically called a/an _____. | three-position, directional control valve | variable-position, directional control valve | infinite-position, directional control valve | two-position, directional control valve | GS-0024 |
| 11 | 3742 | B | If you have a duplex double acting reciprocating pump making 270 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 31 gpm | 62 gpm | 52 gpm | 15 gpm | |
| 11 | 3743 | A | Regarding the device shown in the illustration, if the operator releases the handle while the system output is in motion, the _____. | valve will remain in position with the output remaining unchanged | valve will remain in position with the system output steadily decreasing | valve will drift to the center position stopping any further output of the system | valve will drift to the opposite position changing the direction of output motion of the system | GS-0035 |
| 11 | 3744 | D | Which of the listed types of refrigeration compressors can be designed with short large diameter suction lines? | Reciprocating | Rotary | Screw | Centrifugal | |
| 11 | 3745 | A | The device shown in the illustrated is known as a/an _____. | three-position, detented, directional control valve | four-position, spring-centered, directional control valve | rotary, directional control valve | offset solenoid, directional control valve | GS-0035 |
| 11 | 3746 | D | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 82% volumetric efficiency, what is the capacity of this pump? | 55 gpm | 16 gpm | 62 gpm | 31 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3747 | D | A hydraulic fluid flow control circuit, controlling linear actuator speed, with the pump operating below maximum operating pressure is known as the _____. | metered-in circuit | metered-out circuit | bleed-in circuit | bleed-off circuit | |
| 11 | 3748 | A | A hydraulic system flow-control circuit is shown in the illustration and is known as a _____. | metered-in circuit | metered-out circuit | bleed-off circuit | bleed-in circuit | GS-0105 |
| 11 | 3749 | B | A hydraulic system flow-control circuit is shown in the illustration and is known as a _____. | metered-in circuit | metered-out circuit | bleed-in circuit | bleed-off circuit | GS-0106 |
| 11 | 3750 | A | A hydraulic fluid flow control circuit, controlling linear actuator speed during extension, with the pump operating at system pressure, is known as a _____. | metered-in circuit | metered-out circuit | bleed-off circuit | bleed-in circuit | |
| 11 | 3751 | C | If you have a simplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 114 gpm | 57 gpm | 38 gpm | 86 gpm | |
| 11 | 3752 | A | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 136 gpm | 542 gpm | 271 gpm | 426 gpm | |
| 11 | 3753 | B | A hydraulic fluid flow control circuit, used to control linear actuator speed during retraction, with the pump operating at above maximum pressure, is known as a _____. | metered-in circuit | metered-out circuit | bleed-in circuit | bleed-off circuit | |
| 11 | 3754 | D | A dehydrator installed in a refrigeration system is used to remove _____. | noncondensable gases and vapors | oil from the refrigerant | refrigerant from the oil | moisture from the system | |
| 11 | 3755 | B | Which of the statements is true concerning the illustrated hydraulic circuit when the directional control valve is centered? | The oil pressure will equalize at both ends of the actuator and the pump will discharge through the reducing valve to the sump. | The load on the actuator may cause a difference in pressure to exist between the rod and cap end, and oil discharging to the sump across the relief valve with the pump operating. | A pressure differential will exist between the two ends of the actuator, with pump discharge lower than normal due to flow across the unloading valve. | Oil pressure to both sides of the actuator will be equal as the pump discharge flow is directed across the relief valve. | GS-0105 |
| 11 | 3756 | A | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 183 gpm | 91 gpm | 128 gpm | 46 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3757 | D | Directional control valves used in hydraulic systems may be positioned _____. | manually | mechanically | electrically | all of the above | |
| 11 | 3758 | C | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 312 gpm | 94 gpm | 187 gpm | 375 gpm | |
| 11 | 3759 | C | Valve "D" indicated in the illustration is referred to as a/an _____. | relief valve | sequence valve | unloading valve | counter balance valve | GS-0049 |
| 11 | 3760 | B | Which of the listed pressure-control valves would be used in a hydraulic system to temporarily divert some, or all of the pump discharge until the additional flow was required? | counterbalance valve | unloading valve | compound, pressure-relief valve | sequence valve | |
| 11 | 3761 | C | The determining factor for the strength of a flexible rubber hydraulic hose is the _____. | external cover | synthetic rubber inner tube | braided layer | Teflon sleeve | |
| 11 | 3762 | D | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 85 gpm | 51 gpm | 205 gpm | 102 gpm | |
| 11 | 3763 | A | Which of the following statements will be true if the position of the manual control lever, shown in the illustration, remains unchanged after the pump is placed on stroke? | Although oil will leak past part 'B,' the amount of pump stroke will be maintained until the control handle position is changed. | Regardless of the control handle position, the pump will gradually return to neutral stroke. | Regardless of the control handle position, the pump will gradually move to full stroke. | Although the control handle position was set, the pump displacement will fluctuate from zero to maximum flow rate until the handle is placed in its neutral position. | GS-0039 |
| 11 | 3764 | D | Which of the listed materials can be used as a desiccant in a refrigeration system? | Silica gel | Activated alumina | Anhydrous calcium sulfate | All of the above | |
| 11 | 3765 | B | A bent axis, variable stroke, axial piston pump produces a greater capacity than a comparable tilting box-type axial piston pump, because the _____. | piston diameters are smaller | length of stroke is greater | RPM is doubled | discharge/return line diameter are arranged differently | |
| 11 | 3766 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 90 gpm | 108 gpm | 54 gpm | 216 gpm | |
| 11 | 3767 | D | Both the direction of flow and fluid flow rate of a variable displacement radial piston pump are determined by the relative positions of the _____. | pump shaft and central valve | pump shaft and horizontal ports | floating ring and pump shaft | floating ring and cylinder body | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3768 | D | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 5 diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 101 gpm | 56 gpm | 42 gpm | 27 gpm | |
| 11 | 3770 | D | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 521 gpm | 260 gpm | 608 gpm | 130 gpm | |
| 11 | 3771 | D | With an increase in temperature, the volume of hydraulic fluid _____. | contracts | remains the same | remains constant if pressure decreases | increases | |
| 11 | 3772 | A | When normal operating pressure is applied to the hydraulic oil in a high-pressure system, the oil _____. | viscosity will increase | viscosity will decrease | volume will increase | floc point will increase | |
| 11 | 3773 | B | Overheating of the hydraulic fluid in an electro-hydraulic anchor windlass, may indicate pump cavitation caused by _____. | overload of the pump motor | low oil level in the reservoir | low fluid viscosity existing only around the shaft seal | high oil level in the sump | |
| 11 | 3774 | B | Cold storage compartments used for frozen or chilled foods, may be equipped with medium velocity air coolers to establish rapid convection and to _____. | prevent shrinkage and drying of stored foods | deliver cooled air to all areas of the compartment | prevent air from being cooled below the dew point | eliminate all noxious odors in the compartment | |
| 11 | 3775 | A | Overheating of the oil in a hydraulic system can be caused by _____. | continuous leakage through the pressure relief valve | an increase in the number of the hydraulic fluid film layers | insufficient external pump slippage | fluctuating pump discharge pressure in response to normal load variations | |
| 11 | 3776 | C | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 50 gpm | 38 gpm | 75 gpm | 150 gpm | |
| 11 | 3777 | C | Coast Guard Regulations require that OSV's under 100 GT must have a steering system that is capable of moving the rudder _____. | by a required auxiliary steering system under emergency conditions when duplicated main steering power systems are provided | by design at one-half astern speed without damage. | from 35 degrees on one side to 30 degrees on the other side in no more than 28 seconds | from 15 degrees on one side to 15 degrees to the other side in 30 seconds at 7 knots or one-half the maximum service speed | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3778 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 519 gpm | 259 gpm | 605 gpm | 130 gpm | |
| 11 | 3779 | B | In order to properly regulate the high side pressure of a refrigerating system, using the device shown in the illustration, adjustment should be carried out by rotating the component labeled as _____. | I | M | N | O | RA-0015 |
| 11 | 3781 | A | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 22 gpm | 89 gpm | 45 gpm | 78 gpm | |
| 11 | 3782 | D | In order to reduce the operating head pressure of a refrigerating system using the device shown in the illustration, you should use component _____. | "I" and rotate it counter clockwise (out) | "O" and rotate it clockwise (up) | "N" and rotate it counter clockwise (up) | "M" and rotate it counter clockwise (down) | RA-0015 |
| 11 | 3783 | C | In order to raise the operating head pressure of a refrigerating system using the device shown in the illustration, component _____. | "O" should be rotated counter clockwise (down) | "N" should be rotated counter clockwise (down) | "M" should be rotated clockwise (up) | "I" should be rotated clockwise (up) | RA-0015 |
| 11 | 3784 | C | To prevent motor overload during start-up of a hermetically sealed centrifugal refrigeration system, the compressor suction gas variable inlet guide vanes remain _____. | closed until the motor is connected across the line at full voltage and current drawn is up to full load current | opened until the motor is connected across the line at full voltage and current drawn is below full load current | closed until the motor is connected across the line at full voltage and current drawn is below full load current | opened until the motor is connected across the line at full voltage and current drawn is up to full load current | |
| 11 | 3785 | C | In a refrigeration system, if the cooling water to the condenser fails, the _____. | box temperature solenoid valve will close | expansion valve will close due to high superheat | compressor will shutdown on the high discharge pressure cutout switch | king valve will open | |
| 11 | 3786 | D | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 124 gpm | 31 gpm | 129 gpm | 62 gpm | |
| 11 | 3787 | A | The item, labeled "F" shown in the illustration, will begin to lift to a higher position if _____. | the total force above "H" is reduced | the working pressure in "N" is decreased | the spring force controlled by "I" is reduced | component "C" becomes fully seated | RA-0015 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3788 | B | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 8" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 62 gpm | 124 gpm | 170 gpm | 31 gpm | |
| 11 | 3789 | A | If a hydraulic pump is overheating, the cause may be _____. | excessive internal slippage in the pump | low discharge pressure and fluid flow | excessive fluid level in the hydraulic reservoir | operation of the pump at 100% efficiency | |
| 11 | 3790 | C | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operation with 75% volumetric efficiency, what is the capacity of this pump? | 349 gpm | 73 gpm | 145 gpm | 291 gpm | |
| 11 | 3791 | D | Capacity control of a centrifugal refrigeration compressor can be accomplished by _____. | varying the speed of the compressor | varying the suction pressure | varying condenser water flow rate | all of the above | |
| 11 | 3792 | A | During the operation of a multi-box refrigeration system using a capacity controlled compressor, only one box is actively being cooled. Under this operating condition, the compressor lube oil pressure should be _____. | the lowest normal pressure | in the midrange pressure | the highest normal pressure | of no consequence as the compressor lube oil pressure is not used in the operation of the capacity unloading system. | RA-0013 |
| 11 | 3793 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 139 gpm | 35 gpm | 69 gpm | 83 gpm | |
| 11 | 3794 | B | A solenoid valve is operated by magnetic action through _____. | suction pressure at the compressor | an electrically energized coil | superheat at the evaporator outlet coil | a vacuum operated bellows | |
| 11 | 3795 | D | A refrigeration compressor is used in a multi-box refrigeration system, having six of its eight cylinders controlled for variable load conditions. If all of the reefer boxes are recently activated, what percentage of the total number of compressor cylinders will be unloaded? | 100% | 50% | 25% | 0% | RA-0013 |
| 11 | 3796 | A | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 150 gpm | 225 gpm | 75 gpm | 300 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3798 | C | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 251 gpm | 31 gpm | 63 gpm | 126 gpm | |
| 11 | 3799 | A | If it is necessary to increase the operating head pressure of the refrigeration system using the device shown in the illustration, component _____. | "A" should be turned to compress the spring | "A" should be turned to relax the compression of the spring | "D" should be rotated to compress the enclosed bellows | "G" should be exchanged for a larger cross-sectional diameter | RA-0014 |
| 11 | 3800 | B | The function of the device shown in the illustration is to control _____. | flow of refrigerant into the evaporator coils | high side pressure of a refrigeration system | flow rate of secondary refrigerant in a chilled water air conditioning system | the amount of low pressure gas entering the compressor suction | RA-0015 |
| 11 | 3801 | A | The device shown in the illustration would normally be associated with what engine room system? | Bilge pump priming system. | Lube oil transfer system. | Fuel oil transfer system. | Hydraulic steering system. | GS-0075 |
| 11 | 3802 | D | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 49 gpm | 181 gpm | 25 gpm | 98 gpm | |
| 11 | 3803 | B | If "E" is moved closer to the top of "B" as shown in the illustration, the _____. | efficiency of the heat exchanger operation will be increased | point of condensation will be moved closer to the steam inlet of the heat exchanger | point of condensation will be moved closer to the condensate outlet of the heat exchanger | steam pressure set point will automatically be increased | GS-0002 |
| 11 | 3804 | B | When multiple refrigerated boxes are maintaining individual temperatures and supplied by a single refrigeration compressor, the individual box temperatures are controlled by the _____. | suction valves | solenoid valves | expansion valves | compressor speed | |
| 11 | 3805 | D | A fluid power system is considered to be fail-safe if a component failure will result in _____. (46 CFR) | continuous operation of the system | a safety interlock producing a regulated shutdown of the system | the guaranteed safe and efficient operation of the system at all times | a slow and controlled release of the loading so as not to endanger personnel | |
| 11 | 3806 | C | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 149 gpm | 273 gpm | 297 gpm | 74 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3807 | C | The devices labeled "C" in the illustration, are used as _____. | pressure regulating valves to insure excessive pressure does not damage the manifold nozzles | mud by-pass valves that protects a pump that fails when both pumps are on line | pressure relief valves to protect the pump in the event of a clog in the discharge line | a sealing water supply to the pump lantern gland | GS-0162 |
| 11 | 3808 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 301 gpm | 560 gpm | 603 gpm | 151 gpm | |
| 11 | 3809 | A | If you have a simplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 10" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 42 gpm | 84 gpm | 126 gpm | 168 gpm | |
| 11 | 3810 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 425 gpm | 163 gpm | 82 gpm | 327 gpm | |
| 11 | 3812 | D | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 314 gpm | 52 gpm | 209 gpm | 105 gpm | |
| 11 | 3813 | A | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 164 gpm | 82 gpm | 55 gpm | 41 gpm | |
| 11 | 3814 | A | Which of the following statements best describes the operation of the refrigeration valve shown in the illustration? | Turning the adjustment screw counterclockwise, as viewed from the bottom, results in an increase in evaporator superheat setting. | The sensor bulb detects changes in box temperature. | The temperature of the refrigerant passing through the device is colder at the inlet than at the outlet. | Refrigerant pressure acting through the external equalizer connection is always acting to close the valve. | RA-0007 |
| 11 | 3815 | C | Which segment of the graph shown in the illustration represents the latent heat of fusion? | line 4 | Line 3 | Line 2 | Line 1 | SG-0001 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3816 | A | If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 34 gpm | 57 gpm | 17 gpm | 68 gpm | |
| 11 | 3817 | D | The part labeled "C" of the illustrated bearing is called the _____. | thrust ring | outer race | inner race | cage | MO-0001 |
| 11 | 3818 | D | The lowest temperature at which fuel oil gives off sufficient vapor to burn continuously when ignited is defined as the _____. | burning temperature | auto ignition temperature | flash point | fire point | |
| 11 | 3819 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 216 gpm | 36 gpm | 144 gpm | |
| 11 | 3820 | A | The flash point of bunker fuel is defined as the _____. | lowest temperature at which the fuel oil will give off enough vapor to momentarily flash into flame when ignited | lowest temperature at which the fuel oil will give off enough vapor to continue to burn once ignited | temperature the fuel oil must be heated to for proper atomization | temperature at which the fuel oil will burn in a boiler furnace | |
| 11 | 3821 | A | A micrometer scale reading is indicated as 0.349 inches and is represented in the illustration by _____. | Figure C | Figure A | Figure G | Figure H | GS-0013 |
| 11 | 3822 | A | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 134 gpm | 537 gpm | 268 gpm | 626 gpm | |
| 11 | 3823 | B | When a refrigeration compressor is in the 'off' cycle, the thermal expansion valve will_____. | always be wide open when the compressor restarts | continue to operate as if the system were in operation | remain open until evaporator pressure equalizes, then close until the compressor restarts | always be completely closed until the compressor restarts | |
| 11 | 3825 | D | Some 'hot gas' defrost systems reheat the refrigerant just prior to its returning to the compressor to _____. | increase the circulation of liquid refrigerant | prevent chill shocking the compressor suction valves | improve the efficiency of the expansion valve | reduce the damaging effects of liquid slugging | |
| 11 | 3826 | D | The lowest temperature at which fuel oil gives off sufficient vapor to momentarily flash into flame when ignited is defined as the _____. | burning temperature | ignition temperature | fire point | flash point | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3827 | B | If you have a duplex double acting reciprocating pump making 270 strokes/minute with 4" diameter cylinder, and a 7" stroke with 81% volumetric efficiency, what is the capacity of this pump? | 83 gpm | 167 gpm | 146 gpm | 42 gpm | |
| 11 | 3828 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 7" diameter cylinder, a 11" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 542 gpm | 271 gpm | 426 gpm | 136 gpm | |
| 11 | 3829 | B | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 121 gpm | 104 gpm | 52 gpm | 207 gpm | |
| 11 | 3830 | C | The tendency of a flammable liquid to vaporize is indicated by its _____. | fire point | pour point | flash point | boiling point | |
| 11 | 3831 | D | When using a chisel, you should _____. | wear gloves | hold the tool lightly | be certain it is a nonsparking type | wear safety glasses | |
| 11 | 3832 | D | The reading on the micrometer scale shown in figure "C" in the illustration is _____. | 0.301 inch | 0.310 inch | 0.325 inch | 0.335 inch | GS-0081 |
| 11 | 3833 | A | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 41 gpm | 52 gpm | 21 gpm | 83 gpm | |
| 11 | 3834 | D | The pressure in a low pressure refrigeration system about to be opened for repair should be _____. | 10 to 12 psig | 4 to 7 psig | 0 to 1 psig | 25 inches of hg vacuum | |
| 11 | 3835 | B | When adding oil to a refrigeration system, precautions must be taken to ensure that _____. | the compressor suction pressure is not too high | all air is purged from the pump and charging fittings | the high pressure cutout switch is held open to prevent accidental starting | the condenser is completely shutdown first | |
| 11 | 3836 | B | If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 132 gpm | 75 gpm | 38 gpm | 150 gpm | |
| 11 | 3837 | C | The normal operation of a refrigeration compressor should be to cycle on _____. | in response to the low pressure cutout switch and off in response to the high pressure cutout switch | in response to the high pressure cutout switch and off in response to the low pressure cutout switch | and off in response to the low pressure cutout switch | and off in response to the high pressure cutout switch | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3838 | B | If you have a simplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 176 gpm | 44 gpm | 88 gpm | 157 gpm | |
| 11 | 3839 | C | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 204 gpm | 57 gpm | 113 gpm | 226 gpm | |
| 11 | 3840 | A | The lathe tool shown as figure "T" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut side-facing tool | right-cut threading tool | left-cut roughing tool | GS-0090 |
| 11 | 3841 | C | If a block and tackle arrangement were rigged as shown in figure "C" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____. (See illustration GS-0110) | 83.33 lbs. | 104.16 lbs. | 125.00 lbs. | 250.00 lbs. | GS-0110 |
| 11 | 3842 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 268 gpm | 626 gpm | 134 gpm | 537 gpm | |
| 11 | 3843 | D | If you have a duplex double acting reciprocating pump making 230 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 78% volumetric efficiency, what is the capacity of this pump? | 68 gpm | 120 gpm | 34 gpm | 137 gpm | |
| 11 | 3844 | C | Loss of refrigerant during the purging process can be kept to a minimum by _____. | operating the dehydrator continuously | purging through the discharge service valve | cracking the purge valve briefly | closing the liquid line king valve | |
| 11 | 3845 | B | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 19 gpm | 9 gpm | 38 gpm | |
| 11 | 3846 | C | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 80 gpm | 40 gpm | 20 gpm | 134 gpm | |
| 11 | 3847 | B | The lathe tool shown as figure "Q" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut side-facing tool | right-cut side-facing tool | left-cut roughing tool | GS-0090 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3848 | D | The reading indicated on the micrometer scale in the illustration is .4815 inches. Which illustration represents this reading? | Figure A | Figure B | Figure C | Figure D | GS-0081 |
| 11 | 3849 | D | If you have a simplex single acting reciprocating pump making 120 strokes/minute with 3" diameter cylinder, and a 4" stroke with 95% volumetric efficiency, what is the capacity of this pump? | 14 gpm | 28 gpm | 19 gpm | 7 gpm | |
| 11 | 3850 | D | The lathe tool shown as figure "S" in the illustration is commonly known as a/an _____. | right-cut roughing tool | left-cut threading tool | right-cut side-facing tool | left-cut roughing tool | GS-0090 |
| 11 | 3851 | A | If you turn the hand wheel clockwise of a spring-loaded, internal pilot, reducing valve, you will _____. | compress the adjusting spring against the diaphragm | release spring tension from the diaphragm | increase steam pressure to the reducing valve | decrease spring tension in the main valve | GS-0044 |
| 11 | 3852 | B | What can happen to oil based mud when contaminated with salt water? | Nothing, as salt water is an ingredient of oil based mud. | Small amounts can cause thickening of the oil based fluid as well as a reduction in density. | Small amounts react with gel particles in the mud causing them to flocculate. | The water will collect at the bottom of the tank and can not be stripped overboard. | |
| 11 | 3853 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 149 gpm | 388 gpm | 75 gpm | 298 gpm | |
| 11 | 3855 | B | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____. (See illustration GS-0110) | 43 lbs. | 63 lbs. | 83 lbs. | 100 lbs. | GS-0110 |
| 11 | 3856 | D | If you have a duplex double acting reciprocating pump making 250 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 34 gpm | 57 gpm | 17 gpm | 68 gpm | |
| 11 | 3857 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 110 gpm | 47 gpm | 95 gpm | 189 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3858 | C | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 54 gpm | 40 gpm | 81 gpm | 161 gpm | |
| 11 | 3859 | A | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 451 gpm | 226 gpm | 526 gpm | |
| 11 | 3860 | B | The lathe tool shown as figure "Q" in the illustration is commonly used for _____. | cutting-off | left hand rough side facing | right hand rough turning | machining a smooth surface | GS-0090 |
| 11 | 3861 | C | Frost appearing on the evaporator coils of a multi-box direct expansion refrigeration system _____. | is best removed by means of an ice pick | will increase the refrigeration effect | can be removed by passing hot vapors through the coils | can be quickly removed by simply shutting down the coils | |
| 11 | 3862 | A | If a refrigeration system were short of refrigerant, the condition would result in _____. | continuous running of the compressor | high suction pressure | high discharge pressure | short cycling of the compressor on the water failure switch | |
| 11 | 3863 | C | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 147 gpm | 354 gpm | 295 gpm | 74 gpm | |
| 11 | 3864 | A | If you have a duplex double acting reciprocating pump making 210 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 123 gpm | 62 gpm | 108 gpm | 31 gpm | |
| 11 | 3866 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 62 gpm | 37 gpm | 148 gpm | 74 gpm | |
| 11 | 3867 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 453 gpm | 227 gpm | 491 gpm | |
| 11 | 3868 | D | Figure "I" shown in the illustration is a diagram of a valve hand wheel, with S=5 inches and T=50 lbs. When an 18 inch cheater bar is used instead, and V=50 lbs., as shown in Figure "II", what value of additional torque is now being applied to the hand wheel valve stem? | 115% | 154% | 250% | 360% | GS-0109 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3870 | D | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 348 pound load stationary would be _____. | 57 lbs. | 66 lbs. | 79 lbs. | 87 lbs. | GS-0110 |
| 11 | 3871 | A | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 259 gpm | 605 gpm | 130 gpm | 519 gpm | |
| 11 | 3872 | B | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 98 gpm | 196 gpm | 272 gpm | 49 gpm | |
| 11 | 3873 | B | A "barrel" is defined as a unit of liquid, measured at 60° F, and is equivalent to _____. | 31.5 U.S. gallons | 42.0 U.S. gallons | 55.0 U.S. gallons | 60.0 U.S. gallons | |
| 11 | 3874 | B | On the refrigeration valve shown in the illustration, the part labeled "D" is the _____. | back disc | front disc | seal cap | normal discharge | RA-0008 |
| 11 | 3875 | D | If your vessel burns 4 tons of fuel per hour at 21 knots, how many tons per hour will it burn at 16 knots? | 3.0 tons | 5.3 tons | 2.3 tons | 1.8 tons | |
| 11 | 3876 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 76 gpm | 95 gpm | 104 gpm | 183 gpm | |
| 11 | 3877 | B | Which of the statements listed concerning heat transfer is correct? | Heat is always transferred at a constant rate. | Heat transfer rate increases as temperature difference increases. | The rate of heat transfer is not affected by temperature difference. | The high temperature region is known as a heat sink. | |
| 11 | 3879 | A | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 54 gpm | 36 gpm | 27 gpm | 108 gpm | |
| 11 | 3880 | A | Temperature measurement is an indication of the _____. | level of heat intensity | total heat of a substance | rate of heat transfer from one substance to another | total heat contained in any closed energy system | |
| 11 | 3881 | D | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 54 gpm | 217 gpm | 27 gpm | 109 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3882 | B | If you have a duplex single acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 181 gpm | 49 gpm | 25 gpm | 98 gpm | |
| 11 | 3883 | D | The reading indicated on a vernier micrometer caliper scale is .3128 inches. Which of the figures in the illustration represents this reading? | Figure B | Figure C | Figure E | Figure F | GS-0091 |
| 11 | 3884 | A | When adding oil to a refrigeration system, you must be certain that _____. | all air is removed from the pump and fittings | the suction strainer is not blocked | the discharge pressure is not too high | the condenser is secured | |
| 11 | 3886 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 128 gpm | 183 pm | 46 gpm | |
| 11 | 3887 | A | After a refrigeration plant has been open for repairs, it is advisable to purge air from the system by _____. | slightly opening the purge valve on the condenser | cracking the valve bonnet assembly on the thermostatic expansion valve | turning over the compressor flywheel with the suction line valve open | loosening the purge connection attached to the receiver head | |
| 11 | 3888 | A | If you have a duplex double acting reciprocating pump making 330 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 78 gpm | 39 gpm | 52 gpm | 19 gpm | |
| 11 | 3890 | B | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 132 gpm | 82 gpm | 41 gpm | 164 gpm | |
| 11 | 3891 | D | Which practices should be followed at all times when using an electric grinding machine? | Wear goggles or face shield. | Be certain that the frame is properly grounded. | Be properly trained in the use of this tool. | Each of the above practices. | |
| 11 | 3892 | D | Safety glasses should be worn when _____. | using a hand portable grinder | scraping paint with a hand scraper | using a hammer and chisel | all of the above | |
| 11 | 3893 | A | When a refrigeration system is being charged through the low side, the _____. | refrigerant should be added as a vapor | suction service valve must be back seated | discharge service valve must be front seated | refrigerant drum should be turned upside down | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3894 | C | Which of the following statements is correct concerning the testing of an R-12 refrigeration system for leaks in an enclosed compartment? | To gain sensitivity, the largest possible flame should be used with the halide torch. | The flame of a halide torch will turn blue in the presence of R-12. | Halide torches are useful in locating very small R-12 leaks. | Rapid leak testing is possible with the halide torch since there is no time lag between the time air enters the exploring tube until it hits the reactor plate. | |
| 11 | 3895 | C | Coast Guard Regulations (46 CFR) require that a small electrically heated hot water supply boiler, must be fitted with a/an _____. | temperature limiting regulating valve to be set at not more than 220° Fahrenheit | manual pressure regulator | temperature limiting control device set for not more than 210° Fahrenheit | audible high water level alarm | |
| 11 | 3896 | D | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 98% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 90 gpm | 54 pm | 216 gpm | |
| 11 | 3897 | A | Coast Guard Regulations (46 CFR) for electric storage tank-type hot water heaters, required temperature limit controls to _____. | prevent the water in the upper 25% of the tank from attaining a temperature higher than 99° C (210° F) | are automatically reset when the temperature drops below 90° C (194° F) | open a secondary power supply to the heater elements only | prevent the water from attaining a temperature of more than 90° (194° F) | |
| 11 | 3898 | D | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 75 gpm | 50 gpm | 38 gpm | 150 gpm | |
| 11 | 3899 | B | The instrument always used in conjunction with a salinometer is a _____. | pyrometer | thermometer | hygrometer | hydrometer | |
| 11 | 3900 | C | The flash point of a petroleum product is an indication of its _____. | viscosity | pour point | volatility | lower explosive limit | |
| 11 | 3901 | C | If you have a duplex single acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 35 gpm | 42 gpm | 84 gpm | 169 gpm | |
| 11 | 3902 | B | The temperature, in degrees Fahrenheit, at which a liquid gives off a flammable vapor when heated in an open cup tester is called the _____. | fire point | flash point | flame point | ignition point | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3903 | C | If you have a simplex single acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 207 gpm | 103 gpm | 52 gpm | 336 gpm | |
| 11 | 3904 | A | During the initial cooling down of a box temperature in a refrigeration system, which of the devices listed is used to prevent excessive gas pressure at the compressor suction? | Suction pressure hold back valve | High pressure cutout | Solenoid valve | Low pressure cutout | |
| 11 | 3905 | A | The flash point of a liquid refers to the temperature _____. | at which a liquid will give off inflammable vapors | at which a liquid will burn steadily | at which a liquid will explode | that a liquid must reach before it will flow readily | |
| 11 | 3906 | A | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 88% volumetric efficiency, what is the capacity of this pump? | 205 gpm | 102 gpm | 85 pm | 51 gpm | |
| 11 | 3907 | C | The flash point of a liquid is the _____. | temperature at which it burns freely | temperature at which paraffin wax begins to crystallize out of the solution | lowest temperature at which it vaporizes enough to form an explosive air/vapor mixture | ability of a fuel to ignite upon injection into a diesel engine cylinder | |
| 11 | 3908 | D | The lowest temperature at which the vapors of a flammable liquid will ignite and cause self-sustained combustion in the presence of a spark or flame is the _____. | auto ignition temperature | vaporization temperature | flash point | fire point | |
| 11 | 3909 | D | Oils are usually graded by their service classification and _____. | fire point | flash point | neutralization number | viscosity | |
| 11 | 3910 | B | During operating temperature changes, the ability of a lubricating oil to resist viscosity changes is indicated by a/an _____. | API number | viscosity index number | seconds Saybolt Furol number | seconds Saybolt Universal number | |
| 11 | 3911 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 188 gpm | 94 gpm | 282 gpm | 47 gpm | |
| 11 | 3912 | C | The general service pump is to be used to remove clean water from the No. 4 port aft cargo hold and discharged through the ballast overboard. What are the minimum number of valves that must be opened on both the suction and discharge to accomplish this task? | Four | Five | Six | Seven | GS-0042 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3913 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 39 gpm | 78 gpm | 156 gpm | |
| 11 | 3914 | B | Copper piping has been used in refrigeration systems because _____. | it is creep resistant at low temperatures | it offers greater heat transfer coefficient | iron is corroded by R-12 | leaks are more easily detected in copper | |
| 11 | 3915 | D | Additives commonly found in turbine lubricating oil include _____. | antifoaming agents | oxidation inhibitors | extreme pressure additives | all of the above | |
| 11 | 3916 | B | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 70 gpm | 140 gpm | 47 pm | 35 gpm | |
| 11 | 3917 | D | What is the harmful effect of sulfur in a fuel? | It causes excessive smoking and soot at low firing rates. | It doesn't readily burn when combined with oxygen. | It clogs fuel oil strainers more often. | It forms a corrosive acid when mixed with water or water vapor. | |
| 11 | 3918 | D | A journal rotating in its bearing relies on hydrodynamic principles for lubrication. Under steady load conditions, the journal rotating in the bearing will assume a position _____. | at bearing bottom center | concentric in the bearing | at bearing top center | eccentric in the bearing | |
| 11 | 3919 | A | Which letter represents the gear tooth working depth of the gear set illustrated? | A | B | C | D | GS-0111 |
| 11 | 3920 | A | Which of the following lube oil filters would be considered acceptable for use with today's high detergent additive type oils? | Cotton waste packed in perforated metal containers or cylindrical cartridges. | Cylindrical elements containing fullers earth combined with cellulose. | Foamed polyurethane of the impingement type supported on perforated metal rings. | Chemically treated paper and waste in cartridges. | |
| 11 | 3921 | D | Which of the filters listed will deplete the additives in lubricating oil? | Extended area membrane filter | Cloth bag extractor | Absorbent filter | Adsorbent filter | |
| 11 | 3922 | C | If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 167 gpm | 83 gpm | 42 gpm | 146 gpm | |
| 11 | 3923 | C | When securing a steam reciprocating pump, which of the valves listed should remain open? | Steam supply valve | Steam exhaust valve | Steam cylinder drain valve | Water cylinder drain valve | |
| 11 | 3924 | C | The device used to limit the passage of moisture through a refrigeration system is the _____. | humidifier | aerator | dehydrator | trap | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3925 | A | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 378 gpm | 189 gpm | 441 gpm | 95 gpm | |
| 11 | 3926 | C | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 8" diameter cylinder, a 8" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 263 gpm | 363 gpm | 527 gpm | 132 gpm | |
| 11 | 3927 | A | An automatic temperature controller, with a net output pressure of 15 psi and a full scale range of 15° F, would have a sensitivity ratio of _____. | 1.0 psi/° F | 3.9 psi/° F | 10.0 psi/° F | 12.25 psi/° F | |
| 11 | 3928 | B | As a watchstander you should know that some auxiliaries are not designed to handle steam at boiler pressure. Which of the devices listed is usually fitted in the branch line to deliver steam at the correct pressure? | An orifice | A steam pressure reducing valve | A nozzle valve | A constant quantity regulating valve | |
| 11 | 3929 | C | A mechanical and/or hydraulic action preventing the over- correction of the fuel supply, while producing transient speed droop is called _____. | stability | hunting | compensation | sensitivity | |
| 11 | 3930 | C | A pyrometer is capable of producing a voltage by _____. | chemical reaction | light striking a photo sensitive substance | heating a junction of two dissimilar metals | squeezing crystals of certain substances | |
| 11 | 3931 | D | Before setting out on a three day voyage, Coast Guard Regulations require that the steering gear, whistle, and communications system between the bridge and engine room must be tested within how many hours prior to departure? | 1 hour | 4 hours | 8 hours | 12 hours | |
| 11 | 3932 | A | Coast Guard Regulations (46 CFR) require that any tankship making a voyage 'of over a 48 hour duration' must have certain tests conducted not more than 12 hours prior to leaving port. Meeting this requirement includes the testing of the _____. | means of communication between the bridge and engine room | fire pump relief valve | watertight door to the shaft alley | emergency lighting system | |
| 11 | 3933 | B | Pillar cross-sections of "I", "H", or circular are used in ship construction in locations where there are large expanses, void of intermediate decks and bulkheads, such as in cargo holds and engine rooms. A supporting pillar which becomes bent out of vertical will _____. | not be critical until the vertical angle approaches 15° | loose practically all of its strength as a support | most likely experience shear stress failure if not reinforced immediately | not pose any problem, provided there are no cracked welds connecting it to any adjoining strength members | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3934 | B | The back pressure regulating valve used in a refrigeration system serves to _____. | maintain a constant pressure in the suction line heat exchanger | limit the minimum pressure in the evaporator | limit the maximum pressure in the suction line heat exchanger | maintain a minimum discharge head on the compressor | |
| 11 | 3936 | D | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 141 gpm | 24 gpm | 94 gpm | |
| 11 | 3937 | B | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 8" diameter cylinder, a 13" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 312 gpm | 625 gpm | 507 gpm | 156 gpm | |
| 11 | 3938 | C | The helicopter deck on an offshore drilling unit is required to be fitted with perimeter lights in alternating colors of _____. | red and white | yellow and white | yellow and blue | yellow and red | |
| 11 | 3939 | A | Each drilling unit equipped with helicopter fuel storage tanks must have the tanks installed as far as practicable from the _____. | landing area and sources of vapor ignition | main deck | engine room | drill floor | |
| 11 | 3940 | D | On all mobile offshore drilling units, the deckhead of each accommodation space must be located above _____. | the operating draft | the survival draft | the transit draft | the deepest load line | |
| 11 | 3941 | C | Coast Guard Regulations (46 CFR) require watertight doors in cargo vessels to be _____. | electrically controlled from a remote location | hydraulically powered only for closing | tested at each inspection for certification | tested within 12 hours after leaving port | |
| 11 | 3942 | C | The minimum firefighting equipment to be maintained onboard a tank vessel, can be determined from the _____. | USCG Firefighting Manual for Tank Vessels | USCG Equipment List | vessel's Certificate of Inspection | vessel's current articles | |
| 11 | 3943 | D | The vessel's firefighting equipment is listed on the _____. | Muster List ("Station Bill") | official ship's paper | hull certificate | Certificate of Inspection | |
| 11 | 3944 | B | A solenoid valve used in a refrigeration system should be installed _____. | with the axis of the solenoid horizontal, sensing temperature of the box, and upstream of the thermal expansion valve | upright, sensing temperature of the box, and upstream of the thermal expansion valve | upright, sensing temperature of the box, and downstream of the thermal expansion valve | upright, sensing superheat of the tail coil, and upstream of the thermal expansion valve | |
| 11 | 3945 | A | Where would you find a list of the firefighting equipment required on your vessel? | Certificate of Inspection | Muster List ("Station Bill") | Official logbook | In the captain's desk | |
| 11 | 3946 | A | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 8" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 682 gpm | 341 gpm | 469 gpm | 170 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3947 | C | To determine the number of industrial personnel allowed on a mobile offshore drilling unit, you should check the _____. | Muster List ("Station Bill") | Safety of Life at Sea Certificate | Certificate of Inspection | operations manual | |
| 11 | 3948 | D | To determine the number of inflatable liferafts required on a mobile offshore drilling unit, you should check the _____. | load line certificate | operations manual | Stability letter | Certificate of Inspection | |
| 11 | 3949 | B | According to the regulations for mobile offshore drilling units, 'industrial personnel' are considered to be all persons carried on the MODU for the sole purpose of carrying out the industrial business of the unit, except for _____. | the operator's representative | the crew required by the Certificate of Inspection | the galley personnel | the designated person in charge | |
| 11 | 3950 | A | With regards to shipboard refrigeration systems, after November 14, 1994 it is illegal to _____. | intentionally vent class I or II refrigerants to the atmosphere | work on a refrigeration system without permission of the Officer in Charge Marine Inspection | mix R-12 and R-22 | produce a class I refrigerant | |
| 11 | 3951 | C | If you have a duplex single acting reciprocating pump making 250 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 70% volumetric efficiency, what is the capacity of this pump? | 86 gpm | 29 gpm | 57 gpm | 114 gpm | |
| 11 | 3952 | D | Coast Guard Regulations require that vessels of 500 GT or less, what equipment must be tested weekly? | Storage batteries to provide all power for the vessel and operated under load for emergency lighting. | All vessel internal control system alarms. | Emergency astern operations, regardless of vessel location | Run emergency generator, driven by an internal combustion engine, under load for at least 2 hours. | |
| 11 | 3954 | C | When starting a reciprocating refrigeration compressor that has been shutdown for a period of time, you should manually throttle the _____. | sea water valve | king valve | suction valve | expansion valve | |
| 11 | 3955 | C | The type of gage most commonly used to measure pressure is the _____. | bimetallic type | diaphragm type | bourdon tube type | resistance-temperature type | |
| 11 | 3956 | B | If you have a duplex double acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 80% volumetric efficiency, what is the capacity of this pump? | 94 gpm | 188 gpm | 282 gpm | 47 gpm | |
| 11 | 3957 | C | Purging is the process used to _____. | eliminate moisture from the refrigeration system | separate refrigerant from oil | remove noncondensable gases from the refrigeration system | decrease the total amount of refrigerant in the system | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 3958 | D | Gate valves should not be used for throttling as _____. | the pressure drop will be excessive | air binding will develop | the installation of an equalizing line will be necessary | cutting of the disc will result | |
| 11 | 3962 | D | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 40 gpm | 25 gpm | 101 gpm | 50 gpm | |
| 11 | 3963 | C | A purge connection installed on the refrigerant side of a water cooled condenser is used to _____. | free tubes of accumulated scale | charge the system with refrigerant | remove noncondensable gases | ensure positive air circulation | |
| 11 | 3964 | D | If two compressors must be operated in parallel in order to maintain the box temperatures, a careful watch should be kept on the _____. | discharge pressure gauges of both compressors | suction pressure gauges of both compressors | expansion valves of both evaporator coils | oil levels in both compressor crankcases | |
| 11 | 3965 | D | A gear train is constructed with only two gears: a 2-inch (50.5 mm) diameter driving gear and a driven bull gear to rotate a propeller at 200 rpm. If the speed of the driving gear is 4,800 rpm, what is the diameter of the driven gear? | 6 inches (152.4 mm) | 12 inches (304.8 mm) | 24 inches (609.6 mm) | 48 inches (1219.2 mm) | |
| 11 | 3966 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 9" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 150 gpm | 225 gpm | 300 gpm | 75 gpm | |
| 11 | 3968 | D | The valve shown in the illustration is designed to seal against positive pressure leaks around the valve stem by the use of _____. | a two piece rotating mechanical seal | rubber "O" rings | an external sealing line | adjustable packing gland | GS-0047 |
| 11 | 3971 | C | In order to increase the set point of the control valve illustrated to regulate the output temperature of a lube oil cooler, the part labeled _____. | "K" must be rotated clockwise | "A" must be rotated counterclockwise | "A" must be rotated clockwise | "K" must be rotated counterclockwise | GS-0043 |
| 11 | 3972 | C | In order to increase the set point of the control valve as illustrated, used to regulate the output temperature of a refrigeration condenser, the part labeled _____. | "K" must be rotated clockwise | "A" must be rotated counterclockwise | "A" must be rotated clockwise | "K" must be rotated counterclockwise | GS-0043 |
| 11 | 3973 | A | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 45 gpm | 78 gpm | 22 gpm | 89 gpm | |
| 11 | 3974 | C | When a refrigerated compartment of a multi-box system served by one compressor reaches the correct temperature, the temperature control in that one compartment is achieved by a/an _____. | expansion valve | back pressure regulating valve | solenoid valve | low pressure cutout switch | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3975 | B | In order to decrease the set point of the control valve as illustrated, used to regulate the output temperature of a lube oil cooler, the part labeled _____. | "K" must be rotated clockwise | "A" must be rotated counterclockwise | "A" must be rotated clockwise | "K" must be rotated counterclockwise | GS-0043 |
| 11 | 3976 | D | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 75 gpm | 50 gpm | 38 gpm | 150 gpm | |
| 11 | 3977 | B | In order to decrease the set point of the control valve as illustrated, used to regulate the output temperature of a refrigeration condenser, the part labeled _____. | "K" must be rotated clockwise | "A" must be rotated counterclockwise | "A" must be rotated clockwise | "K" must be rotated counterclockwise | GS-0043 |
| 11 | 3978 | C | Which of the following characteristics is true concerning the device shown in the illustration? | The unit does not require sealing liquid. | The correct rotation of the impeller is counter-clockwise as shown. | The unit completes two suction and discharge cycles in one revolution. | The unit is designed to pump liquids. | GS-0075 |
| 11 | 3980 | D | If the evaporator coil horizontal return line of a container refrigeration system is less than 0.874" (2.21 cm) in diameter, the thermostatic expansion valve sensing bulb should be placed _____. | on the bottom of the line to enable the bulb to absorb the maximum amount of heat | as close as possible to the expansion valve | directly below the point of maximum heat transfer | on the upper surface of the line | |
| 11 | 3981 | A | A turbine exhaust pressure of 14.7 psia is equal to _____. | 00.000 psig | 01.470 psig | 07.350 psig | 29.400 psig | |
| 11 | 3982 | B | In diagram "A", shown in the illustration, what is the displacement of the vessel when it is at a six foot (1.829 m) draft? | 1000 tons (1016.47 t) | 2000 tons (2032.94 t) | 3000 tons (3049.41 t) | 4000 tons (4065.88 t) | SF-0024 |
| 11 | 3984 | C | The thermostatic expansion valve in a refrigeration system opens when the pressure _____. | decreases in the evaporator | decreases in the expansion valve control bulb | increases above the expansion valve diaphragm | increases in the solenoid valve | |
| 11 | 3985 | B | If you have a duplex single acting reciprocating pump making 180 strokes/minute with 5" diameter cylinder, and a 6" stroke with 87% volumetric efficiency, what is the capacity of this pump? | 96 gpm | 80 gpm | 40 gpm | 160 gpm | |
| 11 | 3986 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 77% volumetric efficiency, what is the capacity of this pump? | 80 gpm | 104 gpm | 134 gpm | 225 gpm | |
| 11 | 3987 | C | A reading of 0.250 on a micrometer with a 1 to 2 inch range is equal to _____. | 1/4 inch | 1/2 inch | 1 1/4 inches | 2 1/4 inches | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3989 | B | The disc of a relief valve has an area of 0.75 square inches (483.87 square mm) when seated, and lifts at a set point pressure of 250 psi (1723.50 kPa). When the valve lifts, the area of the disc exposed to pressure increases by 10%. At what pressure does the valve reseat? | 206 psi (1420.16 kPa) | 227 psi (1564.94 kPa) | 231 psi (1592.51 kPa) | 250 psi (1723.50 kPa) | |
| 11 | 3990 | D | The controller set point of an automatic control system is 150° F (65.5° C). The valve closes when the output temperature reaches 160° F (71.1° C), and reopens when the temperature falls below 140° F (60° C). The type of positioning action in this controller is known as _____. | one-position single-point | two-position single-point | one-position differential-gap | two-position differential-gap | |
| 11 | 3991 | C | What is the potential energy of an object weighing 10 pounds (4.54 kg) at a height of 10 feet (3.05 m)? | 10 ft-lb (1.38 kg-m) | 20 ft-lb (2.76 kg-m) | 100 ft-lb (13.83 kg-m) | 1000 ft-lb (138.25 kg-m) | |
| 11 | 3992 | C | An 8-inch (203 mm), globe-type, stop-check valve has been installed in the lube-oil cooler water outlet, with the flow coming in from the top of the disk. This means that _____. | the valve will remain completely open | the valve will prevent back flow | the valve will never permit water flow from the lube oil cooler | the valve will allow the lube oil temperature to be 10° F (5.5° C) cooler than if the valve were properly installed | |
| 11 | 3993 | B | What is the weight of the empty barge shown in the illustration if it is currently drawing one foot of salt water? [ Its length is 40', width is 20', and its height is 10' ] | 10.3 long tons | 22.9 long tons | 102.9 long tons | 205.7 long tons | GS-0157 |
| 11 | 3994 | D | The pressure in a small appliance refrigeration system about to be opened for repair should be _____. | 15 inches Hg | 14.7 psig | 1 to 2 psig | 4 inches Hg vacuum | |
| 11 | 3995 | C | The barge shown in the illustration is 40' X 20' X 10' (12.192 m X 6.096 m X 3.048 m ) and weighs 22.9 long tons (23.28 t) when empty. It has been loaded to a draft of 5 feet (1.524 m) in salt water. How many long tons of cargo have been added? | 19.4 long tons (19.72 t) | 49.1 long tons (49.91 t) | 91.4 long tons (92.91 t) | 94.1 long tons (95.65 t) | GS-0157 |
| 11 | 3996 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 48 gpm | 95 gpm | 104 gpm | 225 gpm | |
| 11 | 3997 | B | The barge shown in the illustration is 40' X 20' X 10' (12.192 m X 6.096 m X 3.048 m) and weighs 22.9 long tons when empty. It has been loaded to a draft of 8 feet in salt water. How many long tons of cargo have been added? | 144.8 long tons | 159.8 long tons | 183.9 long tons | 243.3 long tons | GS-0157 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 3998 | A | What is the lowest permissible flashpoint of the oil used in a hydraulic valve actuating system that operates at 145 psi? (46 CFR) | 200° F | 212° F | 300° F | 315° F | |
| 11 | 3999 | C | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 60 gpm | 150 gpm | 120 gpm | 30 gpm | |
| 11 | 4001 | A | The ball float shown in the illustration is 7 inches in diameter, with an effective float arm of 31.5 inches and floats in a liquid with a specific gravity of 0.95. What is the operating torque of the system? | 94.5 inch-pounds | 100.8 inch-pounds | 121.4 inch-pounds | 220.5 inch-pounds | GS-0158 |
| 11 | 4002 | A | When responding to a 'left rudder' command from the amidships position, which parts of the steering gear system illustrated will be subjected to the highest pressure? | "C" and "F" | "E" and "B" | "F" and "E" | "B" and "C" | GS-0137 |
| 11 | 4003 | B | If you have a duplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 25 gpm | 48 gpm | 76 gpm | 101 gpm | |
| 11 | 4004 | C | The charging of a refrigerating system should be carried out by adding _____. | refrigerant vapor to the receiver only | liquid refrigerant to the low side only | liquid refrigerant to the high side only | liquid refrigerant to the high or low side | |
| 11 | 4005 | B | Why is a hydraulic linear actuator fitted with a cushioning device? | To regulate actuator speed through the entire stroke length. | To slow the action of the piston preventing shock and damage due to hammering effects. | To allow the pump to temporarily operate at a pressure 10% above the relief valve setting without lifting the relief valve. | All of the above. | |
| 11 | 4008 | D | Which of the listed types of soap grease offers the maximum chemical stability and resistance to separation at temperatures between 250° F (121.1° C) and 300° F (148.8° C)? | Lime soap grease | Calcium soap grease | Sodium soap grease | Lithium soap grease | |
| 11 | 4009 | A | When gas welding or burning, the acetylene working pressure must be kept below 15 psi (103.41 kPa) to prevent a possible _____. | explosion | torch backfire | torch flameout | acetone fire | |
| 11 | 4010 | A | In the illustrated system, what pressure will be indicated on the gauge if the load (x) is 8000 lbs (3632 kg) and the piston area is 10 sq. in (64.5 sq. cm)? | 800 psi (56.31 kg/cm2) | 8,000 psi (563.1 kg/cm2) | 80,000 psi (5631.0 kg/cm2) | 80 psi (5.63 kg/cm2) | GS-0062 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4011 | B | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 8000 lbs (3632 kg) and the piston area (y) is 8 sq. in (51.6 sq. cm)? | 640 psi (44.99 kg/cm2) | 1,000 psi (70.3 kg.cm2) | 64,000 psi (449.2 kg/cm2) | 125 psi (8.79 kg/cm2) | GS-0062 |
| 11 | 4012 | C | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 10,000 lbs (4540 kg) and the piston area (y) is 8 sq. in (51.6 sq. cm)? | 10,000 psi (703 kg/cm2) | 80,000 psi (5,624 kg/cm2) | 1,250 psi (87.88 kg/cm2) | 156.25 psi (10.89 kg/cm2) | GS-0062 |
| 11 | 4013 | D | If you have a duplex double acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 66 gpm | 99 gpm | 33 gpm | 132 gpm | |
| 11 | 4014 | C | Leaking discharge reed valves in a refrigeration compressor should be _____. | reground | relapped | replaced | rewound | |
| 11 | 4015 | C | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 702.68 lbs (319.02 kg) and the piston area (y) is 1.117 sq. in (7.21 sq. cm)? | 785 psi (55.19 kg/cm2) | 353 psi (24.82 kg/cm2) | 629 psi (44.22 kg/cm2) | 283 psi (19.89 kg/cm2) | GS-0062 |
| 11 | 4016 | B | If you have a duplex single acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 74 gpm | 147 gpm | 173 gpm | 354 gpm | |
| 11 | 4017 | A | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 291 gpm | 145 gpm | 349 gpm | 73 gpm | |
| 11 | 4018 | D | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 10,000 lb (4,450 kg) and the piston area (y) is 10 sq. in (64.5 sq cm.)? | 10,000 psi (703 kg/cm2) | 100,000 psi (7,030 kg/cm2) | 100 psi (7.03 kg/cm2) | 1,000 psi (70.30 kg/cm2) | GS-0062 |
| 11 | 4019 | B | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 9984 lbs (4532.7 kg) and the piston area is 12 sq. in (77.4 sq. cm)? | 291 psi (20.46 kg/cm2) | 832 psi (58.49 kg/cm2) | 628 psi (44.15 kg/cm2) | 220 psi (15.47 kg/cm2) | GS-0062 |
| 11 | 4020 | A | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 508 pound load stationary would be _____. | 127 lbs. | 145 lbs. | 169 lbs. | 203 lbs. | GS-0110 |
| 11 | 4021 | A | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 2,530 lbs (1,148.48 kg) and the area of the piston (y) is 38 sq. in (244.8 sq. cm)? | 66.66 psi (4.69 kg/cm2) | 8000 psi (562.4 kg/cm2) | 55.55 psi (3.91 kg/cm2) | 96000 psi (6,748.8 kg/cm2) | GS-0062 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4022 | A | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 376 pound load stationary would be _____. | 94 lbs. | 119 lbs. | 125 lbs. | 150 lbs. | GS-0110 |
| 11 | 4023 | D | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 632 lb (286.9 kg) and the piston area (y) is 1.5 sq. in (9.6 sq. cm)? | 255 psi (17.93 kg/cm2) | 565 psi (39.72 kg/cm2) | 942 psi (66.22 kg/cm2) | 424 psi (29.81 kg/cm2) | GS-0062 |
| 11 | 4024 | B | What is the color of the flame produced by a halide torch when there is no refrigerant present? | Orange | Blue | Red | Green | |
| 11 | 4027 | A | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 5" diameter cylinder, a 4" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 101 gpm | 50 gpm | 40 gpm | 25 gpm | |
| 11 | 4028 | A | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 758.7 lbs (344 kg) and the piston area (y) is 1.25 sq. in (8.0 sq. cm)? | 611 psi (42.95 kg/cm2) | 471 psi (33.11 kg/cm2) | 942 psi (66.22 kg/cm2) | 306 psi (921.51 kg/cm2) | GS-0062 |
| 11 | 4029 | B | In the illustrated system, what pressure will be indicated on the gage if the load (x) is 500 lbs (227 kg) and the piston area (y) is 0.63 sq. in. (4 sq. cm.] | 318 psi (22.63 kg/cm2) | 796 psi (55.96 kg/cm2) | 1,263.49 psi (88.8 kg/cm2) | 785 psi (55.19 kg/cm2) | GS-0062 |
| 11 | 4030 | D | If you find the pressure of a R-12 refrigeration system to be worked on is 0 psig, _____. | only recover the vapor refrigerant | only recover the liquid refrigerant | recover liquid and vapor refrigerant and have it reclaimed | do not recover the refrigerant | |
| 11 | 4033 | C | Deck beams on a MODU are generally spaced at equal intervals and run _____. | longitudinally | vertically | transversely | intermittently | |
| 11 | 4034 | A | In radiographic inspections, the standard test piece included in every radiograph provides an effective check on the overall quality and bears a numerical relation to the thickness of the part being tested. This piece is called a/an _____. | penetrometer | intensimeter | lead filter gauge | exposure screen | |
| 11 | 4035 | A | The safety feature which assists the hydraulic crane circuit illustrated to maintain the required boom angle is a function of item _____. | 18 | 1 | 6 | 5 | GS-0161 |
| 11 | 4038 | B | According to Coast Guard Regulations (46 CFR), all pressure vessels other than unfired steam boilers shall be protected by pressure-relieving devices that prevent the pressure from rising more than _____ above the maximum allowable working pressure. | 5 percent | 10 percent | 15 percent | 20 percent | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4039 | C | Which of the tolerances listed is allowed on the outside diameter of the bushing illustrated? | .050 inch | .003 inch | .0005 inch | 1.2015 inches | GS-0017 |
| 11 | 4040 | B | The movement of steam piping, as a result of changes in temperature, is best compensated for by the use of _____. | union joints | expansion joints | flexitallic gaskets | rigid brackets | |
| 11 | 4041 | B | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 45 gpm | 89 gpm | 78 gpm | 22 gpm | |
| 11 | 4042 | D | Aboard tankers, the term Category "A" Machinery Space, as defined by Coast Guard Regulations (46 CFR) means any space including trunks and ducts to that space containing _____. | internal combustion machinery used for main propulsion | one or more oil fired boilers or oil fuel units | internal combustion machinery used for purposes other than main propulsion where the total collective power is at least 500 brake horsepower | all of the above | |
| 11 | 4043 | D | In the illustration shown, which of the listed components would be removed or disconnected last during cleaning and inspection of the tank internals? | Valve, item "5" | Weir, item "7" | Coalescer bed, item "9" | coalescer bed, item "12" | GS-0153 |
| 11 | 4044 | B | Which of the following conditions is true concerning a radiograph taken on a large welded piping repair? | A discontinuity in the form of a crack would appear as a thin light line against the dark background of the film. | Porosity, a discontinuity caused by entrapped gas, would occur as various sized round dark spots. | As long as the plane of a crack is not in direct alignment with the direction of radiation, detection is certain. | All of the above. | |
| 11 | 4045 | A | The steam coils in a high pressure evaporator used for saltwater service should be descaled with _____. | a wire brush | a needle gun | a chipping hammer | soap and water | |
| 11 | 4046 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 53.7 gpm | 59.6 gpm | 62.6 gpm | 119.2 gpm | |
| 11 | 4047 | D | The ash content of a fuel oil is significant to the operating engineer because it _____. | indicates the quantity of energy released by burning a unit amount of fuel | is useful for determining proper atomization temperatures | reflects the overall thermal efficiency of the fuel oil service systems | is an indication of the amount of noncombustible material present in the oil | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4048 | D | Dirt should not be allowed to contaminate a grease lubricant because the _____. | bearings will leak oil excessively | dirt will cause corrosion of bearing | grease will become inflammable | dirt is very abrasive when mixed with grease | |
| 11 | 4049 | D | The lubrication of a precision high speed bearing depends upon a system that produces _____. | high detergent oil with pressure additives | constant viscosity lubrication | a minimum of 15 psi to all parts of the system | adequate quantity at sufficient pressure | |
| 11 | 4050 | B | When the rotating shaft frequency and the natural vibrating frequency become synchronized at a particular speed, that speed is known as the _____. | breakaway speed | critical speed | synchronous speed | sympathetic speed | |
| 11 | 4051 | B | The function of the section labeled "C" in the device illustrated is to provide a/an _____. | passage for sealing liquid to enter the pump | passage for gas to be discharged | bearing surface for the rotor shaft | area for pump packing | GS-0075 |
| 11 | 4052 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 69 gpm | 83 gpm | 139 gpm | 35 gpm | |
| 11 | 4053 | C | Which of the following statements represents the last step to be followed when replacing the power element of the device shown in the illustration? | Shorten the capillary tubing. | Insulate the sensing bulb. | Adjust the TXV for proper evaporator tail coil superheat. | Reset the compressor cut-in setting. | RA-0007 |
| 11 | 4054 | D | Tubing connections for refrigeration systems may be made by _____. | flaring | soldering | silver brazing | all of the above | |
| 11 | 4055 | B | The compressor in figure 4, if permitted to operate as illustrated will _____. | damage the bearings of the compressor | damage the bearings of the driving motor | cause the compressor to use more oil | result in a constant enlargement of the clearance expansion volume | GS-0159 |
| 11 | 4058 | B | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 4.5 gpm | 9.0 gpm | 13.5 gpm | 18 gpm | |
| 11 | 4060 | C | Coast Guard Regulations (46 CFR) permit the interval required for drawing certain tail shafts to be extended by the _____. | Vessel Operator's senior Port Engineer | Senior ABS surveyor | Commandant (G-MOC) | U.S. Maritime Administration | |
| 11 | 4061 | C | When metal is tempered, it becomes _____. | harder | less tough | less brittle | more brittle | |
| 11 | 4062 | C | When metal is tempered, it becomes _____. | harder | less flexible | less brittle | more brittle | |
| 11 | 4063 | D | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 41 gpm | 52 gpm | 21 gpm | 83 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4064 | A | In addition to removing water from a refrigerant, most dehydrators also effectively remove entrapped _____. | acid | air | dichlorodifluoromethane | desiccant | |
| 11 | 4065 | D | Which of the following statements is true concerning the pump characteristics shown in the illustration? | The pump discharge head when operating at maximum efficiency is approximately 132 feet | Operating the pump at maximum efficiency would require approximately 58 horsepower | The pump capacity would be approximately 1480 GPM when operating at maximum efficiency | All of the above | GS-0138 |
| 11 | 4066 | C | Which of the following statements is true concerning the pump characteristics shown in the illustration? | Maximum pump horsepower is developed between 1600 and 1800 GPM. | Maximum pump dynamic discharge pressure is approximately 160 PSI | Maximum efficiency occurs when the pump is operating between a 120 foot and 140 foot head. | All of the above | GS-0138 |
| 11 | 4068 | C | Which of the following statements is true concerning the illustration? | The device is mainly used to indicate the superheat temperature of the refrigerant in the system. | Gage #7 is usually colored red. | Gage #7 would be classified as a compound gage. | Gage #6 is usually colored blue. | RA-0001 |
| 11 | 4069 | A | Using the device shown in the illustration, which of the following statements is true when adding a charge to a refrigeration system. | Fitting #3 should be connected to the refrigerant cylinder | Fitting #4 should be connected to the system low side | Fitting #2 should be connected to the system high side | All of the above | RA-0001 |
| 11 | 4070 | B | Which of the following statements is true concerning the illustration? | Valves 1 and 5 must both be opened to read system pressures on the respective gages. | Closing valve 1 isolates line #2 from line #3 | Closing valve 1 isolates gage #7 from line 2. | Opening and back seating valve 1 isolates gage #7 from line 2. | RA-0001 |
| 11 | 4071 | D | Which of the following is true concerning the system shown in the following illustration? | The system cannot control the relative humidity of the conditioned air | The reheaters are not used when in the cooling mode | The supply fan discharges directly into a chilling unit for the final stage of air temperature modulation | The dry bulb room temperature is controlled by a hot water reheater | RA-0009 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4072 | C | Which of the following is true concerning the system shown in the following illustration? | The system represents the Freon circuit of a direct type air conditioning unit. | A room thermostat controls the wet bulb temperature of the space. | The air fan discharge temperature determines the amount of water flow circulating through the cooling coils. | Heat load will increase by increasing the amount of recirculated air. | RA-0009 |
| 11 | 4073 | B | From the characteristics shown in the illustration, what would be the approximate shut-off head pressure of the centrifugal salt water pump? | 58 psi | 71 psi | 130 psi | 360 psi | GS-0138 |
| 11 | 4074 | A | Which of the devices listed is used to limit frosting of evaporator coils on multiple box installations served by one compressor? | Back pressure control valve | Automatic expansion valve | Capillary tube | Solenoid valve | |
| 11 | 4075 | A | If you have a duplex double acting reciprocating pump making 160 strokes/minute with 3" diameter cylinder, and a 4" stroke with 97% volumetric efficiency, what is the capacity of this pump? | 38 gpm | 19 gpm | 25 gpm | 9 gpm | |
| 11 | 4076 | D | Which of the following characteristics is true concerning the device shown in the illustration? | The unit does not require sealing liquid. | The correct rotation of the impeller is counter-clockwise as shown. | The unit is designed to pump high viscosity oil. | The unit is designed to pump gases. | GS-0075 |
| 11 | 4078 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute with 4" diameter cylinder, and a 11" stroke with 89% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 181 gpm | 249 gpm | 45 gpm | |
| 11 | 4079 | C | A "thirty pound" steel plate would be _____. | 3/8" thick | 1/2" thick | 3/4" thick | 1" thick | |
| 11 | 4080 | B | A "twenty pound" steel plate would be _____. | 3/8" thick | 1/2" thick | 3/4" thick | 1" thick | |
| 11 | 4081 | D | According to Title 33 CFR, of the equipment listed below, which equipment must be tested NOT more than 12 hours prior to getting underway from a U.S. port when the voyage is to be of 48 hours or greater duration? | Steering gear | Emergency generator | All internal vessel control communications systems | All of the above | |
| 11 | 4083 | D | A trainee is on board your vessel and will need to be assessed in the demonstration of practical skills. Ideally you should assess their skill _____. | before they have received training | immediately after they have received training | after they have observed the skill demonstrated once | after they have received training and personally practiced the skill | |
| 11 | 4084 | C | When the temperature in a refrigerated space rises above its normal set point, which of the listed actions should occur FIRST? | The thermal expansion valve will close. | The compressor will start. | The solenoid valve will open. | The automatic defrost timer will activate. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4086 | B | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 95 gpm | 189 gpm | 110 gpm | 47 gpm | |
| 11 | 4088 | B | In order to assess each trainee in the performance of a practical demonstration, the assessor should _____. | create a unique set of subjective questions for each trainee | refer to a checklist that represents the skill process as required on board the vessel | evaluate according to their discretion, simply by their ability to "tell" when a candidate is performing well | sign off the remaining half of all skills to be demonstrated based upon the success of the first half of the skill demonstration | |
| 11 | 4089 | A | When a ships officer signs off a trainee's successful completion of one or more practical demonstrations, they are attesting to the trainee's_____. | ability to perform the practical demonstration only at the time the skill was assessed | overall competency | ability to perform the specific task not only at the time of demonstration, but also for the future | knowledge of how to perform the task and nothing more | |
| 11 | 4090 | A | The assessment of a trainee's practical demonstration of skills should be conducted _____. | within the normal routine of vessel's operation | at any time of the day, particularly outside normal operations | only when the trainee first arrives on board, and preferably within the first few days | within the last six hours that the trainee will be on board the vessel | |
| 11 | 4091 | D | A licensed officer designated to certify a trainee's performance of a practical demonstration should sign off when _____. | another license officer has witnessed the performance of the demonstration | the majority of any portion of the skill has been demonstrated | the pre-brief with the trainee has been completed | the entire practical demonstration has been successfully completed and personally observed by the licensed officer | |
| 11 | 4092 | D | One function of the model checklists provided for the conduct of a practical demonstration is to promote _____. | repeatability in observing the assessment of the task to be demonstrated | a consistent standard in the assessment of the task to be demonstrated | a methodology by which elements of the missed practical demonstration can pointed out to the trainee | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4093 | B | When a training program provides a company and/or its vessels the model checklists by which a trainee will be deemed proficient, the ship's officers should _____. | use each specific checklist as it was presented and without deviation | modify the checklist to reflect the specifics of the equipment, systems, and operating parameters for the vessel upon which the demonstration is being conducted | totally disregard the model checklist and develop their own based on their own vessel standards | all of the above | |
| 11 | 4094 | C | Unless designed for such operation, two compressors should not be operated in parallel in a refrigeration system because the _____. | operation of two compressors will overload the expansion valve | condenser pressure will be too high causing condenser failure | lubricating oil may be transferred from one compressor to the other | evaporator would fail due to low suction pressure | |
| 11 | 4095 | B | If the discharge valves used in a refrigeration compressor are leaking badly, _____. | the reeds should be reground | the reeds should be replaced | the low side pressure will indicate below normal | the high pressure cut-out setting should be lowered | |
| 11 | 4096 | B | If a hole were to form in the division plate between stages of a flash type evaporator _____.<br>I. 2nd stage vacuum would increase<br>II. vaporization of the feed water would continue | I only | II only | Both I and II | Neither I nor II | |
| 11 | 4097 | C | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 74 gpm | 62 gpm | 148 gpm | 37 gpm | |
| 11 | 4098 | A | The result of a blow delivered by a heavy sea causing rapid vibrations of the elastic portions of the ships hull is identified as _____. | pounding | pitching | hogging | sagging | |
| 11 | 4099 | D | A refrigeration compressor used in a multi-box refrigeration system, is designed with six of its eight cylinders able to be controlled for variable load conditions. If all of the reefer boxes have just recently been activated, what percentage of the total number of compressor cylinders will be unloaded after start-up? | 100% | 50% | 25% | 0% | |
| 11 | 4101 | B | The exploded view of the drawing shown in the illustration is intended to show the _____. | total number of parts in the assembled component | parts aligned for the correct order of reassembly | disassembled component in a one point perspective view | parts without using hidden lines | GS-0025 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4102 | C | While on watch, you notice that a significant amount of water is flowing out of the packing box from a centrifugal salt water pump which had been recently overhauled. You tighten the packing gland evenly by nearly a half inch, yet the amount of water output from the packing box does not diminish. You should _____. | make no further adjustments and continue to make a round of the engine room | take up evenly on the packing gland nuts another 2 or 3 full turns | back off on the nuts by the same amount to prevent scoring of the shaft sleeve and notify the next watch of the condition | shut off the sealing line valves to diminish the outflow of water from the packing box | |
| 11 | 4103 | B | In the hydraulic anchor windlass system illustrated, replenishment pump fluid flow is provided to the main system for automatic replenishment and to _____. | release the spring brake | provide actuating fluid flow to the horsepower torque limiter | shift valve "L" to line up the fluid motor relief valve | move stored oil across the indicated filter to maintain the oil in a water free condition | GS-0160 |
| 11 | 4104 | C | A thermal expansion valve installed in a refrigeration system is controlled by _____. | the solenoid valve energizing coil | regulating the king valve | a thermal bulb on the evaporator coil | an electrically operated controller | |
| 11 | 4105 | D | The barge shown in the illustration is 40' X 20' X 10' and weighs 22.8 long tons when empty. What would be the maximum amount of cargo that may be loaded on the barge in salt water so that the maximum draft does not exceed 8 feet. | 100 long tons | 120 long tons | 140 long tons | 160 long tons | GS-0157 |
| 11 | 4106 | D | While on watch, you notice that a significant amount of water is flowing out of the packing box from a centrifugal salt water pump which had been recently overhauled. You tighten the packing gland evenly by nearly a half inch, yet the amount of water output from the packing box does not diminish. You should _____. | make no further adjustments and continue to make a round of the engine room | take up evenly on the packing gland nuts another 2 or 3 full turns | shut off the seal line valves to diminish the outflow of water from the packing box | change over to the stand-by pump and inform the next watch | |
| 11 | 4107 | B | The ball float shown in the illustration is 9 inches in diameter, with an effective float arm of 27 inches and floats in a liquid with a specific gravity of 1.0. If the distance "L" equals 9 inches, what will be the force available at point "X"? | 6.6 pounds | 20.1 pounds | 28.2 pounds | 43.5 pounds | GS-0158 |
| 11 | 4108 | C | At what temperature would the reading on the Fahrenheit scale and the Centigrade scale be identical? | 16 degrees above zero | 32 degrees below zero | 40 degrees below zero | 64 degrees below zero | |
| 11 | 4110 | D | The stud and nut pictured just below "B" is used to _____. | prevent the shaft sleeve from sliding | hold the impeller onto the shaft | maintain the two shaft sections together during rotation | hold the packing gland in place | GS-0129 |
| 11 | 4111 | D | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 73 gpm | 87 gpm | 140 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4113 | C | A temperature reading of 72 degrees on the Fahrenheit scale would correspond to what temperature on the centigrade scale? | 18 degrees | 20 degrees | 22 degrees | 24 degrees | |
| 11 | 4115 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 132 gpm | 526 gpm | 263 gpm | 614 gpm | |
| 11 | 4116 | B | Which of the following statements is true concerning the pump characteristics shown in the illustration? | Maximum efficiency is achieved when the pump is operating at a capacity of approximately 900 GPM | Operating the pump at a capacity of 1600 GPM would require approximately 60 horsepower | When operating at a 160 foot discharge head, the pump is running at maximum efficiency | All of the above | GS-0138 |
| 11 | 4117 | B | Which of the filters listed will deplete the additives in lubricating oil? | Abundant filter | Adsorbent filter | Cloth bag extractor | Extended area membrane filter | |
| 11 | 4118 | D | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 672 gpm | 97 gpm | 390 gpm | 195 gpm | |
| 11 | 4119 | A | Which of the filters listed will deplete the additives in lubricating oil? | Adsorbent filter | Cloth bag extractor | Fine wire mesh | Extended area membrane filter | |
| 11 | 4120 | D | If your vessel burns 3 tons of fuel per hour at 19 knots, how many tons per hour will it burn at 15 knots? | 5.3 tons | 2.4 tons | 1.9 tons | 1.5 tons | |
| 11 | 4121 | C | Which of the filters listed will deplete the additives in lubricating oil? | Fine copper screen | Extended area membrane filter | Adsorbent filter | Cloth bag extractor | |
| 11 | 4122 | A | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 108 gpm | 54 gpm | 36 gpm | 27 gpm | |
| 11 | 4123 | C | Energy existing in a system as a result of the relative velocities of the objects is defined as _____. | potential energy | pressure energy | kinetic energy | relative energy | |
| 11 | 4125 | C | Mechanical energy in transition is referred to as _____. | enthalpy | heat | work | velocity | |
| 11 | 4126 | D | Using the device shown in the illustration, which of the following statements is true when adding a charge to a refrigeration system? | Fitting #3 should be connected to the refrigerant cylinder. | Fitting #2 should be connected to the system low side. | Fitting #4 should be connected to the system high side. | All of the above. | RA-0001 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4127 | D | Machinery with ball bearings designed to be filled with grease should have the relief plug temporarily removed while grease is being added. This plug should remain out until the machinery has been operated and sufficiently warmed up to ensure that _____. | the bearing does not shift position on the shaft | dirt and grit are flushed from the bearing housing | all air pockets are vented from the grease | all excess grease is expelled from the housing | |
| 11 | 4128 | C | Theoretically, if the "B" end of the hydraulic transmission illustrated were provided with a variable position tilting box, and the "A" end displacement were to be constant, the _____. | speed output of the "B" end would decrease in proportion as the tilting box would approach zero stroke | available horsepower at the "B" end would increase in proportion as the tilting box would approach zero stroke | available torque at the "B" end would increase in proportion to the increasing angle of the "B" end tilt box | speed output of the "B" would increase in proportion to increasing the "B" end tilting box angle | GS-0057 |
| 11 | 4129 | D | What is the reading of the vernier micrometer caliper scale shown in figure "E" in the illustration? | 0.2997 inch | 0.3007 inch | 0.3017 inch | 0.3107 inch | GS-0091 |
| 11 | 4130 | C | The reading on the micrometer scale shown in figure "C" in the illustration is _____. | 0.301 inch | 0.324 inch | 0.349 inch | 0.351 inch | GS-0013 |
| 11 | 4131 | C | Which of the following terms is used to indicate that additional BTU's will result in a temperature change? | Critical point heat | Sublimation heat | Sensible heat | Latent heat | |
| 11 | 4132 | B | A decision has been made to change out the lube oil in a vessel's main propulsion unit ahead of the scheduled maintenance period. Which of the following statements is true concerning the reason for this decision? | The amount of detergent additives has decreased. | The viscosity of the oil has increased in addition to a decided rise in the neutralization number. | The alkalinity of the oil has decreased. | The neutralization number has decreased below minimum levels. | |
| 11 | 4133 | B | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 82 gpm | 164 gpm | 132 gpm | 41 gpm | |
| 11 | 4134 | D | A compound gage is used for measuring pressures both above and below _____. | absolute pressure | latent pressure | flow pressure | atmospheric pressure | |
| 11 | 4136 | D | The angle "A" shown on the illustrated lathe tool bit is properly called the _____. | working relief angle | side relief angle | side rake angle | nose angle | GS-0164 |
| 11 | 4137 | A | The angle "D" shown on the illustrated lathe tool bit is properly called the _____. | working relief angle | side relief angle | side rake angle | nose angle | GS-0164 |
| 11 | 4138 | C | The angle "B" shown on the illustrated lathe tool bit is properly called the _____. | working relief angle | side relief angle | side rake angle | nose angle | GS-0164 |
| 11 | 4139 | B | The angle "C" shown on the illustrated lathe tool bit is properly called the _____. | working relief angle | side relief angle | side rake angle | nose angle | GS-0164 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4140 | D | The function of the hydraulic telemotor transmitter used in an electro-hydraulic steering gear system is to _____. | transmit the rudder angle to the bridge indicator | prevent the control linkage from striking the stops when hard over | automatically purge all entrained air from the system | send hydraulic signals to the receiving unit | |
| 11 | 4144 | D | When you find a small refrigerant leak with a halide torch, the color of the torch flame will be _____. | orange | blue | white | green | |
| 11 | 4145 | C | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 9" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 84 gpm | 152 gpm | 169 gpm | 42 gpm | |
| 11 | 4151 | A | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 95 gpm | 38 gpm | 30 gpm | 15 gpm | |
| 11 | 4153 | A | If you have a duplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 78 gpm | 176 gpm | 39 gpm | 157 gpm | |
| 11 | 4155 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 6" diameter cylinder, a 11" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 149 gpm | 273 gpm | 74 gpm | 297 gpm | |
| 11 | 4156 | D | If the high side pressure of a R-134A refrigeration system is maintained at approximately 124 psig in the system receiver, which of the listed values would approximately represent its saturation temperature? | 5° F | 20° F | 50° F | 100° F | RA-0023 |
| 11 | 4157 | B | An orifice-check valve placed in a hydraulic system is used to _____. | regulate the fluid flow in either direction | restrict movement of hydraulic fluid in one direction, but allow free movement in the other direction | allow free movement of hydraulic fluid in both directions | allows only a restricted fluid flow in one direction | |
| 11 | 4158 | A | From the illustration shown, what would be the normal procedure to make adjustments to angle "E"? | Rock the tool holder on its base. | Remove the tool bit and regrind. | Extend or retract the tool bit in the tool holder. | Use the Tailstock Offset method. | GS-0164 |
| 11 | 4159 | C | Structural members used to support and transmit the downward force of the load and distribute that force over a large area, are called _____. | stringers | gussets | stanchions | all of the above | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4161 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 83 gpm | 21 gpm | 41 gpm | 52 gpm | |
| 11 | 4162 | A | The propeller blade pitch angle change is caused by axial movement of what component in the hub body assembly? | The crosshead. | The sliding block. | The crankpin ring. | The internal ring gear. | GS-0172 |
| 11 | 4164 | D | A purge recovery system is used in a centrifugal air conditioning or refrigeration system to _____. | purge lube oil from the liquid refrigerant | recover water purged from the system | separate foul gases from the receiver | purge noncondensable gases without losing refrigerant | |
| 11 | 4165 | B | If you have a duplex single acting reciprocating pump making 110 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 79% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 52 gpm | 26 gpm | 103 gpm | |
| 11 | 4166 | A | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 158 gpm | 79 gpm | 237 gpm | 39 gpm | |
| 11 | 4167 | B | The hub purge valve serves to relieve pressure in the forward chamber of the servomotor cylinder in a CPP system when what situation occurs? | The propeller is stroked beyond its full ahead pitch limits. | The propeller is stroked beyond its full astern limits. | During periods thrust loading. | During periods of high-pressure oil surge. | GS-0172 |
| 11 | 4168 | B | The function of the head tank on a CPP system is to _____. | provide extra oil for maintaining the normal sump level | prevent seawater from entering the hydraulic system when it is secured | provide static head pressure for maintaining proper control oil pressure | provide dynamic head pressure for maintaining proper high-pressure oil pressure | |
| 11 | 4169 | B | The direction in which the control oil servo valve opens and directs control oil to the oil distribution (OD) box piston in a CPP system is determined by the command _____. | signal timing input | signal polarity input | feedback timing. | feedback polarity | GS-0170 |
| 11 | 4171 | D | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "19", and the "FRONT VIEW" is indicated by figure "23", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "17" | Figure "12" | Figure "3" | Figure "8" | GS-0165 |
| 11 | 4172 | D | If you have a duplex double acting reciprocating pump making 230 strokes/minute with 4" diameter cylinder, and a 7" stroke with 78% volumetric efficiency, what is the capacity of this pump? | 68 gpm | 120 gpm | 34 gpm | 137 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4173 | B | A micrometer scale reading is indicated as 0.137 inches and is represented in the illustration by _____. | Figure D | Figure E | Figure F | Figure I | GS-0013 |
| 11 | 4174 | C | Double trunk pistons are used in some refrigeration compressors to reduce refrigerant boil off by _____. | increasing compressor volumetric efficiency | producing higher compression pressures | minimizing free contact between refrigerant and oil in the crankcase | eliminating the need for a shaft seal | |
| 11 | 4175 | C | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "1", and the "FRONT VIEW" is indicated by figure "9", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "13" | Figure "6" | Figure "20" | Figure "5" | GS-0165 |
| 11 | 4176 | B | As shown in the illustration, if figure "21" indicates the "TOP VIEW" of an orthographic projection, and figure "11" indicates the "FRONT VIEW", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "2" | Figure "10" | Figure "8" | Figure "15" | GS-0165 |
| 11 | 4177 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 69 gpm | 139 gpm | 83 gpm | 35 gpm | |
| 11 | 4178 | A | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "12", and the "FRONT VIEW" is indicated by figure "3", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "17" | Figure "23" | Figure "9" | Figure "8" | GS-0165 |
| 11 | 4179 | B | Flux is used when soldering, in order to _____. | decrease the melting point of the solder | decrease the surface tension of the solder | ensure proper tinning | control the soldering iron temperature | |
| 11 | 4181 | D | In the circle illustrated, the circumference is 48.62 feet. What is the area of the shaded portion? | 14.1 square feet | 15.1 square feet | 16.1 square feet | 17.1 square feet | GS-0134 |
| 11 | 4182 | C | An additive used to improve the ability of a lube oil to reduce friction in hypoid gear applications is known as a/an _____. | suppressant additive | dispersant additive | extreme pressure additive | viscosity improver additive | |
| 11 | 4184 | B | Which of the following statements is true concerning the use of dehydrators in refrigeration systems? | Dehydrators must be used continuously. | Dehydrators are usually installed in the liquid line. | Dehydrators are used when pumping down the system. | Dehydrators are used when purging the system. | |
| 11 | 4185 | D | The energy associated with atoms forming molecules is known as _____. | kinetic energy | potential energy | mechanical energy | chemical energy | |
| 11 | 4186 | C | Which lathe tool shown in the illustration would best be used on a work piece to perform a left hand facing operation? | P | V | Q | R | GS-0090 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4187 | A | What is the reading of the vernier caliper scale shown in figure "A" in the illustration? | 3.890 inch | 3.915 inch | 4.215 inch | 4.890 inch | GS-0092 |
| 11 | 4188 | C | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 226 gpm | 113 gpm | 57 gpm | 249 gpm | |
| 11 | 4189 | B | Bronze metal is an alloy composed mainly of _____. | copper and zinc | copper and tin | tin and lead | iron and copper | |
| 11 | 4190 | D | Monel metal is an alloy composed mainly of _____. | copper and tin | bronze and tin | zinc and copper | nickel and copper | |
| 11 | 4191 | C | Brass metal is an alloy composed mainly of _____. | tin and zinc | copper and tin | copper and zinc | silicon and lead | |
| 11 | 4192 | A | Stainless steel is an alloy composed mainly of _____. | chromium and steel | iron and steel | copper and steel | brass and steel | |
| 11 | 4193 | B | What would be the result of throttling the suction valve to the point where the flow was less than that recommended by a centrifugal pump?<br>I. The designed total net head would be reduced.<br>II. The pump would begin to cavitate. | I only | II only | Both I and II | Neither I nor II | |
| 11 | 4194 | D | A measurement of .2344 inches is equal to _____. | 11/32 inches | 15/32 inches | 11/64 inches | 15/64 inches | |
| 11 | 4195 | B | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 9" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 275 gpm | 214 gpm | 107 gpm | 427 gpm | |
| 11 | 4196 | A | The device shown in the illustration is known as a/an _____. | viscosimeter | flow meter | Reid vapor pressure analyzer | Pensky-Martens cup | GS-0069 |
| 11 | 4197 | D | The rupture disc on a low pressure centrifugal refrigeration unit is used as an over pressure protection device for the _____. | economizer | condenser | compressor | chiller barrel | |
| 11 | 4198 | D | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "13", and the "FRONT VIEW" is indicated by figure "15", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "11" | Figure "16" | Figure "2" | Figure "15" | GS-0165 |
| 11 | 4199 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 74 gpm | 37 gpm | 123 gpm | 18 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4200 | A | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 19.8 gpm | 39.7 gpm | 59.5 gpm | 79.4 gpm | |
| 11 | 4201 | A | Regarding the hydraulic hose installation illustrated, the hose _____. | will expand under pressure to the left of center with flow from left to right | will expand under pressure to the right of center with flow from left to right | is properly installed | can pull away from the right hand pipe fitting with flow from left to right | GS-0064 |
| 11 | 4203 | C | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 154 gpm | 165 gpm | 309 gpm | 325 gpm | |
| 11 | 4204 | A | When a refrigerated space reaches the desired temperature in a multi-box refrigeration system, which of the listed actions will occur FIRST? | The solenoid valve will close. | The expansion valve will open. | The low pressure cutout switch will stop the compressor. | The high pressure cutout switch will stop the compressor. | |
| 11 | 4205 | A | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 4" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 24 gpm | 94 gpm | 47 gpm | 59 gpm | |
| 11 | 4206 | C | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "15", and the "FRONT VIEW" is indicated by figure "18", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "5" | Figure "6" | Figure "10" | Figure "16" | GS-0165 |
| 11 | 4207 | B | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "2", and the "FRONT VIEW" is indicated by figure "21", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "3" | Figure "2" | Figure "17" | Figure "8" | GS-0165 |
| 11 | 4208 | B | Which of the figures illustrated correctly identifies the position of the journal shortly after it has begun to rotate? | A | B | C | D | GS-0121 |
| 11 | 4209 | C | The relative humidity is 50% and the dry bulb temperature is 90° F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature. | 2° F | 4° F | 6° F | 12° F | RA-0021 |
| 11 | 4210 | B | The relative humidity is 30% and the dry bulb temperature is 90° F. Using the information shown in the illustration, determine the difference between the dew point and wet bulb temperature. | 6.5° F | 12.5° F | 54.8° F | 67.3° F | RA-0021 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4211 | D | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 30 gpm | 55 gpm | 104 gpm | 119 gpm | |
| 11 | 4213 | B | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 3" diameter cylinder, a 4" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 43 gpm | 11 gpm | 21 gpm | 28 gpm | |
| 11 | 4214 | B | In a water-cooled refrigeration system, the condenser cooling water regulating valve is controlled by _____. | temperature of the cooling water | refrigerant pressure | amount of refrigerant in the system | temperature of the refrigerant after compression | |
| 11 | 4215 | B | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 227 gpm | 453 gpm | 491 gpm | |
| 11 | 4216 | C | Which one of the following statements describes the throttling characteristics of a typical globe valve? | The first third of the valve disk travel in the open direction will result in approximately one-third of full flow rate. | The first third of valve disk travel in the open direction will produce a smaller increase in flow rate than the last third of valve disk travel. | The first third of valve disk travel in the open direction will produce a greater increase in flow rate than the last third of valve disk travel. | The first two-thirds of valve disk travel in the open direction will produce approximately the same increase in flow rate as the last third of valve disk travel. | |
| 11 | 4217 | D | When comparing globe valves to gate valves, globe valves: | are less effective at throttling flow. | are less effective as pressure regulating valves | produce a smaller pressure decrease when fully opened. | require less force to open against large differential pressures. | |
| 11 | 4218 | B | When comparing gate valves to globe valves, gate valves _____. | are more effective at throttling flow. | require more force to open against large differential pressures. | produce a larger pressure decrease when fully open. | are more effective as pressure regulating valves. | |
| 11 | 4219 | C | To "verify" the position of a fully opened manual valve in an operating system, the operator should operate the valve hand wheel _____. | in the open direction until the valve is back seated one-half turn | to fully close the valve, then open the valve to the fully open position. | in the closed direction, then open the valve to its previously open position. | to open the valve until it touches the backseat, then close the valve to the desired position. | |
| 11 | 4220 | D | The reading indicated on a vernier micrometer caliper scale is .2470 inches. Which of the figures in the illustration represents this reading? | Figure A | Figure E | Figure F | Figure G | GS-0083 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4221 | B | Assuming oil and water flow rates remain the same, what would be the effect of scale formation occurring on the inside of the cooling water tubes of a lube oil heat exchanger? | Water temperature outlet temperature will decrease and the lube oil temperature will decrease. | Water temperature outlet temperature will decrease and the lube oil temperature will increase. | Water temperature outlet temperature will increase and the lube oil temperature will decrease. | Water temperature outlet temperature will increase and the lube oil temperature will increase. | |
| 11 | 4222 | C | Tube scaling in heat exchangers causes the heat transfer rate to decrease because the _____. | surface area of the tube decreases | cooling fluid outlet temperature decreases | thermal conductivity of the scale is very low | flow through the heat exchanger becomes more turbulent | |
| 11 | 4223 | D | What is the reading of the vernier micrometer caliper scale shown in figure "F" in the illustration? | 0.6153 inch | 0.6203 inch | 0.6253 inch | 0.6383 inch | GS-0083 |
| 11 | 4224 | C | When multiple refrigeration evaporators are served by the same compressor and operate at different temperatures, the pressure in the coldest evaporator is _____. | higher than the pressure in warmest evaporator | the same as any evaporator in the system | lower than the pressure in the warmest evaporator | controlled by adjusting the thermal expansion valve | |
| 11 | 4225 | C | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 7" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 207 gpm | 104 gpm | 53 gpm | 21 gpm | |
| 11 | 4226 | B | Why must an operator pay particular attention to an auto/manual valve controller when it is placed in manual mode? | Manual valve control is not as stable as automatic valve control. | Valve position will no longer change in response to changes in system parameters. | The position of the valve can only be determined locally during manual control. | The valve can only be operated locally during manual control. | |
| 11 | 4228 | B | Which one of the following is a difference between a typical relief valve and a typical safety valve? | The actuator closing spring on a relief valve is in a compressed state whereas the actuator closing spring on a safety valve acts in tension. | A relief valve gradually opens as pressure increases above set point pressure whereas a safety valve fully opens at the set point pressure. | Relief valves are capable of being gagged whereas safety valves are not. | The blowdown of a relief valve is greater than the blowdown of a safety valve. | |
| 11 | 4229 | D | A safety valve with a 2-inch diameter disk has a compressed spring applying 2,400 pounds of force to the top of the valve disk in opposition to system pressure. Which one of the following is the approximate system pressure at which the safety valve will open? | 95 psig | 191 psig | 382 psig | 764 psig | |
| 11 | 4230 | C | Rapid wear on the extreme outer corners to the cutting edges of a drill bit is the result of the drill having _____. | insufficient feed pressure | not enough cutting speed | too much clearance angle | not enough margin width | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4231 | B | In the hydraulic anchor windlass system illustrated, replenishment pump fluid flow is provided to the main system for automatic replenishment and to _____. | release the spring brake | provide actuating fluid flow to the main pump tilt box control | shift valve "L" to line up the fluid motor relief valve | provide actuating fluid flow to the winch motor tilt box control | GS-0160 |
| 11 | 4232 | C | The running unloader of the device shown in the illustration operates by _____. | temporarily discharging the compressed air to the atmosphere | holding open the high pressure stage reed-type suction valves | throttling a butterfly valve located in the compressor suction line | the use of an intercooler relief device | GS-0119 |
| 11 | 4233 | C | If you have a duplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 122 gpm | 488 gpm | 244 gpm | 570 gpm | |
| 11 | 4235 | B | One turn of the micrometer barrel will linearly move the spindle _____. | 0.001 inch | 0.025 inch | 0.100 inch | 0.250 inch | |
| 11 | 4236 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 148 gpm | 74 gpm | 62 gpm | 37 gpm | |
| 11 | 4237 | C | If a specifically trained and qualified person is NOT on board a vessel to assess a new officer trainees practical demonstration or skills, the demonstration can be conducted, when provided with guidance, and signed off by _____. | any rating forming part of the watch | the vessel owner | any licensed officer at the management level | All of the above | |
| 11 | 4238 | B | Which component in a hydraulic system is commonly used to prevent the stray movements of a vertical load until required? | Pressure reducing valve | Counterbalance valve | Unloading valve | Sequence valve | |
| 11 | 4239 | C | In terms of liquid volume, approximately how many "Liters" equal one US "Gallon"? | 1.75 | 2.75 | 3.75 | 4.75 | |
| 11 | 4240 | B | In terms of linear measurement, approximately how many "inches" equal one "meter"? | 29.4 | 39.4 | 49.4 | 59.4 | |
| 11 | 4241 | A | When applying weight conversion factors, approximately how many US "pounds" equal one "kilogram"? | 2.2 | 3.2 | 4.2 | 5.2 | |
| 11 | 4244 | D | Which of the following machinery remote control shutdowns is required to be tested during each regular inspection for certification? | Forced draft fan | Induced draft fan | Fuel oil transfer pump | All of the above | |
| 11 | 4246 | B | The function of the device illustrated is to _____. | assist in synchronizing generators | measure the speed of a rotating shaft | test for condensate conductivity | measure brine density | GS-0117 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4247 | A | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 30 gpm | 118 gpm | 59 gpm | 39 gpm | |
| 11 | 4248 | A | Modern trends show that full flow filters used in multi-operation hydraulic systems would most likely be located _____. | on the reservoir return line | on the relief valve discharge line | between the control valves and the actuators | on the reservoir fill line | |
| 11 | 4249 | D | Which of the following is true concerning the hose threads on compressed gas oxy-acetylene regulators and torches? | The oxygen regulator hose outlet thread connection is "left handed". | The acetylene regulator hose outlet thread connection is "right handed". | The torch oxygen inlet hose thread connection is "left handed". | The torch acetylene inlet hose thread connection is "left handed". | |
| 11 | 4250 | C | Which of the following is true concerning the hose threads on compressed gas oxy-acetylene regulators and torches? | The oxygen regulator hose outlet thread connection is "left handed". | The acetylene regulator hose outlet thread connection is "right handed". | The torch oxygen inlet hose thread connection is "right handed". | The torch acetylene inlet hose thread connection is "right handed". | |
| 11 | 4251 | D | Which of the following procedures would be correct when first lighting-off an oxy-acetylene torch? | Open the oxygen valve wide open and the acetylene valve slightly to light-off. | Open the acetylene valve very slightly and the oxygen valve the same amount to light-off. | Open the oxygen valve very slightly to light-off and then open and adjust the acetylene valve. | Open the acetylene valve very slightly to light-off and then open and adjust the oxygen valve. | |
| 11 | 4252 | C | On a container box refrigeration system, when the current to a suction modulating valve is increased, the _____. | valve is moving to a more open position | temperature of the box is increasing | suction pressure of the compressor will decrease | amount of air flowing through the condenser is decreased | |
| 11 | 4253 | D | If a centrifugal boiler feed pump operating with a positive suction head vibrates, or becomes noisy, the cause could be _____. | excessive suction pressure | worn wearing rings | air leakage into suction line | insufficient flow | |
| 11 | 4254 | D | In addition to the main outermost scale on the low side compound gage fitted to the portable service manifold, there are often one or more other scales on the face of the gage. These are _____. | pressure scales for different refrigerants | pressure scales for varying ambient temperatures | temperature scales for varying ambient pressures | temperature scales for different refrigerants | |
| 11 | 4255 | C | A volume of one cubic foot would equal how many gallons? | 5.48 gallons | 6.48 gallons | 7.48 gallons | 8.48 gallons | |
| 11 | 4256 | C | The device shown in the illustration is commonly referred to as a _____. | hydraulic steering gear pump | multistage ballast pump | rotary lobe type air compressor | control air dehydrator | GS-0119 |
| 11 | 4257 | B | Cracks may be prevented from developing at the corners of welded plating inserts by _____. | squaring the corners | rounding the corners | plug welding the corners | slot welding the corners | |
| 11 | 4258 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 279 gpm | 70 gpm | 140 gpm | 186 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4259 | D | In accordance with Coast Guard Regulations (46 CFR), a steam propelled cargo vessel over 25 gross tons may have a Certificate of Inspection issued for _____. | one voyage only | a specific period of time to cover a described situation | a time period not exceeding 5 years | all of the above, depending upon the pertinent circumstances | |
| 11 | 4260 | C | The gas that exists in the stratosphere that helps to protect the environment from ultraviolet radiation is called _____. | radon | oxygen | ozone | nitrogen | |
| 11 | 4261 | D | What is the chemical in CFC refrigerant that destroys stratospheric ozone? | fluorine | carbon | hydrogen | chlorine | |
| 11 | 4262 | C | Stratospheric ozone gas found in the atmosphere is a chemical compound composed of _____. | one oxygen atom | two oxygen atoms | three oxygen atoms | four oxygen atoms | |
| 11 | 4263 | B | What is the physical state of refrigerant as it enters the condenser of a typical refrigeration system. | subcooled liquid | superheated vapor | subcooled vapor | superheated liquid | |
| 11 | 4264 | C | At which of the following intervals must the cargo pump relief valves on tank vessels be tested? | Prior to each fuel discharge operation. | At least once each voyage. | At least once a year. | At each biennial inspection. | |
| 11 | 4265 | A | What is the physical state of refrigerant as it leaves a receiver in a typical refrigeration system ? | subcooled liquid | superheated liquid | subcooled vapor | superheated vapor | |
| 11 | 4266 | A | R-134A is normally the replacement for which older type of refrigerant? | R-12 | R-22 | R-11 | R-123 | |
| 11 | 4267 | D | The "Tare Weight" of a refrigerant storage cylinder refers to _____. | the weight of the cylinder with its current contents | the maximum weight of the refrigerant charge | the total weight of a fully charged cylinder | the weight of an empty cylinder | |
| 11 | 4268 | C | If a block and tackle arrangement were rigged as shown in figure "D" in the illustration, the amount of force "P" required to hold the 383 pound load stationary would be _____. (See illustration GS-0110) | 57 lbs. | 77 lbs. | 128 lbs. | 153 lbs. | GS-0110 |
| 11 | 4269 | C | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 9" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 118 gpm | 59 gpm | 30 gpm | 133 gpm | |
| 11 | 4270 | B | Which of the following substances is normally classified as a low pressure refrigerant? | R-12 | R-123 | R-22 | R-134A | |
| 11 | 4271 | D | What is the color coding for a storage container of R-134A refrigerant? | green | grey | purple | light blue | |
| 11 | 4272 | A | Which of the following refrigerants is Chlorine free and safe regarding atmospheric Ozone depletion? | R-134A | R-12 | R-22 | R-11 | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4273 | B | If there is a "large" release of refrigerant gas in a confined area, _____. | safety goggles and lined butyl gloves would be required before entering the space | a self contained breathing apparatus (SCBA) would be required before entering the space | an explosive atmosphere would be created | dust or particle masks would be required before entering the space | |
| 11 | 4274 | A | Watertight doors on cargo vessels must be examined and tested by a Coast Guard inspector _____. | at each inspection for certification | at each cargo gear inspection | within 12 hours prior to any international voyage of 48 hours or more | at all fire and boat drills | |
| 11 | 4275 | D | A "hydroscopic" lubricant used in refrigeration compressors would have the characteristic of _____. | losing its lubrication qualities at higher temperatures | being highly toxic | decreasing in viscosity at low temperatures | having a high affinity for water which requires it to be kept in a sealed container. | |
| 11 | 4276 | D | What is the physical state of refrigerant leaving the condenser of a R-22 refrigeration system? | low pressure liquid | low pressure vapor | high pressure vapor | high pressure liquid | |
| 11 | 4277 | B | Why can CFC or HCFC refrigerants leaking into a confined space or in limited surroundings cause suffocation ? | Refrigerants contain an acidic substance. | Refrigerants are heavier than air and displace oxygen. | Refrigerants lighter than air will rise. | Refrigerants obnoxious odor prevents breathing. | |
| 11 | 4278 | C | Why do low pressure refrigerant chillers usually require purge units ? | They normally operate below atmospheric pressure. | They draw in air through gaskets and seals. | Either A or B | Neither A nor B | |
| 11 | 4279 | D | The purge unit of a low pressure refrigeration chiller draws gas from the _____. | rupture disk | suction of the compressor | evaporator | top of the condenser | |
| 11 | 4280 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 226 gpm | 113 gpm | 249 gpm | 57 gpm | |
| 11 | 4281 | B | What is the short term replacement for R-11 refrigerant, used in low pressure chillers? | R-22 | R-123 | R-500 | R-134A | |
| 11 | 4282 | B | Why would one use refrigerant vapor rather than liquid, to initially charge a low pressure air conditioning chiller unit? | To prevent a safety shut down | To prevent the water coil from freezing | To keep pressure at a minimum | To protect the Thermal Expansion Valve | |
| 11 | 4283 | B | The recovery of refrigerant from refrigerant oil can be maximized by _____. | removing the oil | heating the oil | prolonged evacuation | all of the above | |
| 11 | 4284 | D | According to Coast Guard Regulations (46 CFR), a single steel hull cargo vessel operating exclusively in freshwater, shall be dry-docked, or hauled out, at intervals not to exceed _____. | 1 year | 2 years | 3 years | 5 years | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4285 | D | What condition may cause excessive superheat to occur at the evaporator outlet of an air conditioning system? | High head pressure | A dirty condenser | Insufficient air flow | Low refrigerant charge | |
| 11 | 4286 | A | If a block and tackle arrangement were rigged as shown in figure "F" in the illustration, the amount of force "P" required to hold the 324 pound load stationary would be _____. (See illustration GS-0110) | 81 lbs. | 108 lbs. | 116 lbs. | 130 lbs. | GS-0110 |
| 11 | 4287 | B | Most of the liquid refrigerant to be removed from a system during a refrigerant recovery procedure, would be found in the _____. | condenser | receiver | hoses and lines | evaporator | |
| 11 | 4288 | D | What is the physical state of refrigerant entering the receiver of a refrigeration system? | superheated low pressure vapor | superheated high pressure vapor | subcooled low pressure liquid | subcooled high pressure liquid | |
| 11 | 4289 | A | Which best defines a "Type I" small refrigeration appliance according to the EPA regulations Section 608? | systems manufactured and hermetically sealed having a capacity of five pounds (2.27 kg) or less of refrigerant | refrigerators, freezers, room air conditioners and central air conditioners | any appliance charged with less than ten pounds (4.54 kg) of refrigerant | any appliance charged with less than two pounds (0.91 kg) of refrigerant | |
| 11 | 4290 | A | The physical state of refrigerant as found in the system receiver would be defined as a _____. | high pressure liquid | high pressure vapor | low pressure liquid | low pressure vapor | |
| 11 | 4291 | A | If you have a simplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 24 gpm | 97 gpm | 48 gpm | 193 gpm | |
| 11 | 4292 | B | Any non-condensable gases in a refrigeration system will eventually accumulate and cause a/an _____. | decrease low side pressure | increase in the high side pressure | decrease low side temperature | all the above | |
| 11 | 4293 | A | In the circle illustrated, the circumference is 50.24 feet. What is the area of the shaded portion? | 18.3 square feet | 19.3 square feet | 20.3 square feet | 21.3 square feet | GS-0134 |
| 11 | 4294 | D | Which of the following intervals do Coast Guard Regulations (46 CFR) require the remote cutout for the fuel oil service pumps to be tested? | Prior to each sailing | Once each month | At each fire and boat drill | At each inspection for certification | |
| 11 | 4295 | C | Which of the following will speed up the recovery process when performing maintenance on a refrigeration system _____. | chilling the recovery vessel | heating the appliance | both A and B | neither A and B | |
| 11 | 4296 | A | The process of recovering refrigerant from an air conditioning or refrigeration system may be accelerated by _____. | recovering the liquid first and then the vapor | recovering vapor before the liquid | recovering the vapor and liquid at the same time | first heating the recovery cylinder | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4297 | D | In a shipboard potable water system, which of the following symptoms would indicate that the hot water circulating pump had failed? | The hot water return manifold would be warmer than normal. | The average temperature of the hot water heater would be above normal. | The water faucets would operate at a lower pressure. | Below normal water temperature would be discharged for a long period before hot water would appear at the hot water faucets. | |
| 11 | 4298 | B | According to 46 CFRs, the master of a commercial vessel is required to submit a marine casualty report form CG 2692 to the nearest Coast Guard Marine Safety Office if _____. | damage to the vessel due to a collision is estimated between $15,000 and $20,000 | the vessel was intentionally grounded because the bilge pumps were unable to maintain normal levels | a crewmember was placed on light duty for two days due to a sprained wrist and was required to wear a sling | all of the above | |
| 11 | 4299 | A | If your vessel burns 2.9 tons of fuel per hour operating at a speed of 20 knots, how many tons per hour will it burn at a speed of 15 knots? | 1.2 tons | 1.6 tons | 2.0 tons | 2.4 tons | |
| 11 | 4300 | D | According to 46 CFRs, when estimating the cost of collision damage to a tank vessel after a marine accident, which of the following should NOT be included in the repair cost estimate? | Cost to off-load the current cargo | Cost to gas-free the cargo tanks | Cost to dry-dock the vessel | All of the above | |
| 11 | 4301 | A | During the operation of a flash-type evaporator, the distillate flow meter indicates the output has significantly decreased from the previous day. Although all shell pressures appear normal, which of the following could be the probable cause for the decrease in output? | A leak has developed in the distillate collection tray. | Excessive L.P. extraction steam is flowing to the feedwater heater. | Feedwater temperature is being introduced at 170° F. | Distillate output temperature is being discharged at 100° F. | |
| 11 | 4302 | B | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 267 gpm | 67 gpm | 134 gpm | 347 gpm | |
| 11 | 4303 | D | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 32 gpm | 43 gpm | 64 gpm | 129 gpm | |
| 11 | 4305 | B | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 70 gpm | 279 gpm | 140 gpm | 186 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4306 | C | In a flash type evaporator, all saltwater headers are vented through individual vent cocks to the _____. | saltwater heater shell | second-stage condenser | atmosphere | first stage condenser | |
| 11 | 4308 | D | The rate of heat transfer between the hot and cold fluids passing through a shell-and-tube type heat exchanger will _____. | remain constant along the tube's length | vary according to the fluid pressures | remain constant throughout the heat exchanger | vary from section to section throughout the heat exchanger | |
| 11 | 4309 | B | If you have a duplex double acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 12" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 142 gpm | 570 gpm | 285 gpm | 488 gpm | |
| 11 | 4310 | D | The presence of scale and dirt on the saltwater side of a lube oil cooler is usually indicated by _____. | clogged lube oil strainers | seawater leaking into the lube oil system | increasing lube oil pressure | gradually increasing lube oil temperature | |
| 11 | 4311 | D | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 81 gpm | 101 gpm | 162 gpm | 202 gpm | |
| 11 | 4312 | C | Which of the following is the probable cause for a motor driven, low pressure, reciprocating air compressor to repeatedly trip the circuit breaker upon starting? | Defective pressure switch | Leaking suction valve | Failure of the unloader system | Compressor starting without load | |
| 11 | 4313 | C | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 414 gpm | 207 gpm | 104 gpm | 483 gpm | |
| 11 | 4314 | B | In refrigeration systems with multiple evaporators, the metering of refrigerant to each refrigerated space is accomplished by _____. | the king expansion valve | individual coil expansion valves | a solenoid valve in the liquid line | individual back pressure regulating valves on all but the coldest box | |
| 11 | 4315 | A | If you have a duplex double acting reciprocating pump making 190 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 109 gpm | 95 gpm | 54 gpm | 27 gpm | |
| 11 | 4316 | B | The root opening dimension shown in the illustration is used to indicate the _____. | penetration depth of the desired weld | allowable space across the bottom of the "V" groove | width across the bottom of the weldment | maximum thickness of the completed weld | GS-0076 |
| 11 | 4317 | B | The high pressure cut-out switch used on centrifugal low pressure refrigeration units using R-123 would be set to shut off the compressor at approximately _____. | 1 psig | 10 psig | 50 psig | 100 psig | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4318 | B | When welding or burning with an oxy-acetylene torch, _____. | it is important to remember that the oxygen cylinder and hose thread connections are left handed | never allow more than 15 PSIG pressure in the acetylene hose | never allow more than 10 PSIG pressure in the oxygen hose | it is important to remember that the acetylene hose thread connections are right handed | |
| 11 | 4319 | B | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 23 gpm | 91 gpm | 45 gpm | 79 gpm | |
| 11 | 4320 | D | If a bilge pump is able to develop some vacuum, but is unable to sufficiently pump out the bilges, you would check for _____. | a clogged suction strainer | leaks in the suction piping | a relief valve not properly seated | all of the above | |
| 11 | 4321 | C | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 10" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 33 gpm | 131 gpm | 65 gpm | 163 gpm | |
| 11 | 4322 | C | The difference between the set point and the measured parameter in an automatic flow controller is called: | gain | bias | error | feedback | |
| 11 | 4323 | C | The range of values around a set point of a measured variable where "no action" occurs in an automatic flow controller is called: | deviation | error | deadband | bias | |
| 11 | 4324 | A | In addition to pressure, most refrigerant compound gages are also provided with a scale indicating _____. | saturated gas temperature | superheated gas temperature | absolute temperature | absolute pressure | |
| 11 | 4325 | D | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 267 gpm | 134 gpm | 347 gpm | 67 gpm | |
| 11 | 4326 | B | In an automatic flow controller, the factor by which the magnitude of the flow error signal has been increased to drive the final valve controller is referred to as _____. | bias | gain | feedback | offset | |
| 11 | 4327 | A | In a proportional controller, the term "offset" refers to the difference between the _____. | control point and set point | control point and proportional band | deadband and set point | deadband and proportional band | |
| 11 | 4328 | C | The return signal from a valve as sensed by an automatic flow controller that is proportional to the actual valve position is referred to as _____. | gain | bias | feedback | error | |
| 11 | 4329 | A | The difference between the set point in an automatic controller and the steady-state value of the measured parameter is called _____. | offset | gain | deadband | feedback | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4330 | D | Which of the following changes in pump operating parameters will lead to pump cavitation in a centrifugal pump that is operating in an open system? | Steadily decreasing pump speed | Steadily increasing pump suction pressure | Steadily increasing pump discharge pressure | Steadily increasing pump inlet temperature | |
| 11 | 4331 | A | If you have a duplex double acting reciprocating pump making 110 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 33gpm | 27 gpm | 16 gpm | 8 gpm | |
| 11 | 4332 | A | As shown in the illustration, if electric current energizes the solenoid valve #24, which of the following will occur? | The evaporator defrost cycle will initiate. | The spool piece of modulating valve #5 will shift to the left. | The compressor will deenergize on low pressure cut off. | System will pump down to the receiver. | RA-0018 |
| 11 | 4333 | B | If you have a duplex double acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 96% volumetric efficiency, what is the capacity of this pump? | 47 gpm | 188 gpm | 94 gpm | 78 gpm | |
| 11 | 4334 | C | Which of the following statements is correct concerning a halide torch leak detector? | The probe should be moved rapidly over the area of a suspected leak. | The torch is effective in locating large leaks only. | The flame will turn green in the presence of R-12. | A refrigerant gas mask must be worn while using the torch. | |
| 11 | 4335 | A | If a reciprocating air compressor has a knock occurring in frequency with its operating RPM, the cause is probably _____. | worn main bearings | insufficient cylinder lubrication | defective drive belts | all of the above | |
| 11 | 4336 | A | If you have a simplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 39 gpm | 154 gpm | 79 gpm | 237 gpm | |
| 11 | 4338 | C | In a direct expansion condensing unit type refrigeration system, an externally equalized thermal expansion valve will respond to _____.<br>I. A change in temperature of the evaporator coil<br>II. pressure surges at the compressor suction | I only | II only | Both I and II | Neither I nor II | |
| 11 | 4339 | D | While at sea, the flash type evaporator is discharging the output to the boiler water reserve feed tanks. If it becomes necessary to reduce the evaporator feed water temperature to below 165° F, you should _____. | decrease the steam pressure to the air ejectors | dump the distillate to the bilge | secure the evaporator until the feedwater temperature can be raised to 165° F or more | lower the feedwater trip point temperature at the indicating panel for the three-way dump valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4340 | C | An engine spare parts storeroom is at a temperature of 70 degrees Fahrenheit and contains a storage bottle of refrigerant R-134A. What would be the approximate gage pressure inside this bottle? | 5 psig | 35 psig | 70 psig | 170 psig | RA-0023 |
| 11 | 4341 | D | An engine spare parts storeroom is at a temperature of 70 degrees Fahrenheit and contains a storage bottle of refrigerant R-22. What would be the approximate gage pressure inside this bottle? | 5 psig | 35 psig | 70 psig | 125 psig | |
| 11 | 4342 | C | Which of the following statements is true concerning the illustration shown? | Figure E tool bit would be used to face off work piece labeled VI | Figure G tool bit would be fed from right to left | Figure F tool bit would be fed from right to left | Figure A tool bit would be fed from left to right | GS-0009 |
| 11 | 4343 | D | The minimum length of dimension "C" shown in the illustration is _____. | 0.844 inch | 0.344 inch | 0.656 inch | 0.516 inch | GS-0014 |
| 11 | 4344 | D | In the refrigeration system illustrated, the liquid line strainer is used to keep dirt and scale out of the _____. | compressor | receiver | back pressure valve | solenoid valve | RA-0010 |
| 11 | 4345 | D | One of the main functions of wearing rings, as used in a centrifugal pumps, is to _____. | maintain radial alignment between the pump impeller and casing | absorb all impeller shaft end thrust | prevent water leakage to the atmosphere | allow for economical replacement of worn internal pump components during regular overhaul maintenance | |
| 11 | 4346 | C | If your ship is experiencing slow, erratic, or no pitch response to normal CPP system commands, you would suspect a fault in the _____. | high pressure air supply | pneumatic clutch | electro hydraulic servo | feedback potentiometer | GS-0170 |
| 11 | 4347 | B | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 249 gpm | 113 gpm | 57 gpm | 226 gpm | |
| 11 | 4348 | A | Which of the listed conditions would cause the thermal expansion valve to open in a refrigeration system? | Rise in the gas temperature within the cooling coils | Compressor cutting out | Compressor cutting in | A drop in the temperature of the cooling coils | |
| 11 | 4349 | D | If you have a duplex double acting reciprocating pump making 120 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 27 gpm | 54 gpm | 65 gpm | 109 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4350 | D | The reading on the micrometer scale shown in figure "C" in the illustration is _____. | 0.200 inch | 0.201 inch | 0.220 inch | 0.224 inch | GS-0093 |
| 11 | 4351 | A | The absolute pressure maintained in the shell of the salt water feed heater on most flash evaporators used on steam propelled vessels is _____. | slightly less than the absolute pressure of the L.P. extraction | slightly more than the supplied live steam pressure at the reducing valve outlet | slightly higher than the second stage vacuum | slightly lower than the first stage vacuum | |
| 11 | 4353 | D | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 5" diameter cylinder, a 7" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 43 gpm | 78 gpm | 110 gpm | 157 gpm | |
| 11 | 4354 | D | Which of the locations listed would be considered as the most common place to install a dryer in a refrigeration system? | Between the compressor and the condenser. | Between the thermal expansion valve and the evaporator. | In the suction line. | In the liquid line. | |
| 11 | 4355 | B | On modern tankers with separate pump rooms, which of the following is used to minimize cargo pump shaft leakage? | Slinger rings | Mechanical seals | Shaft sleeves | Stuffing box glands | |
| 11 | 4356 | C | When there is no movement of the rams of an electro-hydraulic steering gear system, the tilting box of the axial piston hydraulic pump is _____. | operating at maximum torque | in the recirculation mode | in the neutral position | rotating backwards | |
| 11 | 4357 | C | A "P" type trap and drain is used for sanitary system piping rather than an "S" type trap, whenever _____. | hot water drains are being removed | the 'gray' water drain system connection is located in the deck | the 'gray' water drain system connection is located in the adjacent bulkhead | the system operates under vacuum conditions | |
| 11 | 4359 | B | In a typical refrigeration system, refrigerant leaving the receiver will then flow to the _____. | evaporator coils | liquid line strainer | back pressure regulator | condenser | |
| 11 | 4360 | C | If a bolt or stud were to break off flush at the surface of a flange or block, which of the following procedures would offer the best chance of success for its removal? | Hammer the top of the stud with a drift pin | Melt the stud with an oxyacetylene torch. | Drill a small hole in the center of the broken stud and use a screw extractor. | Punch a cross notch in the stud and use a Phillips head screwdriver. | |
| 11 | 4361 | C | Which of the following statements best describes the term 'base' in reference to the classification of lubricating grease? | Texture of the grease under load. | Temperature at which the grease softens or melts. | Type of soap used in its production. | Temperature below which the grease will be ineffective as a lubricant. | |
| 11 | 4362 | C | Which of the following statements is true of the illustrated pump? | It can only operate with positive suction pressure. | The pump discharge is from the outlet marked "G". | It is a positive displacement air operated pump. | The pump suction is through the inlet marked "C". | GS-0061 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4363 | C | Which of the following statements best describes the reason for the pressure drop indicated between points B' and C' as shown in the illustration? | As the liquid flows through the expansion valve, its pressure is dropped as a result of friction only. | The drier element obviously requires replacement due to its saturated condition and is the contributing factor for the pressure drop through the liquid line. | The gas flow frictional loss through the evaporator coil is the origin of this condition and a universal characteristic of fluid flow through most heat exchangers. | The thermodynamic principle of 'heat in equals heat out' is responsible for the pressure drop indicated by the equal vertical distances between B and B', C and C'. | RA-0022 |
| 11 | 4365 | A | Which of the gasket types listed is typically used on high pressure steam flange joints? | Spiral wound flexitallic | Wire-impregnated sheet plastic | High temperature neoprene | Wire-impregnated rubber | |
| 11 | 4366 | B | Referring to the device shown in the illustration, the port labeled "F" would be connected to _____. | a constant control air supply pressure | variable output pressure line to a regulating valve diaphragm | a feedback signal pressure | a atmospheric vent line | GS-0050 |
| 11 | 4367 | B | When air compressors are arranged for automatic operation, the cylinders can be unloaded during starting by _____. | bypassing the discharge valves | fitting depressors which hold the suction valve plates open | applying reduced voltage to the motor | all of the above | |
| 11 | 4368 | D | If your vessel burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 22 knots? | 11.7 tons | 17.2 tons | 14.2 tons | 25.2 tons | |
| 11 | 4369 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 347 gpm | 67 gpm | 267 gpm | 134 gpm | |
| 11 | 4370 | D | Which of the following forms of heat can be removed from the refrigerant in the condenser of a refrigeration system? | Latent heat of vaporization | Heat of compression | Superheat | All of the above | |
| 11 | 4371 | A | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 6" diameter cylinder, a 10" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 322 gpm | 268 gpm | 161 gpm | 81 gpm | |
| 11 | 4372 | D | In the illustrated drawing, what is the largest maximum allowable diameter of the work piece? | 0.559 inch | 0.565 inch | 0.622 inch | 0.625 inch | GS-0016 |
| 11 | 4373 | D | The basic function of the servo control shown in the illustration, as used in some hydraulic systems, is to _____. | establish minimum operating pressures within the system | establish minimum operating flow rates within the system | provide a constant output discharge pressure from the hydraulic pump | position the tilt box of a variable displacement hydraulic pump for the desired output | GS-0039 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4374 | B | In a refrigeration system, where multiple evaporators are operating at different temperatures, and serviced by a single compressor and condenser, the control of individual coil temperatures should be carried out by adjustment of the _____. | thermostatic expansion valve | back pressure regulating valve | king valve | box temperature solenoid valve | |
| 11 | 4375 | B | The flame screens installed on tank vents that may contain combustible gases, are designed to prevent explosions by _____. | allowing the escape of flammable vapors | dissipating the heat of an external flame | absorbing any flammable vapors in the vicinity | preventing flammable vapors from entering the tank | |
| 11 | 4376 | A | When renewing a portion of damaged hull plating with a new insert plate, which of the listed guidelines should be followed? | The insert plate should cover at least one full frame space and have rounded corners. | The lines of new welding should, where possible, lie in existing lines of welding. | The corners of the insert plate should be square. | The insert plate should be at least 9/16 thick. | |
| 11 | 4377 | D | When renewing spiral packing in a centrifugal pump stuffing box, after the packing is firmly seated, the packing gland nuts should be _____. | left in that position | loosened until the gland clears the stuffing box | tightened an additional 10% to compress the packing | loosened, and then retightened with the pump running under normal conditions | |
| 11 | 4378 | D | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 79 gpm | 23 gpm | 91 gpm | 45 gpm | |
| 11 | 4379 | C | Which of the components listed is required for the processing of bilge slops for overboard discharge? | A 100 PPM oily water detector and separator. | A lube oil purifier configured as a separator and aligning it to the bilge overboard. | A 15 PPM oily water detector and separator. | A magnetic duplex strainer. | |
| 11 | 4380 | A | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 207 gpm | 483 gpm | 104 gpm | 414 gpm | |
| 11 | 4381 | D | Machinery with ball bearings designed to be filled with grease should have the relief plug temporarily removed while grease is being added. This plug should remain out until the machinery has been operated and sufficiently warmed up to ensure that _____. | a path for expansion is provided for the grease | the grease is properly distributed within the bearing | contaminated grease is flushed from the bearing housing | all of the above | |
| 11 | 4382 | A | After using a pipe cutter to cut a piece of pipe, the inside edge of the pipe should be _____. | deburred with a pipe reamer | cleaned with a pipe cleaner | made square with a taper tool | threaded for a standard pipe fitting | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4383 | B | One of the functions of the component labeled "E" shown in the illustration is to _____. | act as a hydraulic accumulator | separate oil from the compressed air supply | act as a oily water separator | provide for expansion of refrigeration gases | GS-0119 |
| 11 | 4384 | D | Excessively tight drive belts installed between a motor and a refrigeration compressor pulley may cause _____. | overheated bearings | unnecessary motor loading | noisy operation | all of the above | |
| 11 | 4385 | B | The thermal bulb for a thermal expansion valve used in a refrigeration system is usually charged with _____. | distilled water | the same refrigerant as the system | bees wax | mercuric sulfate | |
| 11 | 4386 | B | Under standard atmospheric conditions, air at a higher temperature can _____. | give up moisture faster as condensation | hold more moisture than air at a lower temperature | become supersaturated at low relative humidity | absorb less free atmospheric moisture | |
| 11 | 4387 | A | Under standard atmospheric conditions, which of the following is true concerning the characteristics of air? | Dry air is heavier than moist air. | Dry air is lighter than moist air. | Cold air can hold more moisture than warm air. | Heating a sample of air will increase its relative humidity. | |
| 11 | 4388 | A | Which of the following is true when comparing the different "class of fit" for machine threads on bolts and nuts? | A class 2 fit is looser than a class 4 fit. | A class 1 fit is tighter than a class 2 fit. | A class 4 fit always has more threads per inch. | A class 1 fit always has fewer threads per inch. | |
| 11 | 4389 | D | The purpose of wearing rings as found in large centrifugal pumps is to _____. | prevent an internal explosion in the pump when it is overheated | enable a visual inspection of the pump while it is running | insure the proper alignment of the pump coupling to the driver | permit internal components that are subjected to high erosion conditions, to be replaceable thereby extending the service life of the pump | |
| 11 | 4390 | C | Two individual centrifugal pump impellers of the same diameter, width, and rotating speed are to be compared, one is cast with straight vanes, the other with curved vanes. Which of the following statements is correct? | The straight vane impeller always develops a higher discharge pressure | The straight vane impeller always has a greater capacity | The curved vane impeller is less likely to develop cavitation. | The curved vane impeller will be easier to balance | |
| 11 | 4391 | B | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 13" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 347 gpm | 134 gpm | 67 gpm | 267 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4392 | C | If the device shown in the illustration is used to control the output of a variable displacement pump, and the handle is displaced 50% from 'zero' stroke, which of the following statements will be correct? | Pump discharge will be 100% until the effects of lost motion in the associated linkages is eliminated. | Once the pump achieved a corresponding output of 50%, the pump would automatically return to neutral stroke. | The pump would develop a 50% discharge rate and remain at that condition until the control handle position is changed. | The system unloading valve will open to guarantee a pump discharge of no more than 50%. | GS-0039 |
| 11 | 4394 | A | The primary purpose of the liquid line strainer used in a refrigeration system is to prevent dirt and scale from entering the _____. | solenoid and expansion valves | compressor and receiver | condenser and liquid line | evaporator coil piping | |
| 11 | 4395 | A | Which of the following forms of energy is released through the process of fuel combustion? | Chemical energy | Mechanical energy | Potential energy | Electrical energy | |
| 11 | 4396 | A | If you have a simplex single acting reciprocating pump making 170 strokes/minute, with a 6" diameter cylinder, a 5" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 50 gpm | 202 gpm | 101 gpm | 84 gpm | |
| 11 | 4397 | D | At the beginning of a cool down period for a multi-box refrigeration system, the operating conditions of the system would require the flow rate of refrigerant circulating in the system to _____. | remain the same, with a decrease in suction pressure | increase, while maintaining the normal suction pressure | remain the same with an increase in suction pressure | increase, with an increase in suction pressure | |
| 11 | 4398 | A | Bilge suction lines led through tanks, without using a pipe tunnel, must be _____. | fabricated of schedule 80 pipe | fitted with gate valves at the bilge manifolds | coated with coal tar epoxy, or similar corrosion resistant substance | fitted so as to not allow for expansion | |
| 11 | 4399 | D | Which of the following methods is normally used to control the individual room temperature with an air conditioning system using a chilled water circulation system? | A room thermostat activates an electric heater at each individual chilled air outlet when necessary. | Varying the number of passes the air makes across the cooling coils. | Varying the temperature of the water to the cooling coils. | A regulating valve controls the quantity of chilled water flowing through the air cooling coils. | |
| 11 | 4400 | B | Which of the statements best describes the process of heat transfer by conduction? | The conductivity of the heat source controls the final temperature. | Transfer of heat is accomplished by passing through solid material causing a change in temperature. | The size of the heat sink establishes the final temperature. | The amount of heat available in the source controls the final temperature. | |
| 11 | 4401 | A | Which of the following statements is correct regarding the device shown in the illustration? | The areas dimensioned 0.64 in length are flats on the shaft. | The areas dimensioned 0.64 in length are steps in the shaft diameter. | The maximum diameter of the shaft is 1.522 inches. | Both ends of the shaft have 1 inch external pipe thread. | GS-0008 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4402 | C | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 237 gpm | 39 gpm | 79 gpm | 158 gpm | |
| 11 | 4403 | B | Strainers are commonly used in hydraulic systems to _____. | protect the pump from fine soluble contaminants | prevent solid particles from entering the pump | prevent air from entering the pump | protect the directional control valves | |
| 11 | 4404 | B | Cylindrical driers installed in halocarbon refrigerant systems should be arranged _____. | so that the liquid enters at the top and leaves at the bottom when located in the liquid line | so that the liquid enters at the bottom and leaves at the top when located in the liquid line | so that the gas enters at the bottom and leaves at the top when located in the suction line | horizontally if the drying agent is calcium oxide | |
| 11 | 4405 | B | The reading on the vernier caliper scale shown in figure "A" in the illustration is _____. | 1.250 inches | 1.500 inches | 2.150 inches | 2.500 inches | GS-0082 |
| 11 | 4406 | B | As the speed of an oil lubricated ball bearing increases, fluid friction, due to churning, generates heat. This condition may be avoided by _____. | adding more lubricant until the ball bearings are completely covered with a layer of oil | reducing the quantity of lubricant until only a mist of oil is present on the ball bearings | maintaining a continuous fluid level over half of the outer race | installing oil rings on the ball bearings | |
| 11 | 4407 | D | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 12 gpm | 16 gpm | 20 gpm | 24 gpm | |
| 11 | 4409 | C | According to Coast Guard Regulations (33 CFR Part 159), which of the listed types of Marine Sanitation Devices (MSD) is designed to hold sewage on board in special tanks to be pumped out at shore side facilities when available? | Type I | Type II | Type III | Type IV | |
| 11 | 4410 | A | The device shown in the illustration is commonly used to _____? | compress air | pump heavy liquids | pump refrigerant | generate electricity | GS-0120 |
| 11 | 4411 | C | Which of the nondestructive testing methods listed, is most often used to accurately detect external defects in welded metals? | Magnetic particle | Ultrasonics | Visible dye penetrant | All of the above | |
| 11 | 4412 | A | Zinc plates commonly found in refrigeration systems are located in the _____. | saltwater side of the condenser | refrigerant side of the condenser | evaporator coils | cooling water suction strainer | |
| 11 | 4413 | D | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 249 gpm | 57 gpm | 226 gpm | 113 gpm | |
| 11 | 4414 | A | If the flame of a Halide leak detecting torch burns yellow, which of the problems listed is indicated? | A restricted exploring tube | A refrigeration leak | A faulty reactor plate | Normal operation | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4415 | D | Which practices should be followed at all times when using an electric bench grinding machine? | Wear goggles or face shield. | Replace grinding wheels that are chipped or unbalanced. | Keep the support rest clearance properly adjusted to the wheel. | All of the above | |
| 11 | 4416 | A | The component labeled "A", as shown in the illustration, would be identified as the _____. | oil level sensing probe | water sensing probe | pressure tank relief valve | oily water content monitor | GS-0175 |
| 11 | 4417 | A | The line labeled "C", as shown in the illustration, would be identified as the _____. | clean water flushing line | oily bilge water inlet | tank drain line | oil discharge line | GS-0175 |
| 11 | 4418 | C | The line labeled "E", as shown in the illustration, would be identified as the _____. | processed oil outlet | clean water flushing line | oily bilge water inlet | oily bilge water outlet | GS-0175 |
| 11 | 4419 | A | The reading on the vernier caliper scale shown in figure "B" in the illustration is _____. | 3.38 inches | 3.48 inches | 3.83 inches | 4.45 inches | GS-0082 |
| 11 | 4420 | C | The illustrated valve "A" needs to be repaired due to a leak across the valve disk. To repair the valve you should _____. | replace the entire valve bonnet and stem as a unit as provided by the manufacturer | remove the handwheel, then remove part #4 and #5, then replace the item #6 and reassemble in the reverse order | disassemble the valve and renew the replaceable valve disk seat | disassemble and renew the replaceable valve body seat | GS-0140 |
| 11 | 4421 | A | The line labeled "G", as shown in the illustration, would be identified as the _____. | separated oil outlet | processed bilge water outlet | oily bilge water inlet | clean water flushing line | GS-0175 |
| 11 | 4422 | B | What is the reading of the vernier micrometer caliper scale shown in figure "C" in the illustration? | 0.3715 inch | 0.4715 inch | 0.4725 inch | 0.4815 inch | GS-0091 |
| 11 | 4423 | B | Which of the following statements best describes an oil lubricated stern tube bearing installation? | It receives its oil supply from a branch line of the main lube oil system. | No shaft liner is needed in the area of the babbitted bearing surface. | The system pressure must be lowered when maneuvering in port to prevent blowing the outer oil seal. | Oil lubricated stern tube bearings operate partially submerged in oil at low propeller speeds. | |
| 11 | 4424 | B | A totally white or yellow colored flame produced by a Halide torch being used to test for refrigerant leaks indicates _____. | no R-12 leakage | a partially clogged torch exploring tube | a defective torch reaction plate | a minute quantity of R-12 leakage | |
| 11 | 4425 | B | Hydraulically, servo-operated, automatic, change over valves, utilized in a two ram hydraulic steering gear, serve to _____. | allow an alternate main pump to start in the fully loaded condition thus developing immediate full torque. | prevent the idle main pump from being hydraulically motored by cross pressure flow. | prevent main pumps from operating simultaneously which could result in the over pressurization of the system. | all of the above. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4426 | C | The presence of gas in the liquid line of a refrigeration system is undesirable and can be eliminated by _____. | increasing the distance between the evaporator and condenser | using a larger expansion valve | subcooling the liquid | installing the evaporator at a higher level than the condenser | |
| 11 | 4427 | B | Sludge may form in the lubricating oil crankcase of a reciprocating air conditioning compressor as a result of _____. | low Freon temperature in the suction line | contamination by dust, scale, or moisture | refrigerant bubbles in the lube oil | refrigerant reducing the lube oil viscosity | |
| 11 | 4428 | A | If you have a duplex single acting reciprocating pump making 130 strokes/minute, with a 3" diameter cylinder, a 10" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 37 gpm | 123 gpm | 18 gpm | 74 gpm | |
| 11 | 4430 | C | The sudden reduction of pressure occurring within the crankcase of a refrigeration compressor during starting causes the _____. | sudden evaporation of wax crystals in the lubricant | sudden evaporation of entrapped air in the lubricant | lube oil to foam due to the release of dissolved refrigerant in the lubricating oil | release of dissolved lubricant from the refrigerant | |
| 11 | 4431 | D | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 8.5 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 7.697 inches | 9.176 inches | 11.519 inches | 13.352 inches | GS-0108 |
| 11 | 4432 | B | All refrigerant recovered from small appliances must be _____. | sent to a designated reclaim facility for processing | contained in a refillable recovery cylinder | destroyed as unusable | used to clean out burn-outs | |
| 11 | 4433 | C | The reading on a vernier caliper scale is indicated as 3.360 inches. Which of the figures shown in the illustration represents this reading? | Figure B | Figure C | Figure E | Figure F | GS-0082 |
| 11 | 4434 | B | Air conditioning duct-work begins at the large mixing chamber called the _____. | exhaust chamber | plenum chamber | intake chamber | vapor chamber | |
| 11 | 4435 | C | Foot valves are primarily designed to _____. | give a pump motor or driver positive protection when operating in a shutoff condition | provide a means of supplying sealing fluid for the impeller shaft stuffing box | enable a pump and its suction line to remain primed prior to starting the pump | afford the pumping system protection against water hammer and surging | |
| 11 | 4437 | C | If a block and tackle arrangement were rigged as shown in figure "C" in the illustration, the amount of force "P" required to hold the 250 pound load stationary would be _____. | 83.33 lbs. | 104.16 lbs. | 125.00 lbs. | 250.00 lbs. | GS-0110 |
| 11 | 4438 | B | If a substantial difference is maintained between the refrigerant temperature and the box air temperature within the refrigerated compartment, this may result in _____. | slugging in the condenser | the evaporator coil to frost | the compressor suction to overheat | the thermal expansion valve to malfunction | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4439 | B | If you have a simplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 6" stroke and operating with 75% volumetric efficiency, what is the capacity of this pump? | 132 gpm | 33 gpm | 66 gpm | 99 gpm | |
| 11 | 4440 | D | When a refrigeration compressor has developed a high head pressure as a result of a refrigerant overcharge, you should _____. | increase the amount of cooling water to the condenser | decrease the amount of cooling water to the condenser | lower the cut-in pressure | remove some refrigerant from the system | |
| 11 | 4441 | B | Which of the fluids listed is normally used to condense the primary refrigerant in a shipboard central air conditioning system? | Engine jacket water | Seawater or Fresh water. | Sodium Nitrate brine. | Calcium Sulfate brine. | |
| 11 | 4442 | C | To add refrigerant to the high side of an air conditioning system, you should close the king valve and introduce the refrigerant through the _____. | discharge service valve as a vapor | suction service valve as a liquid | charging valve as a liquid | condenser purge valve as a vapor | |
| 11 | 4443 | D | In a small appliance using HFC-134a you would expect to see the greatest temperature drop across the _____. | evaporator | receiver | compressor | condenser | |
| 11 | 4444 | D | When air contains some moisture, but is not saturated, the dew point temperature is _____. | between the wet and dry bulb temperatures | equal to the total heat of air | higher than the wet bulb temperature | lower than the dry bulb temperature | |
| 11 | 4445 | C | The lathe tool shown as figure "L" in the illustration is commonly known as a/an _____. | boring tool | external threading tool | internal threading tool | universal turning tool | GS-0090 |
| 11 | 4446 | A | Regarding heat transfer principles, which of the following is true? | Heat transfer always flows from hot regions to cold regions. | Heat transfer always flows from cold regions to hot regions. | Steel pipe can transfer heat more efficiently than copper pipe. | A gas can transfer heat more efficiently than a liquid. | |
| 11 | 4447 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 14" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 61 gpm | 122 gpm | 128 gpm | 244 gpm | |
| 11 | 4448 | B | Copper piping has been used in refrigeration systems because _____. | it is creep resistant at low temperatures | it offers a greater heat transfer coefficient than iron pipe | stronger than iron pipe | it has high resistance to acids | |
| 11 | 4449 | C | If you have a duplex single acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 12" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 193 gpm | 24 gpm | 48 gpm | 97 gpm | |
| 11 | 4450 | A | What is the reading of the vernier caliper scale shown in figure "E" in the illustration? | 4.112 inch | 4.125 inch | 5.112 inch | 6.112 inch | GS-0092 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4451 | D | If the people in an air conditioned room complain of being too cool, the trouble might be that the _____. | preheater has failed to cutout | air velocity is too low | relative humidity and dry bulb is high | dry bulb temperature is too low | |
| 11 | 4452 | A | What is the reading of the vernier caliper scale shown in figure "D" in the illustration? | 2.8350 inch | 3.3750 inch | 3.8350 inch | 4.8350 inch | GS-0092 |
| 11 | 4453 | D | Gate valves should not be used for throttling as _____. | the pressure drop will be excessive | air binding will develop | the installation of an equalizing line will be necessary | damage to the seating surfaces will occur | |
| 11 | 4454 | C | When pumping down an air conditioning system to test the low pressure cutout switch, you should _____. | stop the compressor | secure the condenser | close the 'king' valve | stop the circulating pump | |
| 11 | 4455 | B | Some centrifugal pumps have water lines connected to the stuffing box glands to _____. | prevent seawater from passing out the stuffing box when a high suction head is present | assist the pump in maintaining a vacuum and cool the packing | provide a decrease in impeller thrust | prevent the pump from overspeeding | |
| 11 | 4456 | D | In the diagram, items '2A and 2B' represent the overboard discharge valves of the ballast system illustrated. Which of the following statements is correct if the length between perpendiculars is 500 feet, and the through hull opening is seven feet above the summer loadline? | Valve 2A must be positive closing, in addition to the indicated automatic non-return valve. | Valve 2B must be positive closing, in addition to the indicated automatic non-return valve. | Both valves must be positive closing, in addition to the ability to provide automatic non-return. | Both valves are correct as indicated in the illustration. | GS-0125 |
| 11 | 4457 | D | If you have a duplex double acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 8" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 88 gpm | 157 gpm | 176 gpm | |
| 11 | 4458 | C | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 5" stroke and operating with 92% volumetric efficiency, what is the capacity of this pump? | 42 gpm | 21 gpm | 11 gpm | 35 gpm | |
| 11 | 4459 | D | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 8" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 40.6 gpm | 43.7 gpm | 49.8 gpm | 53.2 gpm | |
| 11 | 4461 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 6" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 107.7 gpm | 113.4 gpm | 215.4 gpm | 226.8 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4462 | C | According to 46 CFR Part 56, carbon steel bolts rather than alloy steel bolts may be used to make up a flange if the normal operating _____. | temperature does not exceed 550° F | temperature does not exceed 750° F | pressure does not exceed 300 psi | pressure does not exceed 500 psi | |
| 11 | 4463 | C | The reading on the micrometer scale shown in figure "I" in the illustration is _____. | 0.455 inch | 0.500 inch | 0.505 inch | 0.550 inch | GS-0095 |
| 11 | 4466 | B | The reading on a vernier caliper scale is indicated as 4.340 inches. Which of the figures shown in the illustration represents this reading? | Figure B | Figure C | Figure D | Figure E | GS-0082 |
| 11 | 4467 | D | The chemical substance initially responsible for heat loss in the combustion process is _____. | sulfur | carbon | hydrogen | nitrogen | |
| 11 | 4468 | B | The surging that occurs in a centrifugal air conditioning compressor is a result of _____. | low pressure in the condenser | the high load on the evaporator producing a thermodynamic head exceeding the normal maximum of the compressor | low pressure in the condenser at low load | low pressure in the evaporator at high load | |
| 11 | 4469 | C | Refrigerants that may experience fractionation are identified as blends of _____. | azeotropic liquids | brine liquids | zeotropic liquids | ammonia liquids | |
| 11 | 4470 | D | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 91% volumetric efficiency, what is the capacity of this pump? | 104 gpm | 52 gpm | 91 gpm | 26 gpm | |
| 11 | 4471 | C | The reading indicated on a vernier micrometer caliper scale is .9453 inches. Which of the figures in the illustration represents this reading? | Figure A | Figure C | Figure D | Figure G | GS-0091 |
| 11 | 4472 | A | The shaft sleeve for the pump illustrated is identified by the item numbered as _____. | 14 | 17 | 27 | 68 | GS-0143 |
| 11 | 4473 | A | If you have a duplex double acting reciprocating pump making 140 strokes/minute, with a 3" diameter cylinder, a 9" stroke and operating with 94% volumetric efficiency, what is the capacity of this pump? | 72 gpm | 157 gpm | 217 gpm | 285 gpm | |
| 11 | 4474 | D | When air is at its dew point and there is no change in either the temperature or pressure, the air _____. | has a low absolute humidity | has the lowest relative humidity | cannot give up its moisture | will gain no additional moisture | |
| 11 | 4475 | C | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 3" diameter cylinder, a 11" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 20.0 gpm | 22.0 gpm | 24.0 gpm | 48.0 gpm | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4476 | A | If you have a duplex single acting reciprocating pump making 270 strokes/minute, with a 4" diameter cylinder, a 7" stroke and operating with 81% volumetric efficiency, what is the capacity of this pump? | 83 gpm | 146 gpm | 42 gpm | 167 gpm | |
| 11 | 4477 | A | The convector shown in the illustration, should have a minimal circulation air space from the bulkhead of approximately _____. | 1/2 inch | 2 inches | 5 inches | 10 inches | GS-0150 |
| 11 | 4478 | D | Which non-ferrous alloy is most commonly used for heat exchanger tubes and possesses a high resistance to corrosion? | Red brass | Nautical bronze | Aircraft aluminum | Copper nickel | |
| 11 | 4479 | D | Which of the following adjustments will cause the illustrated valve, to close at a lower loading pressure? | Increasing the compression on spring No. 6 | Replacing the spring with one that has a higher compression value | Screwing up on sleeve No. 12 | Reducing the spring tension of item No. 6 | GS-0051 |
| 11 | 4480 | C | The major difference to consider when selecting a P-type or S-type lavatory drain trap would be the _____. | flow rate at which water must be removed | efficiency to seal and prevent sewer gas backflow | bulkhead or deck connection to the grey water drain system | percentage of solids entrained in the water to be drained | |
| 11 | 4481 | A | If you have a simplex single acting reciprocating pump making 180 strokes/minute, with a 5" diameter cylinder, a 6" stroke and operating with 87% volumetric efficiency, what is the capacity of this pump? | 40 gpm | 160 gpm | 80 gpm | 96 gpm | |
| 11 | 4482 | C | The reading on the micrometer scale shown in figure "2" in the illustration is _____. | 0.200 inch | 0.220 inch | 0.250 inch | 0.300 inch | GS-0094 |
| 11 | 4483 | B | What is the reading of the vernier micrometer caliper scale shown in figure "F" in the illustration? | 0.3107 inch | 0.3128 inch | 0.3220 inch | 0.3228 inch | GS-0091 |
| 11 | 4484 | D | In a refrigeration system, the amount of superheat absorbed by the refrigerant is adjusted at the _____. | compressor | condenser | evaporator coil | expansion valve | |
| 11 | 4485 | D | A hacksaw blade will start a cut more accurately if you _____. | apply maximum pressure at the start of the cut | coat the saw blade with soap before starting the cut | turn the saw blade at right angles to the saw frame | file a nick where the cut is to be started | |
| 11 | 4486 | B | Rapid fluctuations of absolute pressure in the last effect of a multi-effect submerged tube distilling plant will tend to cause _____. | scale formation with increased heat transfer | priming with increased salinity of distillate | slight foaming at the distillate feed pump | improved operating conditions at the brine pump | |
| 11 | 4487 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 6" diameter cylinder, a 12" stroke and operating with 97% volumetric efficiency, what is the capacity of this pump? | 57 gpm | 114 gpm | 118 gpm | 236gpm | |

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| 11 | 4488 | D | For most multi-box refrigeration systems, the liquid line sight glass would be located _____. | before the compressor suction line | after the compressor discharge | upstream of the condenser | downstream of the receiver | |
| 11 | 4489 | B | If you have a simplex single acting reciprocating pump making 160 strokes/minute, with a 4" diameter cylinder, a 12" stroke and operating with 85% volumetric efficiency, what is the capacity of this pump? | 33.3 gpm | 44.4 gpm | 51.1 gpm | 66.6 gpm | |
| 11 | 4490 | A | If you have a duplex single acting reciprocating pump making 100 strokes/minute, with a 6" diameter cylinder, a 4" stroke and operating with 90% volumetric efficiency, what is the capacity of this pump? | 44 gpm | 22 gpm | 20 gpm | 88 gpm | |
| 11 | 4491 | C | The tool used to make up connection fittings for small diameter copper tubing is called a/an _____. | adjustable tube roller | adjustable belling tool | flaring tool | tubing expander | |
| 11 | 4492 | B | If you have a duplex double acting reciprocating pump making 130 strokes/minute, with a 5" diameter cylinder, a 11" stroke and operating with 93% volumetric efficiency, what is the capacity of this pump? | 113 gpm | 226 gpm | 249 gpm | 57 gpm | |
| 11 | 4493 | C | Which of the following listed illustrated joint preparations correctly depicts a single "J" groove? | 3A | 4A | 5A | 6A | GS-0077 |
| 11 | 4494 | A | The lathe tool shown as figure "U" in the illustration is commonly known as a/an _____. | cutoff or parting tool | left cut side-facing tool | right side end facing tool | universal turning tool | GS-0090 |
| 11 | 4495 | D | The thermal bulb of an expansion valve that is attached to the evaporator tail coil should be _____. | installed on the bottom of the suction line | installed between the suction strainer and compressor | painted to prevent corrosion | insulated after installation | |
| 11 | 4496 | C | In the hydraulic anchor windlass system illustrated, if the power to the electric motor is on, but the wildcat does not turn, the pressure developed on either side of the system increases to half of the normal operating pressure regardless of the direction of movement in which the servo control is placed, the probable cause is the _____. | replenishing pump coupling is broken | relief valve is not opening | manual transfer valve is in the wrong position for the main pump being operated | spring set point for "I" is too high | GS-0160 |
| 11 | 4497 | B | If you have a simplex single acting reciprocating pump making 150 strokes/minute, with a 7" diameter cylinder, a 13" stroke and operating with 95% volumetric efficiency, what is the capacity of this pump? | 146 gpm | 154 gpm | 162 gpm | 170 gpm | |
| 11 | 4498 | A | Item "B" in the pump illustration is the _____. | packing gland | stuffing box | shaft sleeve | wearing ring | GS-0129 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4499 | B | If you have a duplex double acting reciprocating pump making 170 strokes/minute, with a 4" diameter cylinder, a 11" stroke and operating with 89% volumetric efficiency, what is the capacity of this pump? | 91 gpm | 181 gpm | 249 gpm | 45 gpm | |
| 11 | 4500 | C | The valve shown in the illustration is used to _____. | provide the function of compressor unloading | regulate refrigerant flow into the evaporator by reacting directly to the evaporator pressure | maintain back pressure in the evaporator coils at a pressure higher than the remaining coils in a multi-box system | A bellows operated condenser water regulating valve | RA-0006 |
| 11 | 4501 | C | The hydraulic graphic symbol illustrated as Fig. C is used to depict a/an _____. | bi-directional rotating motor | unidirectional rotating motor | variable output, single direction flow pump | bi-directional flow pump | GS-0068 |
| 11 | 4502 | D | Which CFR provides information that pertains to sea valve inspections during a vessel dry-docking? | 46 CFR Part 52 | 46 CFR Part 54 | 46 CFR Part 56 | 46 CFR Part 61 | |
| 11 | 4503 | D | Increasing the speed of a centrifugal pump will result in an increase in the pump capacity. Another means of increasing the total head pressure of a centrifugal pump is to increase the _____. | diameter of the discharge piping, with all other factors remaining the same | diameter of the suction piping, with all other factors remaining the same | width of the impeller | diameter of the impeller | |
| 11 | 4504 | D | The follow-up mechanism for the steering gear shown functions to assure the correct rudder position for each corresponding position of the helm. When operating properly, the follow-up mechanism should _____. | return the main pump stroke to neutral when rudder error angle is less than 10 degrees | maintain a constant pump stroke for all rudder command angles | gradually increase main pump stroke as rudder attains command angle | gradually decrease pump stroke as rudder is achieving command angle | GS-0123 |
| 11 | 4507 | A | The steam coils in a high pressure contaminated evaporator used in a steam plant should be descaled with _____. | a wire brush and wooden mallet | a needle gun | a chipping hammer | soap and water | |
| 11 | 4508 | D | If you find the pressure of an R-12 refrigeration system to be worked on is 0 psig, you will need to _____. | only recover the vapor refrigerant | only recover the liquid refrigerant in the system | recover liquid and vapor refrigerant and have it reclaimed | repair the leak before being able to pull a vacuum on the system | |
| 11 | 4509 | D | Prior to making repairs on an R-12 refrigeration system, if system leaks prevent reaching the required levels of evacuation for recovery of refrigerant, you will need to _____. | only recover the refrigerant vapor from the system | only recover the liquid refrigerant from the system | repressurize the system with R-12 to locate the leak | isolate non leaking components and evacuate to mandated levels wherever possible | |
| 11 | 4510 | D | During the normal operation of a solo shell double-effect distilling unit, what is flowing through the tubes of the first effect vapor feed heater? | Pure distillate | Brine | Condensed vapor from the second-effect | Salt water | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4511 | A | Which of the listed components would normally be installed with a Control Air System pressure regulator? | Moisture separator | Vacuum breaker | Lubricator | Non-return valve | |
| 11 | 4512 | B | While inspecting the steering system at sea, you should check for _____. | air bubbles in the sight glass | any leaks in the system | over travel in the rudder angle indicator | proper rotation of the hydraulic steering pump | |
| 11 | 4513 | A | Which of the following statements describes the operation of a three-way solenoid trip/dump valve on a two stage flash-type evaporator? | The valve normally requires a manual latch reset after tripping. | The valve is set to trip if the sea water feed temperature exceeds 180° F. | The valve will only trip when the solenoid is energized. | The valve will trip if the distillate salinity is excessively low. | |
| 11 | 4514 | C | The safety device which normally stops the refrigeration compressor before the relief valve starts to open is the _____. | low pressure cutout switch | back pressure cutout switch | high pressure cutout switch | relief valve bypass | |
| 11 | 4515 | B | Which of the figures illustrated would be the least desirable to use as a shaft collar lock screw? | figure F | figure H | figure G | figure L | GS-0080 |
| 11 | 4516 | D | If the flow of water from a centrifugal pump is allowed to be stopped by closing the discharge valve while the pump continues to run for an extended period, which of the following will occur? | The wearing rings will become excessively worn. | The water pressure will decrease to shut off head | The water pressure will rise above shut off head | liquid in the pump will overheat | |
| 11 | 4520 | B | From the data shown in the illustration, what would be the refrigeration effect of a typical refrigeration system operating at saturated conditions with a high side pressure of 125.8 psig and a low side pressure of 9.0 psig? | 126.2 BTU/lb | 482.3 BTU/lb | 608.5 BTU/lb | 629.9 BTU/lb | RA-0011 |
| 11 | 4521 | C | From the data shown in the illustration, what would be the refrigeration effect of a typical refrigeration system operating at saturated conditions with a high side pressure of 154.5 psig and a low side pressure of 6.2 psig? | 606.7 BTU/lb | 138.9 BTU/lb | 467.8 BTU/lb | 580.0 BTU/lb | RA-0011 |
| 11 | 4522 | C | A characteristic of lubricating oil which causes additional centrifuging requirements for proper purification is _____. | high TBN value | low oil floc point | low oil demulsibility | low oil neutralization number | |
| 11 | 4523 | B | The torque rating of a fluid power motor is expressed in _____. | RPMs under a given load condition | inch-pounds at a given RPM | foot-pounds per piston stroke | foot-pounds at a given viscosity | |
| 11 | 4524 | A | When the hydraulic control lever for a deck winch is placed in the neutral or off position, the spring set brake on the fluid motor drive shaft is _____. | engaged by spring action and only released by hydraulic pressure | released by spring action and hydraulically locks the winch when the drum ceases rotating | engaged by spring action plus hydraulic pressure | opened hydraulically and held open by spring action whenever the electrical supply is secured | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4525 | C | The fluid used to directly control the cylinder valve position of the refrigeration compressor mechanism illustrated, is obtained from the _____. | high side liquid receiver | gas discharge from the compressor | discharge of the compressor lube oil pump | discharge of a secondary hydraulic pump specifically installed for this operation | RA-0013 |
| 11 | 4526 | A | When using a portable droplight, you should always insure that the _____. | bulb is protected by a shield or guard | extension cord is always yellow and clearly marked 'FOR DROP LIGHT USE ONLY' | bulb capacity does not exceed 75 watts | all of the above | |
| 11 | 4527 | D | As shown in the illustration of a capacity control unit for an air conditioning compressor, the port labeled "B" would be sensing the _____. | high side liquid receiver level | the compressor discharge pressure | discharge pressure of the compressor lube oil pump | the compressor suction pressure | RA-0013 |
| 11 | 4528 | A | Early models of the flash-type evaporators required a pump to drain the steam condensate from the salt water feed heater. This pump would normally discharge to the _____. | DC heater | first stage flash chamber | second stage flash chamber | brine overboard line | |
| 11 | 4529 | C | With regards to a direct acting air pilot relay shown in the illustration, an increase in pressure at "B" will cause the _____. | supply air pressure at "G" to increase | pilot valve stem to move upward | operating air pressure at "F" to increase | operating air pressure at "F" to decrease | GS-0050 |
| 11 | 4530 | C | The probable cause of erratic operation of a pneumatically controlled steam pressure reducing valve is _____. | the range spring has become weakened | an incorrect loading pressure supplied to the power unit | a defective air pilot valve | insufficient steam supply pressure | |
| 11 | 4531 | A | Operation of a hydraulic pump in a cavitating condition can cause _____. | the hydraulic fluid to become overheated | the fluid motor to become overloaded | the relief valve to hum | a decrease in pump RPM | |
| 11 | 4532 | C | What equipment is required when processing bilge slops for overboard discharge? | A 100 PPM oily water separator. | A lube oil purifier operating as a separator. | A 15 PPM oily water separator and discharge monitor. | A 30 PPM oily water separator and discharge monitor. | |
| 11 | 4533 | A | Determine the values of "A", "B", and "C" in the table accompanying the chart shown in the illustration. | A = 71.2° F, B = 62.5° F, C = 35.0 BTU/lb | A = 90.0° F, B = 62.5° F, C = 27.0 BTU/lb | A = 40.0° F, B = 71.2° F, C = 35.0 BTU/lb | A = 52.1° F, B = 65.2° F, C = 37.0 BTU/lb | RA-0021 |
| 11 | 4534 | C | HCFC-22 has been recovered from a refrigeration system during replacement of the condenser. This refrigerant can be _____. | recycled into a system that had used HCFC-11 | reclaimed as a low pressure system refrigerant | returned to the system | must be destroyed, as it can no longer be used | |
| 11 | 4535 | C | A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____.<br>I. the motor to run warmer than usual<br>II. the second stage would operate at a higher temperature | I only | II only | Both I and II | Neither I nor II | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4536 | D | Some of the hazards associated with air-operated power tools may be avoided if the operator would _____. | inspect the hoses for cracks and other defects | remove jewelry and loose clothing | bleed air pressure from the lines before breaking the connections | all of the above | |
| 11 | 4537 | A | The definition of superheat refers to the amount of heat a substance contains and applies to _____.<br>I. vapors<br>II. solids | I only | II only | Both I and II | Neither I nor II | |
| 11 | 4538 | D | According to 46 CFR, the tail shafts of a twin screw ocean going vessel must be examined and inspected in the presence of a marine inspector _____. | each time the vessel is dry-docked | at least twice every five years | at every annual inspection | at least once every five years | |
| 11 | 4539 | C | Hot water system heat exchangers are selected for the heating load required plus about 50% excess capacity to allow for _____. | start-up | increased thermal efficiency | increase capacity during times of peak demand | heat loss due to insufficient insulation | |
| 11 | 4540 | D | The necessity of the six-way valve, as used on many older steering gears, has been replaced by _____. | a simpler two-way valve | check valves installed in the discharge/return lines of the steering gear pumps | spare telemotor system | an automatic hydraulic method when changing over steering gear pumps | GS-0123 |
| 11 | 4542 | D | If increasing the cooling water flow to a refrigeration condenser fails to lower the condenser pressure, the probable cause may be due to _____. | a high level of Freon in the receiver | a low level of Freon in the receiver | partially blocked thermal expansion valve | excessive amount of non-condensable gases trapped in the condenser | |
| 11 | 4544 | D | According to 46 CFR, the tail shafts of a twin screw ocean going vessel must be examined and inspected in the presence of a marine inspector _____. | each time the vessel is dry-docked | at least twice every five years | at every annual inspection | at least once every five years | |
| 11 | 4547 | C | One disadvantage of using a mechanical shaft seal instead of mechanical packing is that _____. | it requires periodic disassembly and adjustment | it is unsuitable for high temperature applications | seal failure usually requires the immediate removal of the pump from service | it is unsuitable for high pressure applications | |
| 11 | 4548 | B | When installing a mechanical shaft seal on a pump, it is important to _____. | make the final spring collar adjustments with the pump running | ensure that correct spring pressure is applied to the seating faces | polish the seating faces with emery cloth prior to assembly | run the pump "dry" for initial break-in of the shaft seal | |
| 11 | 4549 | D | The most likely reason for premature failure of a pumps mechanical shaft seal is _____. | viscosity of the fluid being pumped is too low | pump discharge relief valve is leaking | insufficient prime mover speed | operating the pump "dry" upon start up | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4551 | C | It requires 151 HP to operate a centrifugal pump having a 14.75 inch impeller at 1800 RPM, at a capacity of 2250 GPM with a 218 foot head. If during an overhaul of the pump, the impeller diameter is reduced to 14 inches, the capacity of the pump operating at the same RPM would be _____. | 1924 GPM | 2027 GPM | 2136 GPM | the same as it was prior to the pump being overhauled | |
| 11 | 4552 | B | It requires 151 HP to operate a centrifugal pump having a 14.75 inch impeller at 1800 RPM, at a capacity of 2250 GPM with a 218 foot head. If during an overhaul of the pump, the impeller diameter is reduced to 14 inches, the discharge head of the pump operating at the same RPM would be _____. | 206 feet | 196 feet | 186 feet | the same as it was prior to the pump being overhauled | |
| 11 | 4553 | A | It requires 151 HP to operate a centrifugal pump having a 14.75 inch impeller at 1800 RPM, at a capacity of 2250 GPM with a 218 foot head. If during an overhaul of the pump, the impeller diameter is reduced to 14 inches, the horsepower requirement to operate the pump at the same RPM would be _____. | 129 HP | 136 HP | 143 HP | the same as it was prior to the pump being overhauled | |
| 11 | 4554 | D | As shown in the illustration, if the "TOP VIEW" of an orthographic projection is indicated by figure "4", and the "FRONT VIEW" is indicated by figure "5", which figure would best represent the correct "RIGHT SIDE VIEW"? | Figure "24" | Figure "6" | Figure "7" | Figure "9" | GS-0165 |
| 11 | 4556 | A | All portable electric tools should have a ground connection to prevent _____. | electric shock if the tool is shorted | burning out the motor from an overload | overloading the motor from a short | grounding the plastic case through a short | |
| 11 | 4557 | A | Cavitation in a hydraulic pump is _____. | the compression and collapse of vapor bubbles in the pump internal components | caused by pitting of the pump internals due to galvanic action | caused by pitting of the pump internals due to operation with acidic oil | a result of a clogged discharge filter | |
| 11 | 4558 | A | The component shown in the illustration is a graphic representation of a _____. | two-stage hydraulic pump unit | double pump unit | bi-directional flow pump | single stage constant flow pump | GS-0096 |
| 11 | 4559 | A | If a hydraulic pump sounds like it is pumping rocks when in operation, the problem is most likely _____. | cavitation | galvanic action | slippage | None of the above | |
| 11 | 4560 | C | If the boom shown in the illustration can be raised, but not lowered, the problem is most likely with the "Topping Circuit" _____. | hydraulic pump | linear actuator controlling boom angle | counterbalance valve | counterbalance valve, ball check , failed to close | GS-0161 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4561 | A | If the operating pressure is determined to be normal in the system shown in the illustration, yet the crane does not swing (slew) in either direction when the directional control valve is operated, the problem could be _____. | an obstruction in the brake release cylinder line (2) | double check valve (14) ball jammed to the left | oil cooler partially obstructed | relief valve (12) set to open at too high a pressure | GS-0161 |
| 11 | 4562 | A | The counter balance valve (5) in the winch circuit shown in the illustration _____. | helps prevent slung loads from dropping prematurely | regulates the amount of oil to the brake release cylinder | prevents over-travel of the winch when retrieving | aligns the pump's discharge to the winch's hydraulic motor | GS-0161 |
| 11 | 4563 | D | You press start button on the hydraulic power unit shown in the illustration, and the motor does not start. The first thing you should check is the _____. | suction strainer condition | controller contactor operating coil | pump discharge relief valve setting is too low | controller circuit breaker | GS-0161 |
| 11 | 4564 | B | The directional control valves as shown in the illustration are _____. | three-position, spring loaded, and closed centered | three-position, spring loaded, and open centered | three-position, detented, and closed centered | three-position, detented, and open centered | GS-0161 |
| 11 | 4565 | C | When a rotating engine shaft frequency and the natural harmonic vibration frequency become synchronized at a particular speed, that speed is known as the _____. | synchronous speed | sympathetic speed | critical speed | breakaway speed | |
| 11 | 4566 | A | According to 46 CFR Part 91, a temporary Certificate of Inspection, Form CG-854, may be issued to a self propelled cargo vessel _____. | when the immediate issuance of a Certificate of Inspection is not possible at the completion of an inspection | until all minor deficiencies (CG-835's) found by the CG inspector during a biannual inspection are corrected, at which time a regular certificate may be issued | to cover an expired permanent Certificate of Inspection provided that the certificate did not expire within 15 days after the vessel left the last port of the U. S. | under all of the above situations | |
| 11 | 4567 | B | Liquid line gas in a refrigeration system may cause erosion of the expansion valve's internal components and could cause the valve to _____. | overheat | hunt | freeze shut | freeze open | |
| 11 | 4568 | A | According to 46 CFR Part 58, when installing a new independent fuel tank for the emergency lighting generator, which of the following statements must be strictly adhered to in accordance with Coast Guard Regulations? | The tank must be located on an open deck or in an adequately ventilated metal compartment in which the ambient temperature never exceeds 150° F. | Iron or steel tanks shall be galvanized on the interior to prevent the formation of rust if any condensation should occur. | The fuel tank shall be insulated from the vessel's common ground to insure against static electricity hazards. | All of the above. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4569 | D | According to 46 CFR Part 91, which of the following statements concerning a vessel's Coast Guard Certificate of Inspection and associated inspections is correct? | Application may be made for inspection and issuance of a new Certificate of Inspection at any time during the period of validity of the current Certificate. | To prevent any delay, a temporary Certificate of Inspection may be issued pending delivery of the regular Certificate of Inspection upon completion of the inspection. | A reinspection of a vessel holding a valid two year Certificate of Inspection is normally conducted between the tenth and fourteenth months of inspection date. | All of the above. | |
| 11 | 4570 | C | According to 46 CFR Part 61, what is the maximum allowable permitted wear on a stern tube bushing for a vessel that has its propelling machinery located amidships, with a water lubricated stern tube bearing carrying a 12 inch diameter shaft ? | 1/4 inch | 5/16 inch | 3/8 inch | 1/2 inch | |
| 11 | 4571 | C | If it becomes necessary to start an axial piston hydraulic motor under conditions where the hydraulic fluid is colder than the lowest temperature recommended for proper operation, you should operate the system at _____. | minimum speed until the normal operating pressure is reached | neutral stroke until all of the air has been vented | no load until the normal operating temperature is reached | maximum torque to attain rapid warm-up | |
| 11 | 4572 | D | Regarding the reducing valve shown in the illustration, the spring force generated as a result of compression from turning the hand wheel, is balanced by the _____. | small spring beneath the controlling valve | signal from an external pilot valve | steam pressure on the inlet side of the valve | reduced pressure acting on the underside of the diaphragm | GS-0054 |
| 11 | 4574 | C | According to regulations (46 CFR Part 58), a boiler combustion control system may be tested at _____. | a pressure not less than 1.25 times the maximum allowable working pressure | a pressure not less than 1.5 times the maximum allowable working pressure | the maximum allowable working pressure of the system | the normal operating pressure of the system provided full loading is accomplished | |
| 11 | 4575 | D | In a typical hydraulic steering gear system, as the designated rudder angle is approaching the helm command angle, what will be the reaction of the steering gear follow-up mechanism? | The follow-up mechanism will be compensating with an increasing signal to the hydraulic pump tilt box controls. | The follow-up mechanism will be inactive as long as rudder angle error exists. | The follow-up mechanism will send a hydraulic signal back to the helm as the rudder angle is achieved | The follow-up mechanism will be compensating with an decreasing signal to the hydraulic pump tilt box controls. | |
| 11 | 4576 | C | A vessel has a mean draft of 28 feet 08 inches before taking bunkers. What will be the final aft draft after taking on nine hundred tons of fuel oil, if the TPI immersion is 50 and the final forward draft is 30 feet 00 inches? | 30 feet 00 inches | 30 feet 02 inches | 30 feet 04 inches | 30 feet 08 inches | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4577 | A | Which of the following best describes the adiabatic pressure/volume relationship with regards to a fixed amount of a saturated gas? | As pressure decreases, volume increases | As pressure increases, volume increases | As pressure decreases, volume decreases | As volume increases, pressure increases exponentially | |
| 11 | 4578 | D | As shown in the illustration, at which point would the refrigerant temperature be the highest? | 4 | 6 | 13 | 16 | RA-0012 |
| 11 | 4579 | C | Which of the following statements is true concerning centrifugal pumps? | They are particularly well suited for pumping high viscosity fluids. | They operate best under negative suction pressure conditions. | A flow is developed by imparting kinetic energy to the fluid by the rotation of an impeller. | They operate more efficiently when mounted in a horizontal position. | |
| 11 | 4580 | B | Coast Guard Regulations (46 CFR Part 56) require all power-operated valves, other than those opened against spring force, to have an energy storage system. That energy storage system shall be capable of _____. | being cross connected to an alternate power supply | cycling all connected valves from the initial valve position to the opposite position and return | operating continuously for 60 minutes after a power failure | closing all connected valves three times | |
| 11 | 4581 | C | The power necessary to close the diaphragm control valve, as used in a pneumatic control system, is supplied by the _____. | valve positioning plunger | controlled fluid pressure | operating or loading pressure | valve diaphragm tension | GS-0051 |
| 11 | 4582 | C | Ship's bulkheads are reinforced against bending and bulging with the addition of _____. | stanchions | girders | stiffeners | rabbits | |
| 11 | 4583 | C | A one ton air conditioning system has which of the listed operating characteristics? | It forces 2,000 lbs. of refrigerant through the evaporator per day. | It forces 2,000 lbs. of air per hour across the evaporator coils. | It has the capacity to melt 2,000 lbs. of ice per day. | It has the capacity to melt 2,000 lbs. of ice per hour. | |
| 11 | 4584 | B | A squealing sound generated by a reciprocating air compressor upon starting may indicate _____. | badly leaking valves | defective unloader | compressor interstage leakage | abnormally tight drive belts | |
| 11 | 4585 | A | In an air conditioning system, low discharge head pressure associated with a reciprocating compressor can be the result of _____. | leaky suction valves | insufficient cooling water to the condenser | air in the evaporator coils | air in the condenser | |
| 11 | 4586 | C | The open end wrench size for a 3/4 inch American National Standard hex head machine bolt is _____. | 3/4 inch | 7/8 inch | 1 1/8 inches | 1 1/2 inches | |
| 11 | 4587 | B | The exploded drawing shown in the illustration is intended to show the _____. | total number of hidden parts in the assembly | component parts aligned for assembly | disassembled components in a orthographic perspective | cross section view of the hidden parts | GS-0025 |
| 11 | 4588 | D | When cutting with a handheld hacksaw, you should apply downward pressure on the hacksaw frame _____. | on the forward stroke and backward stroke | only on the backward stroke | only when cutting non ferrous metals | only on the forward stroke | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4589 | D | One function provided by a hydraulic accumulator is to _____. | provide an area where air can separate from the oil | provide an area to separate solid contaminants from the oil | act as an oil and water separator | absorb sudden changes in hydraulic fluid flow occurring in the system | |
| 11 | 4592 | B | Which chemical, when released into the atmosphere, has been found to eventually reach the stratosphere and react unfavorably with the earths ozone layer? | fluorine | chlorine | nitrogen | carbon | |
| 11 | 4593 | A | If the drive belts on an air compressor were squealing during startup, you should _____. | check the operation of the unloaders | check the air filter | check for a receiver outlet valve which may be partially closed | check for a defective high pressure cut-out switch | |
| 11 | 4594 | B | When the axis of the pinion gear is parallel to the center of the bevel gear, similar to right angle drive gear shown in the illustration, the drive would be identified as a _____. | hypoid type | spiral bevel type | zerol type | straight-tooth bevel type | GS-0128 |
| 11 | 4595 | C | Machinery vibration sensing devices are commonly identified as _____. | transducers | resistance temperature devices | accelerometers | frequency synthesizers | |
| 11 | 4596 | B | A machinery vibration monitoring program can be used to identify bearing defects by _____. | measuring output torque | frequency spectrum analysis | thermal radiography | pressure differential analysis | |
| 11 | 4597 | C | As shown in the illustration, what would be the recommended grease replenishment interval for a 5 ½ inch radial ball bearing operating under normal load at approximately 1000 rpm? | 2000 hours | 3000 hours | 6000 hours | 8000 hours | GS-0176 |
| 11 | 4598 | D | If the compressor assembly was operated as shown in figure #5 of illustration GS-0159, which bearing wear pattern would most likely develop for the motor pulley bearing shown in illustration GS-0174? | ( a ) | ( b ) | ( c ) | ( d ) | GS-0174 |
| 11 | 4599 | D | In terms of metric pressure conversion, an absolute pressure of 1 "bar" would be approximately equal to what value "psia"? | 3.5 | 7.5 | 10.5 | 14.5 | |
| 11 | 4600 | D | When converting metric pressure values, an absolute pressure of 7 "bars" would be approximately equal to what value of "psia"? | 21 | 41 | 61 | 101 | |
| 11 | 4601 | A | If the compressor assembly was operated as shown in figure #3 of illustration GS-0159, which bearing wear pattern would most likely develop for the motor pulley bearing shown in illustration GS-0174? | ( a ) | ( b ) | ( c ) | ( d ) | GS-0174 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4602 | B | Which of the following conditions is most likely to cause water hammer in the potable water system shown in the illustration? | The hydro-pneumatic tank being half full of water | Loss of air in the hydro-pneumatic tank. | A low water level in the potable water storage tank. | Operating both pumps simultaneously. | GS-0173 |
| 11 | 4603 | A | Which of the following statements is true concerning the valve shown in the illustration? | The valve is a non-rising stem design. | The valve is normally used to throttle the flow of liquid. | The valve only requires one turn of the handwheel to fully open. | The valve seats cannot be replaced or repaired. | GS-0047 |
| 11 | 4604 | D | In terms of metric pressure conversion, approximately what value of "psi" equals one "bar"? | 1.5 | 4.5 | 10.5 | 14.5 | |
| 11 | 4605 | D | The action of water circulating within a natural circulation boiler, is the direct result of _____. | furnace flame radiation | tube wall conduction | gas convection | water density differences | |
| 11 | 4606 | D | What is the distance between the center of the discharge outlet and the top of the motor illustrated? | 34.625 inches | 35.000 inches | 35.625 inches | 36.000 inches | GS-0011 |
| 11 | 4607 | C | Which of the figures shown in illustration GS-0080 would be the most suitable to fasten the hub of a pump and motor shaft coupling? | figure B | figure C | figure F | figure H | GS-0080 |
| 11 | 4608 | B | Which of the conditions listed represents the greatest effect of excess frost accumulation on evaporator coils in a refrigeration system? | Keeps the refrigerated space cooler. | Reduces the efficiency of the plant. | Increases the load on the compressor. | Has no affect on the system. | |
| 11 | 4609 | C | Which of the following forms of energy concerns the forces which bind atoms together in a molecule? | Thermal energy | Mechanical energy | Chemical energy | Kinetic energy | |
| 11 | 4610 | B | A stop-check valve is a type of check valve that _____. | cannot be shut remotely | can only control the amount of flow in one direction | can be opened manually to allow flow in both directions | contains both a gate valve disk and a check valve disk | |
| 11 | 4611 | A | Which of the following conditions would indicate that the liquid line strainer in a refrigeration system has become excessively restricted and requires cleaning or replacement? | Noticeable temperature drop between the strainer inlet and the outlet tubing. | Frosting at the outlet of the receiver. | Frosting at the inlet of the compressor. | Excessively high suction pressure. | |
| 11 | 4612 | C | "Prussian Blue" is commonly used _____. | for cooling water treatment | for boiler water treatment | when inspecting valve seat contact | as a lube oil additive | |
| 11 | 4613 | C | A Reed and Prince screwdriver should be used only on a Reed and Prince screw, and a Phillips screwdriver should only be used on a Phillips screw in order to avoid damaging the _____.<br>I. tool<br>II. screw head | I only | II only | both I and II | neither I or II | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4614 | B | A "barrel" is defined as a unit of liquid, measured at 60° F, and is equivalent to _____. | 25 U.S. gallons | 42 U.S. gallons | 55 U.S. gallons | 60 U.S. gallons | |
| 11 | 4615 | B | After installing a new hydraulic pump in a system, what special attention should be given to the hydraulic system? | The relief valves in the system should be readjusted. | The filters and strainers should be checked frequently. | System return pressure should be readjusted. | The system should be drained and renewed with a fluid of different operating characteristics. | |
| 11 | 4616 | D | Which units of measurement are commonly used to express pump suction head values when calculating pump capacities and hydraulic horsepower? | Inches of mercury for positive head and feet of water for negative head | Feet of water for positive head and inches of mercury for negative head | Inches of mercury for both positive and negative heads | Feet of water for both positive and negative heads | |
| 11 | 4617 | C | A command signal input to the steering gear has initiated rudder movement for 20° right rudder. The follow-up mechanism at the beginning of the rudder movement will _____. | be in motion with a null input | not be in motion with a null input | be in motion providing an input to place the variable stroke pump on maximum stroke | be in motion providing an input to place the variable stroke pump on null stroke | GS-0123 |
| 11 | 4619 | B | According to 46 CFR Part 113, what would be the maximum time delay period allowed for a ships steering system to reach a 15 degree right rudder helm order from midships, before an alarm condition will be indicated? | 5 seconds | 10 seconds | 15 seconds | 20 seconds | |
| 11 | 4620 | D | According to the illustration shown, which of the following statements is/are true? | If port "C" became obstructed or plugged, the outlet pressure would tend to decrease. | If port "J" became obstructed or plugged, the outlet pressure would tend to increase. | If auxiliary valve "D" developed a considerable leak, the outlet pressure would tend to increase. | all of the above | GS-0044 |
| 11 | 4621 | A | According to the illustration shown, which of the following statements is/are true? | If port "C" became obstructed or plugged, the outlet pressure would tend to decrease. | If port "J" became obstructed or plugged, the outlet pressure would tend to decrease. | If auxiliary valve "D" developed a considerable leak, the outlet pressure would tend to decrease. | all of the above | GS-0044 |
| 11 | 4622 | B | In order to adjust the temperature set point of the temperature regulating valve illustrated, you should adjust the device indicated by the letter _____. | A | B | M | L | GS-0045 |
| 11 | 4623 | C | Which of the following is not part of the high side of a refrigeration system? | condenser | receiver | back pressure valve | liquid line | |
| 11 | 4624 | B | Cylinder inlet valve failure in a low pressure air compressor can be caused by _____. | flywheel misalignment with the driving motor | mechanical failure in the unloader | insufficient rocker arm clearance | excessive moisture buildup in the receiver | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4630 | C | An emergency bilge suction is required for _____. | ballast tanks | sludge tanks | machinery space bilges | cargo hold bilges | |
| 11 | 4631 | A | Which type of pump would normally be used to transfer fairly large quantities of fluids at relatively low pressures? | propeller type | reciprocating type | gear type | screw type | |
| 11 | 4632 | B | Small irregularities on the seat and disk of a globe valve may be manually repaired with the valve in place by the process known as _____. | honing | lapping | counter-sinking | knurling | |
| 11 | 4633 | B | Flanged joints in high pressure hydraulic system piping are commonly made leak proof by _____. | seal welding the flange circumference | incorporating the use of neoprene O-rings | using Teflon threaded connections | using street elbows whenever possible | |
| 11 | 4634 | B | Prussian blue is used to _____. | locate waterside heat exchanger leaks | check the fit of metal mating surfaces | locate refrigeration system leaks | provide corrosion protection for stainless steel | |
| 11 | 4635 | C | The open-end wrench size for a standard 3/4 inch American National hex head bolt is _____. | 10/24 inch | 3/4 inch | 1 1/8 inches | 1 1/2 inches | |
| 11 | 4636 | D | Which of the following statements is true concerning V-belt drives for reciprocating air compressors? | Belts generally stretch slightly during the first few months of use. | Excessively tight belts will overload the bearings. | Belts are generally replaced as a set. | All of the above. | |
| 11 | 4637 | A | Which of the listed statements is true concerning the start-up of a main propulsion boiler centrifugal feed pump? | The pump should always be started with the discharge valve closed. | The pump should always be started with the suction valve closed. | A priming pump is always required to flood the impeller suction. | The pump should always be started with the sealing line valves closed. | |
| 11 | 4638 | D | What would probably occur if excessive misalignment existed between a centrifugal pump and its power source? | pump cavitation will increase | power consumption will be reduced | flashing may occur at the impeller eye | shaft bearings will overheat | |
| 11 | 4639 | C | Piping is sized by its nominal _____. | average between inside and outside diameters | outside diameter | inside diameter from 1/8 inch to 12 inches | weight per linear foot | |
| 11 | 4640 | B | In a refrigeration system, the pressure in the control tubing of a thermostatic expansion valve depends upon the _____. | temperature in the box | temperature of the evaporator coil outlet | compressor suction pressure | heat transferred from the saturated liquid in the evaporator | |
| 11 | 4641 | B | The hydraulic tubing installation shown as figure D in the illustration will probably leak when operating because the tubing _____. | will contract in diameter and expand in length under pressure | has no provision to compensate for strain due to expansion and contraction | will stretch and overstress the male threads on the fitting | cannot properly twist when pressure is applied | GS-0065 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4642 | D | A typical shipboard domestic multi-box refrigeration system operates with one compressor and condenser. What is the purpose of the sensing line connected to the thermal bulb at the evaporator coil outlet? | To open or close the solenoid valve when the box temperature increases or decreases. | To open the back-pressure regulating valve when evaporator coil pressure increases. | To direct evaporator outlet pressure to the lower part of the solenoid bellows. | To transmit the bulb pressure (proportional to the coil temperature) to the thermal expansion valve diaphragm. | |
| 11 | 4643 | A | Operating the compressor and motor as shown in figure 4 of the illustration, will result in _____. | premature damage to the bearings of the driving motor | premature damage to the bearings of the compressor | an increase in the axial thrust on the compressor crankshaft | a decrease in the axial thrust on the compressor crankshaft | GS-0159 |
| 11 | 4644 | C | If you have a duplex, single acting, reciprocating pump making 140 strokes/minute with a 3" diameter cylinder, and a 12" stroke with a 94% volumetric efficiency, what is the capacity of this pump? | 28 gpm | 38 gpm | 48 gpm | 58 gpm | |
| 11 | 4645 | D | If a centrifugal pump sealing line becomes restricted while operating under a negative suction head (suction lift), which of the following may occur? | The pump may lose suction. | The pump gland may overheat. | Pump may tend to cavitate. | All of the above | |
| 11 | 4646 | D | The operation of a bellows type thermostatic steam trap depends upon the _____. | changing position of a float within a chamber | expansion of two dissimilar bimetallic strips of metal | flashing of steam when its vapor pressure is rapidly reduced | expansion and contraction of a sealed chamber closing and opening a control valve | |
| 11 | 4647 | B | The metal scribe of a combination square should only be used to _____. | remove packing | mark on metal | punch gasket holes | clean file teeth | |
| 11 | 4648 | B | What percent of a roller bearing should normally be filled with grease? | Less than 25% | 25% - 50% | 50% - 75% | 75% -100% | |
| 11 | 4649 | A | Which recovery procedure should be used to minimize the loss of oil from the system during the recovery of refrigerant from small appliances such as a water cooler? | vapor recovery | liquid recovery | initial recovery | vapor-liquid recovery | |
| 11 | 4650 | B | Which of the following is true concerning the hydraulic system illustrated? | The piston rod will extend if solenoid "B" is energized. | The piston rod will extend at a faster rate than it retracts. | If neither solenoid is energized, the pump drains oil back to the sump through "G". | All of the above. | GS-0041 |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4651 | D | Which of the following is true concerning the hydraulic system illustrated? | The piston rod will extend if solenoid "A" is energized. | The piston rod will extend at a faster rate than it retracts. | If neither solenoid is energized, the pump drains oil back to the sump through the directional spool valve. | All of the above. | GS-0041 |
| 11 | 4653 | B | The device "F" shown in the illustration is best used to _____. | bolt motor frames to bedplates | assist in securing a coupling half to its shaft | fasten pump casing flanges together | secure tapered pins in position | GS-0080 |
| 11 | 4654 | B | The size of flexible hose used in a hydraulic system is indicated by _____. | the outside diameter of the hose | the numerical designation found on the 'skin' of the hose | a color code on the armor | the thickness of the tube wall | |
| 11 | 4655 | A | If the numerical designation indicated on the outside of a hydraulic hose is BXP-10, the "dash size" 10 indicates that the inside diameter of the hose is _____. | 5/8 inch | 3/4 inch | 7/8 inch | 1 inch | |
| 11 | 4656 | D | What common practice is used to reduce the response time for a bearing thermometer using a protective well? | Fill the well with nitrogen. | Fill the well with water. | Drill small holes in the well. | Pack the space around the bulb with a graphite grease. | |
| 11 | 4658 | A | Small leaks in flange gaskets should be stopped immediately after installation because _____. | the leak may cause damage to the flange mating surface over a period of time | the leak may cause corrosion on the flange | the leak will result in severe flange distortion | small leaks cause the pipeline to creep | |
| 11 | 4659 | C | Which drill size would you use to machine and tap a 3/4 -10 National Coarse internal thread? | 27/64 inches | 31/64 inches | 21/32 inches | 25/32 inches | |
| 11 | 4660 | A | An aligning punch is commonly used to _____. | line up corresponding holes in adjacent symmetrical parts | loosen jammed bolts | tighten tapered pins | remove snap rings | |
| 11 | 4661 | D | In a centrifugal pump, the purpose of the sealing line is to provide liquid from the discharge side of the pump directly to the _____. | slinger ring | wearing ring | pump coupling ring | lantern ring | |
| 11 | 4662 | C | When welding or burning with an oxygen-acetylene torch, the acetylene hose working pressure must not exceed _____. | 2 psi | 5 psi | 15 psi | 25 psi | |
| 11 | 4663 | C | A constant pressure range is maintained in the potable water system of many vessels by using _____. | constant speed supply pumps | variable speed supply pumps | an air cushion in a hydro-pneumatic surge tank | a pressure regulator in the pump suction piping | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4664 | A | To ensure an accurate tank level pneumercator reading, you should _____. | purge the balance chamber to remove any liquid | insure that the balance chamber is completely full of liquid | take the reading with the operating cock in the vent position | make certain the tank vents are completely closed | |
| 11 | 4665 | B | According to the illustration, what dimension would indicate the Pitch Diameter of the thread? | A | B | C | H | GS-0177 |
| 11 | 4666 | A | According to the illustration, what dimension would indicate the Helix Angle of the thread? | F | K | L | D | GS-0177 |
| 11 | 4667 | A | According to the illustration, what would be the value of dimension "H" for a screw thread identified as 3/4-13 NF? | 0.077 inches | 0.133 inches | 0.255 inches | 0.333 inches | GS-0177 |
| 11 | 4668 | B | Which of the following figures is INCORRECT regarding the direction of flow and shaft rotation for the lobe type pump shown? | A | B | C | D | GS-0179 |
| 11 | 4669 | A | According to the illustration, which of the following conditions would most likely cause Pump "A" to short cycle? | The hydro-pneumatic expansion tank is operating with an insufficient air charge. | The hydro-pneumatic tank is operating with a low water level. | A low water level exists in the potable water storage tank. | Pump "A" wearing rings have excessive clearance. | GS-0173 |
| 11 | 4670 | A | Copper tubing is manufactured and classified as type K, L, and M. Which type would offer the greatest wall thickness for a given nominal size? | Type K | Type L | Type M | Type L and M have identical wall thicknesses | |
| 11 | 4671 | B | According to the illustration, what would be the value of the angle labeled "L" for an American Standard screw thread? | 20 degrees | 30 degrees | 45 degrees | 60 degrees | GS-0177 |
| 11 | 4673 | B | The ruler indicated in the illustration is commonly referred to as a _____. | Metric Scale | Engineers Scale | Architects Scale | Micrometer Scale | GS-0023 |
| 11 | 4674 | C | The dimension indicated on the 1/2 inch architects scale, shown in the illustration, will be equal to _____. | 9 feet - 3.5 inches | 5 feet - 3.5 inches | 3 feet - 1.5 inches | 2 feet - 3.5 inches | GS-0023 |
| 11 | 4675 | D | Which of the following statements regarding refrigeration systems is/are true? | In any vapor compression refrigeration system, oil and refrigerant are present in the entire system. | Refrigerant is the working fluid and is required for cooling. | The main purpose of the oil is to lubricate the compressor. | All of the above | |
| 11 | 4676 | D | One important objective of a practical skill demonstration for mariner certification is to _____. | institute busy work for both the trainee and assessor | establish if the trainee can perform certain tasks at a later time | subjectively prevent trainee's from being licensed or certified | determine the degree of competence of the trainee during the assessment | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4677 | A | If a hole were to form in the division plate between stages of a flash type evaporator _____. | vaporization of the feed water would continue at second stage designed saturation conditions | all of the distillate produced would be certain to be contaminated by salt water carry over | Both A and B | Neither A nor B | |
| 11 | 4678 | C | What is the allowable tolerance indicated on the outside diameter of the bushing illustrated? | .050 inch | .003 inch | .0005 inch | 1.2015 inches | GS-0017 |
| 11 | 4679 | B | The efficiency of a flash type evaporator can be increased by _____. | lowering brine discharge density | decreasing the absolute pressure of each stage | increasing the brine overboard discharge | increasing the pressure at the spray pipe | |
| 11 | 4680 | A | Which of the following modes of heat transfer does NOT require any physical contact between a warmer and a cooler substance? | Radiation | Conduction | Lamination | All of the above | |
| 11 | 4681 | C | The quantity of condensate passing through the illustrated steam trap will be reduced as the _____. | amount of vapor contained in "A" decreases | amount of liquid contained in "A" increases | amount of vapor pressure contained in "A" increases | vapor pressure of the liquid contained in "A" decreases | GS-0005 |
| 11 | 4682 | C | The result of mounting an impeller of a double suction centrifugal pump impeller with the vanes facing the wrong direction, would cause the pumps _____. | head capacity to improve | discharge to be reversed | efficiency to decrease | slippage to decrease | |
| 11 | 4683 | A | Protective equipment to be used while carrying out oxyacetylene welding should always include _____. | tinted goggles | ear plugs | non-sparking tools | steel toe safety shoes | |
| 11 | 4684 | D | According to 46 CFR Part 61, which of the following machinery remote control shutdowns is/are required to be tested during each regular inspection for certification? | Forced draft fan | Induced draft fan | Fuel oil transfer pump | All of the above | |
| 11 | 4685 | D | Which of the following methods is normally used to control the circulated air temperature of an air conditioning system using chilled water circulation? | A fan speed controller regulates the amount of air flowing across the coils. | Control dampers varying the number of passes the air makes across the cooling coils. | A regulating valve changes the inlet temperature of the water in the cooling coils. | A regulating valve controls the quantity of chilled water flowing in the cooling coils. | |
| 11 | 4686 | D | An unloader is installed on an air compressor to _____. | bypass the high pressure stage to the intercooler | prevent excessive interstage pressure buildup | control compressor discharge pressure | remove the compression load as the compressor comes up to speed during starting | |
| 11 | 4687 | D | When a refrigeration compressor is in the 'off' cycle, the thermal expansion valve _____. | is always wide open | will completely close | is open only until evaporator pressure is equalized | will operate as if the compressor was still running | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4688 | C | One cubic foot of salt water would equal approximately how many pounds? | 24 | 44 | 64 | 84 | |
| 11 | 4689 | C | A hydraulic system gear pump being fed from a reservoir frequently indicates signs of excessive pitting after two months of service. Which of the following would most likely contribute to this condition? | Abnormal pressurization is occurring in the reservoir. | A partial restriction in the return line has developed. | A vacuum condition has developed in the reservoir. | Operating oil temperature is determined to be below normal. | |
| 11 | 4690 | A | A hydraulic system gear pump being fed from a reservoir indicates signs of excessive pitting after two months of service. Which of the following would most likely contribute to this condition? | Excessive dust conditions have clogged the reservoir breather cap. | A partial restriction in the return line has developed. | Abnormal pressurization is occurring in the reservoir. | Operating oil temperature is determined to be below normal. | |
| 11 | 4691 | D | Distilled water from an evaporator is normally discharged into a potable water tank _____. | through a detachable hose connection | after first passing through an activated charcoal filter | after chemical analysis shows it is fit for consumption | after passing through a solenoid operated dump valve energized by an alarm monitor | |
| 11 | 4692 | C | An axial piston, variable stroke pump is used in a vessel's hydraulic steering gear. Under pressure, the oil leakoff from between the valve plate and cylinder barrel will _____. | cause loss of hydraulic oil from the system | result in extreme damage to the pump | cause damage to the pump if not continually drained from the pump casing | result in the system low side pressure to substantially drop off | |
| 11 | 4693 | D | Which of the following statements regarding low pressure, reciprocating, air compressor valves is correct? | A relatively large cylinder clearance space is required for valve operation. | Mechanical operating valve gear is required to open and close the valves. | Only the suction valve requires a push rod and rocker arm mechanism for valve operation. | Due to the physical construction of the valves, a relatively small cylinder clearance space is required for operation. | |
| 11 | 4694 | C | Fluctuating pressures and temperatures in a low pressure fresh water evaporator will _____. | eliminate most of the scale formation in the first effect | increase the heat level in all effects | increase the probability of priming | automatically cold shock the evaporator | |
| 11 | 4695 | B | According to Coast Guard Regulations (46 CFR), a power driven auxiliary steering gear for a vessel capable of a 20 knot service speed, must be capable of producing a specific range of rudder movement at which of the minimum speeds listed below? | 7 knots | 10 knots | 15 knots | 20 knots | |
| 11 | 4696 | C | Which of the listed pressure control valves would be used to permit the completion of one action of a hydraulic system before a second action would be permitted? | Replenishing valve | Unloading valve | Sequence valve | Pressure-reducing valve | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4697 | A | To thoroughly pump out the bilges using a horizontally mounted centrifugal pump, the _____. | pump must be continuously primed | volute must impart a radial and rotary motion of the water | suction side connection must guide the liquid to the lantern rings | stuffing box should not be allowed any water leakage | |
| 11 | 4698 | A | Which of the following statements concerning braze welding is/are correct? | Braze welding is an acceptable method of repairing malleable iron and mild steel. | A braze welded joint should be cooled immediately with cold water to obtain the highest strength. | Repairs to containers used in chemical processes, especially strong alkaline solutions, are effectively accomplished with braze welding. | All of the above. | |
| 11 | 4699 | D | In accordance with Coast Guard Regulations (46 CFR Part 56), a nonmetallic flexible hose, used in a nonvital freshwater system, operating at 125 psi must be constructed _____. | to withstand a hydrostatic test pressure of 188 psi | with a fiber reinforcement | in short reasonable lengths for the purpose of flexibility only | all of the above | |
| 11 | 4700 | A | With regards to the steam regulating valve shown in the illustration, the maximum amount of steam pressure at the valve outlet is primarily determined by the _____. | the adjusting screw "L" | maximum pressure in element "M" | position of diaphragm "A" | the maximum temperature of "M" | GS-0045 |
| 11 | 4701 | C | In the spring-loaded pressure reducing valve illustrated, what would cause the auxiliary valve "D" to close? | A decrease in the valve outlet pressure. | A decrease in the valve inlet pressure. | Raising adjusting screw "G". | All of the above. | GS-0044 |
| 11 | 4702 | C | The illustrated rudder shown is commonly referred to as a _____. | spade rudder | unbalanced rudder | semi-balanced rudder | full balanced rudder | GS-0131 |
| 11 | 4703 | C | A refrigeration system is found to be too warm, and the compressor is not operating. A service check determines the compressor suction pressure to be above the normal cut-in point, with a normal head pressure, and high evaporator superheat. Which of the following could be the cause of this problem? | A solenoid valve has failed closed. | A solenoid valve is stuck open. | The suction pressure control contacts are stuck open. | Cooling water flow to the condenser is excessive. | |
| 11 | 4704 | B | Which of the listed values represents the temperature at which water will change to saturated vapor at a pressure of 14.7 psia? | 198° F (92° C) | 212° F (100° C) | 335° F (168° C) | 414° F (212° C) | |
| 11 | 4705 | B | In the illustration, line "D" is a _____. | center line | hidden line | cutting plane line | dimension line | GS-0006 |
| 11 | 4706 | D | A lower thermostatic temperature setting will generally tend to cause an air conditioned space to have a _____. | lower relative humidity | lower air circulation | higher air circulation | higher relative humidity | |
| 11 | 4707 | A | Which of the listed metals offers the best resistance to sea water corrosion? | nickel | steel | aluminum | zinc | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4708 | C | The primary function of the device illustrated is to _____. | intensify the pressure developed by an air compressor during its normal running operation | open the discharge valves during the compressors operation to supply compressed air | remove all but the frictional load of an air compressor at start up | precharge the cylinders of an air compressor prior to the start-up of the unit | GS-0029 |
| 11 | 4709 | B | Which of the listed pressure vessels is normally exempt from hydrostatic testing at the regular Coast Guard inspection for certification occurring four years after the initial inspection? | Fire tube auxiliary boiler | A hydraulic accumulator | The main boilers | Air receiver repaired by a certified welder. | |
| 11 | 4710 | B | The transfer of heat within a solid, caused by the application of thermal energy, is called _____. | radiation | conduction | convection | condo-radiation | |
| 11 | 4711 | C | With respect to machine shop "taps and dies", a plug tap is correctly used for _____. | starting the threads on a circular rod | reversing the threads in a hole | the second cut when threading a blind hole | chasing the threads on a circular rod | |
| 11 | 4712 | D | When adding packing to a pump shaft seal, you must be careful to prevent _____. | excessive friction in the joint | excessive wear of the pump shaft | deterioration of the packing due to excessive tightening | all of the above | |
| 11 | 4713 | C | Which component in the illustrated hydraulic crane circuit acts to prevent the wire rope drum from accidentally paying out? | #1 and #3 | #2 and #3 | #4 and #5 | #15 and #18 | GS-0161 |
| 11 | 4714 | D | In order to minimize distortion in a weldment due to shrinkage, you should _____. | use intermittent welds rather than continuous welds wherever possible | make fewer passes with large electrodes as opposed to many passes with small electrodes | use restraining forces such as clamps, jigs, and fixtures | all of the above | |
| 11 | 4715 | C | The illustration is drawn to a scale of 1/4 inch = 1 inch. What is the actual full size dimension of "X", if the scale lengths for "E" = 5/8", "F" = 1 3/8", "G" = 2 1/8", and "H" = 5 3/4"? | 1.625 inches | 2.167 inches | 6.500 inches | 7.667 inches | GS-0007 |
| 11 | 4716 | D | In the illustration shown, which pair of letters represent the same physical surface of the component? | B and C | A and D | A and B | B and D | GS-0033 |
| 11 | 4717 | B | In a small refrigeration appliance using HFC-134a you would expect to see the greatest temperature drop across the _____. | evaporator | thermal expansion valve | compressor | receiver | |
| 11 | 4718 | A | The primary function of a back pressure regulator installed in a multi-box refrigeration system is to _____. | limit the minimum evaporator coil pressure to prevent excessively low evaporator temperatures | limit the maximum evaporator coil pressure to prevent excessively low evaporator temperatures | adjust the compressor discharge pressure to meet load demands | adjust the compressor suction pressure to meet load demands | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
|---|---|---|---|---|---|---|---|---|
| 11 | 4719 | C | Which of the following problems occurring in a hydraulic system can be caused by using an oil having a viscosity lower than specified? | Seal deterioration. | Condensation and rust formation. | Increased wear of moving parts. | Increase in internal fluid friction. | |
| 11 | 4720 | B | In the hydraulic crane circuit illustrated, which would be the correct hydraulic configuration required to raise the boom? | activate directional valve 9 and shift spool valve to area 3 | activate directional valve 9 and shift spool valve to area 1 | activate directional valve 8 and shift spool valve to area 3 | activate directional valve 8 and shift spool valve to area 1 | GS-0161 |
| 11 | 4721 | A | In the hydraulic crane circuit illustrated, what is the function of the component labeled #18? | Provide additional control when lowering the boom. | Provide additional control when swiveling the platform. | Control the lowering speed of the winch cable. | Provide a pressure relief if the boom becomes overloaded. | GS-0161 |
| 11 | 4722 | D | The efficiency and output capacity of a low pressure distilling plant will be greatly reduced if _____. | the second effect shell pressure is lower than the first effect | chemical feed is continuously introduced | brine overboard density approaches 1.5 / 32nds | brine overboard density approaches 1.0 / 32nds | |
| 11 | 4723 | B | The valve shown in the illustration is commonly identified as a _____. | hand expansion valve | back pressure regulating valve | bellows operated expansion valve | bellows operated king valve | RA-0006 |
| 11 | 4724 | D | A simplex pump making 60 pumping strokes per minute has a 10 inch stroke and a 6 inch diameter water cylinder, which is 75% full for each stroke. How many gallons of water are discharged per hour? | 4208 GPH | 6610 GPH | 1339 GPH | 3303 GPH | |
| 11 | 4725 | C | Operating a water service centrifugal pump with an excessive amount of wearing ring clearance would result in _____. | noisy pump operation | excessive pump vibration | a decrease in discharge head | excessive stuffing box leakage | |
| 11 | 4726 | C | Which of the listed materials have been used to manufacture piping available in standard weight, extra strong, and double extra strong wall thickness? | Plastic | Copper | Steel | All of the above | |
| 11 | 4727 | B | Which of the following statements represents an advantage of a triple-effect submerged tube evaporator compared to a single-effect submerged tube evaporator? | Less heat transfer surface area | Reduced steam requirements per pound of distillate produced | Less scale formation | Less complex to maintain and operate | |
| 11 | 4728 | C | If a flash-type evaporator is operating in extremely cold seawater temperatures, the engineer may expect that _____. | the evaporator feed heater will require less steam | the capacity will remain the same regardless of the evaporator shell temperature | the average salinity of the distillate may increase due to excessive vacuum | the average salinity of the distillate may decrease due to excessive vacuum | |
| 11 | 4729 | B | If the evaporator feed temperature from a flash type evaporator falls below 160° F _____. | the distillate may be directed to the storage tanks | the automatic three-way solenoid dump valve should direct distillate to the bilge | the demisters will become scaled | priming will occur in the first-effect | |
| 11 | 4730 | A | Which refrigerant listed is considered to have the highest ozone depletion potential? | R-12 | R-134A | R-123 | R-22 | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4731 | C | If the flow rate and pressure from a variable capacity pump was increased while supplying the device illustrated, the _____. | speed would increase, horsepower and torque would decrease | speed would decrease, horsepower and torque would increase | horsepower, torque, and speed would increase proportionally | horsepower, torque, and speed would decrease proportionally | GS-0058 |
| 11 | 4732 | B | Which of the following characteristics is true concerning the pump shown in the illustration? | The pump is most suited for high pressure hydraulic applications. | The unit is primarily designed to pump vapor only | The unit is designed to efficiently pump high viscosity liquids. | The unit will operate more efficiently at reduced RPM's | GS-0075 |
| 11 | 4733 | D | In the normal operation of a refrigeration system, when the refrigeration compressor cycles "off", the thermal expansion valve will _____. | immediately open wide | completely close | close to a preset minimum opening | show no immediate change in its operation | |
| 11 | 4734 | B | Which of the following statements represents an operating characteristic of neoprene or rubber stern tube bearings? | The bearing requires occasional adjustments. | The bearing is normally lubricated by seawater. | Cathodic protection for the propeller is not required. | Neoprene and rubber bearings require oil lubrication. | |
| 11 | 4735 | D | Where would you find the greatest amount of refrigerant superheat in an operating refrigeration system? | The evaporator outlet. | The receiver inlet. | The receiver outlet. | The compressor discharge. | |
| 11 | 4736 | A | The capacity of a fuel oil transfer pump is 100 gpm. If a fuel oil setting tank measures 6 feet by 6 feet by 12 feet high, how long must the pump run to fill the tank to 11 feet, if the tank presently holds 2 feet of fuel? | 24 minutes | 28 minutes | 32 minutes | 36 minutes | |
| 11 | 4737 | A | What would be the final mean draft in sea water of a 10 foot by 10 foot by 50 foot long barge weighing 10 long tons, if it was evenly loaded with an additional 50 long tons of cargo? | 4 feet, 2 inches | 5 feet, 2 inches | 6 feet, 2 inches | 7 feet, 2 inches | |
| 11 | 4738 | D | Which of the following factors should be considered when calculating the air conditioning requirements for a vessels accommodation spaces? | Solar gain | Quantity of fresh air supply | Number of occupants in the space | All of the above | |
| 11 | 4739 | A | What is the main reason that live auxiliary steam is normally attemporated before entering the feed heater of a flash evaporator? | To reduce the rate of scale formation on heating surfaces. | To increase the brine overboard density. | To increase the pressure in the heat exchanger. | To increase the pressure in the first stage flash chamber. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 4740 | A | On all vessels equipped with ammonia refrigeration units of over 20 cubic foot capacity, _____. | a self contained breathing apparatus must be provided for use as protection against gas leaking from the refrigeration unit | it is the sole responsibility of the chief engineer to ascertain that all crew members are familiar with the use of gas masks or breathing apparatus | 3 spare charges shall be carried for each self contained breathing apparatus | all of the above | |
| 11 | 4741 | A | The proper operation of a P-tank as found on oil industry supply vessels, depends primarily upon _____. | the correct air pressure supply | heating the cargo to the correct temperature | the correct circulating salt water pressure | All of the above | |
| 11 | 4742 | A | Which of the following is true concerning the proper use of a machine shop hand hack saw? | In general, the harder the material to be cut, the greater the number of teeth per inch on the blade to be used. | In general, it is generally required to use a coolant when cutting brass. | The teeth should point toward the handle when installing new blades. | All of the above | |
| 11 | 4743 | B | Which of the listed statements is correct concerning refrigeration systems? | Dehydrators must be used continuously in a refrigeration system. | One refrigeration ton is equivalent to the removal of 144,000 btu per day | A thermostatic expansion valve is used to control refrigerated space temperature. | The liquid receiver functions to collect and remove noncondensable gases. | |
| 11 | 4745 | C | Which of the listed statements is correct concerning refrigeration capacity is true? | One refrigeration ton is equivalent to the removal of 144,000 btu per hour | One refrigeration ton is equivalent to the removal of 12,000 btu per day | One refrigeration ton is equivalent to the removal of 144,000 btu per day | One refrigeration ton is equivalent to the removal of 12,000 btu per hour | |
| 11 | 4911 | D | Figure "B" in the illustration is improperly installed. A restriction will develop in this hose _____. | at the right hand end, regardless of the direction of flow | at the left hand end, regardless of the direction of flow | ahead of the direction of flow | trailing the direction of flow | GS-0063 |
| 11 | 5000 | D | As shown in the illustration, a section of standard weight, seamless steel pipe, has an external diameter of 4.0 inches. When the pipe, is bent into a 90 degree turn, the length of the outside edge of the curve "A-B" will exceed the length of the inside edge of the curve "C-D" by _____. | 1.05 inches | 1.25 inches | 2.67 inches | 6.28 inches | GS-0108 |
| 11 | 5001 | A | The heat added at line #5 shown in the illustration represents _____. | superheat | the latent heat of fusion only | the latent heat of vaporization | sublimation | SG-0001 |
| 11 | 5106 | D | Which of the precautions listed should to be observed when working with oxy-acetylene welding equipment? | Bottles should be labeled air and gas. | Keep cylinders away from exposure to cold temperatures. | Keep oxygen regulators and valves coated with a light film of oil. | Keep gas cylinders supported so that they can not tip over. | |

| Book | Num | Ans | Question | Answer A | Answer B | Answer C | Answer D | Illustr |
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| 11 | 5116 | A | Protective equipment while carrying out oxyacetylene welding should include the use of _____. | goggles | cotton gloves | trousers with deep pockets | wool jackets | |
| 11 | 5117 | B | If high relative humidity is maintained in a cargo hold, there is a significant possibility that _____.<br>I. there will be an accumulation of static electricity<br>II. mold will grow and contaminate the cargo | I only | II only | Both I and II | Neither I nor II | |