General Subjects II							
ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217120	3	An air compressor is equipped with an intercooler to _____. I. increase the efficiency of the compressor II. reduce the low pressure cylinder designed operating temperature	I only	II only	Both I and II	Neither I nor II	
217120	4	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	
217120	1	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	
217120	2	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	
217120	5	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	
217121	1	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	
217121	2	The heat of compression is partially removed from compressed air by _____.	intercoolers	after coolers	compressor water jackets	all of the above	
217122	1	The cylinders and intercoolers of most low pressure air compressors are cooled by _____.	water	oil	air	CO2	
217126	1	The air charge leaving an intercooler, or aftercooler of an air compressor can be expected to be _____.	superheated	super cooled	at or below the dew point	all of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217127	1	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	
217128	1	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	
217129	1	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
217140	1	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.	
217141	1	Moisture and impurities can be removed from pneumatic systems by using _____.	air intake heaters	desiccated suction strainers	multi-orifice suction valves	blow down valves and filters	
217142	1	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	
217143	1	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	
217144	1	Which of the listed devices would be installed at a control system air pressure reducing station?	Moisture separator	Vacuum breaker	Lubricator	Nonreturn valve	
217144	2	Which of the listed components would normally be installed with a Control Air System pressure regulator?	Moisture separator	Vacuum breaker	Lubricator	Nonreturn valve	
217145	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217160	2	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	
217160	1	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	
217161	3	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	
217161	4	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	
217161	2	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	
217161	1	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	
217161	6	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	
217161	5	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	
217161	7	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217163	1	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	
217164	1	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	
217165	1	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	
217166	1	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	
217167	2	The unloading of an air compressor may be provided by _____. I. holding the intake valve off of its seat II. temporarily relieving the the intercooler to the atmosphere	I only	II only	Both I and II	Neither I nor II	
217167	3	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
217170	2	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
217170	1	Over pressurization of an air compressor intercooler is prevented by the _____.	after cooler relief valve	intercooler relief valve	last-stage unloader	first-stage unloader	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217171	1	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 blow down of a relief valve is greater than the blow down of a safety valve.	
217180	1	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	
217181	1	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.	
217183	1	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	
217184	1	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	
217184	2	Air compressor receivers should be 'blown down' at least _____.	yearly	quarterly	monthly	daily	
217184	3	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.	
217185	1	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	
217200	1	Which of the listed valve types is typically used for suction and discharge valves on modern low pressure air compressors?	Poppet	Rotary	Reed	Sliding	
217201	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217202	1	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.	
217203	1	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	
217204	2	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.	
217205	1	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	
217220	1	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	
217221	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217242	1	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
217243	1	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
217243	2	The device shown in the illustration is commonly used to _____?	compress air	pump heavy liquids	pump refrigerant	generate electricity	GS-0120
217244	1	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
217244	2	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
217245	1	Lubricating oil is added to the device shown in the illustration by using the component labeled '_____.'	D	F	M	R	GS-0119
217245	2	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
217245	4	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
217246	1	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
217247	1	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
217249	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217250	1	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
217251	2	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
217253	1	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
217264	1	The piston displacement rate of a reciprocating air compressor can be modified by changing the _____.	piston speed	compressor capacity	volumetric efficiency	total pressure	
217265	1	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	
217268	1	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	
217269	1	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.	
217272	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217272	2	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	
217275	1	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	
217276	1	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	
217276	2	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	
217277	1	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	
217280	2	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	
217280	1	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	
217281	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217282	1	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	
217283	1	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	
217284	1	After disassembly, the safest way to remove carbon deposits from air compressor inlet and discharge valves is to use _____.	ammonia	diesel oil	gasoline	naphtha	
217285	2	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.	
217286	1	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.	
217300	1	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	
217301	3	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	
217301	2	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	
217303	1	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	
217303	2	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	
217304	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217304	2	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	
217305	1	Excessive lube oil consumption in a reciprocating air compressor is an indication of _____.	leakage in the after cooler	leakage in the intercooler	worn or broken piston rings	defects in the high pressure unloader	
217305	2	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 after cooler leaks	carrying the oil level higher than normal	
217307	1	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	
217307	2	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	
217308	1	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	
217309	1	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	
217310	1	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	
217311	2	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	
217312	1	Reciprocating air compressor bearing failure may result from _____.	a misaligned crankshaft	over tightened drive belts	contaminated sump oil	all of the above	
217313	1	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	
217314	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217315	1	If a ship service air compressor failed to unload, the _____.	compressor would dangerously over speed	air receiver pressure would be excessively low	circuit breaker may open on starting	compressor would pump lube oil	
217315	2	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	
217315	3	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	
217316	1	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	
217317	2	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	
217317	1	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	
217319	1	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	
217319	3	Leaking valves in an air compressor can be a result of _____.	excessive discharge pressure	abrasion, dust, and dirt	excessive compressor speed	irregular compression strokes	
217319	2	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	
217321	1	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 after cooler	compressor final discharge temperature	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217322	1	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	
217323	1	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.	
217324	1	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	
217326	1	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	
217327	1	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	
217327	2	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	
217329	1	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	
217332	1	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	
217334	1	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	
217335	3	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	
217336	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217337	4	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
217337	1	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
217337	3	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
217338	2	A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____. I. a high consumption of lube oil II. higher than normal air pressure in the receiver	I only	II only	Both I and II	Neither I nor II	
217338	5	A compressor operating with an accumulation of dust and grease on the surfaces of an intercooler would result in _____. I. the motor to run warmer than usual II. the second stage would operate at a higher temperature	I only	II only	Both I and II	Neither I nor II	
217338	1	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
217350	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217351	1	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	
217352	1	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	
217353	1	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	
217354	1	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)	
217371	1	The difference between the setpoint and the measured parameter in an automatic flow controller is called:	gain	bias	error	feedback	
217372	1	The range of values around a setpoint of a measured variable where "no action" occurs in an automatic flow controller is called:	deviation	error	dead band	bias	
217373	1	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	
217374	1	In a proportional controller, the term "offset" refers to the difference between the_____.	control point and set point	control point and proportional band	dead band and set point	dead band and proportional band	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217375	1	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	
217376	1	The difference between the set point in an automatic controller and the steady-state value of the measured parameter is called _____.	offset	gain	dead band	feedback	
217420	1	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
217421	1	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
217422	1	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
217422	2	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
217423	1	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
217425	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217426	2	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
217530	1	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
217532	1	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
217533	1	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	
217533	2	If you turn the handwheel 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
217534	2	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
217535	1	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.	
217536	1	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
217538	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217539	1	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
217540	1	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
217541	2	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
217541	1	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
217542	1	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
217542	2	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
217543	1	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
217551	1	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	
217552	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217553	1	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.	
217554	1	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.	
217560	1	As shown in the illustration, the pneumatic force balance unit could be used for a _____.	water level alarm actuator	proportional action steam pressure transmitter	feed water regulating value positioner	fuel oil heater temperature regulator	GS-0145
217561	1	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	
217562	1	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.	
217614	6	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217614	7	In order to increase the set point of the control valve illustrated to regulate the controlled temperature at the bulb (J), the part labeled _____.	"K" must be rotated clockwise	"A" must be rotated counterclockwise	"A" must be rotated clockwise	"K" must be rotated counterclockwise	
217615	1	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
217616	2	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
217617	2	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
217618	1	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	
217619	2	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
217620	1	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
217621	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217630	1	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	
217631	1	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	
217650	1	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	
217651	1	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	
217670	1	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
217671	3	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
217671	1	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
217671	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217672	1	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
217673	1	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
217674	1	Automatic thermostatic control valves are used in steam-heated heavy fuel oil service systems for what purpose?	maintenance of double bottom heavy fuel oil storage tank temperature	maintenance of fuel delivery temperature to boiler or diesel engine supply header as appropriate	maintenance of fuel delivery pressure to boiler or diesel engine fuel oil supply header as appropriate	maintenance of steam temperature supplying steam tracing lines for heavy fuel oil	
217675	1	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	
217690	1	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
217692	2	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	
217700	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217701	1	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	
217710	1	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.	
217711	1	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
217711	2	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	
217711	3	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	
217712	1	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	
217712	6	The reset process control mode is also considered to be the same as _____. I. proportional speed floating control II. derivative control	I only	II only	Both I and II	Neither I nor II	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217712	3	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	
217712	4	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	
217712	5	Reset control is considered to be the same as _____. I. proportional speed floating control II. integral control	I only	II only	Both I and II	Neither I nor II	
217712	2	The range of values through which the input can be varied without initiating an output response is known as _____.	deviation	offset	sensitivity	dead band	
217713	3	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	
217713	1	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
217713	2	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	
217714	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217714	5	In the operation of a proportional-plus-reset controller, the proportional action _____. I. aids the reset action during increasing error transients II. and the reset action are completely independent of one another	I only	II only	Both I and II	Neither I nor II	
217714	3	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.	
217714	6	In the operation of a proportional-plus-reset controller, the proportional action _____. I. and the reset action are completely independent of one another II. opposes reset action during decreasing error transients	I only	II only	Both I and II	Neither I nor II	
217714	2	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	
217714	4	In the operation of a proportional-plus-reset controller, the proportional action _____. I. opposes the reset action during decreasing error transients II. aids the reset action during increasing error transients	I only	II only	Both I and II	Neither I nor II	
217715	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217715	2	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	
217715	4	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	
217715	3	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	
217715	6	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	
217716	1	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	
217717	5	The characteristic of 'offset' is inherent with which mode of control? I. proportional control II. reset control	I only	II only	Both I and II	Neither I nor II	
217717	3	'Offset' is an inherent characteristic of which of the following types of control modes?	Two position	Proportional	Reset	Rate	
217717	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217717	2	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.	
217717	4	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	
217718	1	The quantity or condition which is measured and controlled is known as the _____.	controlled variable	manipulated variable	set point	control point	
217719	1	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	
217719	3	The control mode that is generally not used by itself is _____.	reset control	integral control	derivative control	two position differential gap control	
217719	2	Which of the following control modes is generally not used by itself?	Two position action	Proportional action	Integral action	Derivative action	
217719	4	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	
217720	1	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 hand wheel	fuel/air ratio control knob	
217722	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217723	2	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	
217723	4	The mandatory operating characteristic of a pure amplifier is the _____. I. form of the input and output energy must be the same 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	
217723	3	Which of the following proportional band values most closely approaches 'ON-OFF' control?	-10%	2%	100%	500%	
217723	1	A pure transducer utilizes _____.	integral action	rate action	proportional action	derivative action	
217724	2	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	
217724	3	Reset control is also referred to as _____.	proportional speed floating control	derivative control	rate control	proportional control	
217724	1	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	
217724	4	Reset control is also referred to as _____.	derivative control	integral control	rate control	proportional control	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217724	5	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	
217725	2	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	
217725	1	In an automation system, increasing or decreasing the loading pressure by a set amount is known as _____.	positioning	proportioning	biasing	controlling	
217726	1	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	
217726	2	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	
217727	2	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.	
217727	1	The ratio of output response to a specified change in the input is known as _____.	primary feedback	deviation	sensitivity	dead band	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217728	2	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	
217728	1	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 and the follow-up signal, until matched and cancelled, is the _____.	system differential	proportional band	error	command input	
217730	1	In an automation system, the effect of a control action sensed by a controller is known as _____.	command input	set point signal	output	feedback	
217790	1	The type of gage most commonly used to measure pressure is the _____.	bimetallic type	diaphragm type	bourdon tube type	resistance-temperature type	
217790	2	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	
217790	3	The type of gage most commonly used to measure pressure is the _____.	bimetallic type	diaphragm type	bourdon tube type	resistance-temperature type	
217791	1	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	
217792	1	A compound Bourdon tube gage is capable of measuring pressure and _____.	humidity	vacuum	temperature	density	
217792	2	A compound gage is used to measure _____.	temperature and pressure	humidity and temperature	pressure and vacuum	pressure and humidity	
217792	3	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	
217794	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217795	1	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
217796	1	The device shown in the illustration is an example of a simple _____.	Bourdon tube gauge	U-tube manometer	bridge gauge	hydrometer	GS-0115
217797	1	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	
217797	4	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	
217797	2	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	
217797	3	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	
217798	4	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
217798	1	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
217798	2	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
217800	1	In order to accurately measure very low positive pressures, which of the instruments listed should be used?	Compound gage	Bourdon tube	Manometer	Deadweight gage	
217801	1	Which of the following elements is common to all indicating instruments?	An electrical input	A bourdon tube	A reset button	A calibrated scale	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217802	1	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 process known as _____.	hysteresis	compression	homiostatious deformation	gas eddys	
217802	2	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	
217803	1	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
217804	1	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	
217805	1	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
217806	1	Differential pressures can be measured with the use of a _____.	diaphragm type gage	pressure transducer	manometer	all of the above	
217807	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217807	1	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 "D", and the height "H" for device "C" should be _____.	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
217808	1	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
217809	1	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
217810	1	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 the 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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217811	1	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
217840	1	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	
217841	1	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	
217842	1	Which of the following instruments can be used to measure the rate of air flow?	Thermometer	Anemometer	Psychrometer	Aerometer	
217870	1	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.	
217880	2	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.	
217881	1	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	
217882	1	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	
217883	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217884	1	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	
217890	1	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
217890	2	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
217910	2	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	
217910	1	On tank vessels using an automatic tape well for gaging tanks, the hand clutch is used to _____.	adjust the tape weight	lower the thieving rod	roll up the tape	calibrate the tank	
217912	1	A pneumercator is used to indicate fuel oil _____.	pressure	level	temperature	flow	
217912	2	A pneumercator is useful in measuring _____.	relative humidity	air pressure	liquid levels in tanks	fluid pneumercations	
217912	3	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	
217912	4	The instrument used to indicate the level of a fluid in a tank is called a _____.	fluid meter	calorimeter	viscosimeter	pneumercator	
217912	5	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
217914	5	A pneumercator measures the liquid level in a tank by sensing _____. I. head pressure II. liquid density	I only	II only	both I and II	neither I nor II	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217914	6	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	
217914	1	A pneumercator tank gage utilizes _____.	a Bourdon tube indicator	a balance chamber	an electronic sensing line	all of the above	
217914	2	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
217914	3	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
217930	1	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	
217930	2	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	
217931	1	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	
217931	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217932	2	A proportional band or range adjustment to a bourdon tube pressure gage is accomplished by _____. I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum 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	
217932	4	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? True Pressure Indicated Pressure 20 35 30 45 40 55 50 65 I. set point adjustment II. proportional band (range) adjustment	I only	II only	Both I and II	Neither I nor II	
217932	1	A set point adjustment to a bourdon tube pressure gage is accomplished by _____. I. adjusting the effective moment arm length between the end of the bourdon tube and the quadrant gear fulcrum 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	
217936	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
217936	2	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	
217970	2	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	
217970	4	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	
217970	1	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	
217970	3	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	
218000	2	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	
218000	4	Energy imparted to the hydraulic fluid in an operating hydraulic system is stored in the _____.	accumulator	actuator	ram	reservoir	
218000	3	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	
218000	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218001	1	The rubber bladder or separator bag installed in a hydraulic accumulator should only be filled with _____.	pure water	pure oxygen	dry nitrogen	dry hydrogen	
218005	1	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	
218006	1	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	
218006	2	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	
218020	1	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	
218020	2	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	
218024	2	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	
218024	1	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	
218025	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218025	3	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	
218025	5	In a typical hydraulic system, return lines to the reservoir are terminated below the normal oil level to prevent _____. I. foaming of the oil II. condensation of warm oil vapors upon return	I only	II only	Both I and II	Neither I and II	
218025	4	In a typical hydraulic system, return lines to the reservoir are _____. I. terminated at or just above the normal level II. placed as far from the pump suction as possible	I only	II only	Both I and II	Neither I and II	
218027	4	In a typical hydraulic system, a baffle is installed in the reservoir to _____. I. provide a critical reduction in free surface effect of the hydraulic pump II. retard flow of oil through reservoir to assist in heat removal	I only	II only	Both I and II	Neither I and II	
218027	5	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218027	3	In a typical hydraulic system, a baffle is installed in the reservoir to _____. I. insure proper lubrication of the hydraulic pump 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	
218027	6	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	
218028	1	In a hydraulic system using the device illustrated, the high pressure return is provided by _____.	A	B	C	D	GS-0118
218028	3	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	
218028	4	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
218028	2	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	
218029	1	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
218030	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218031	1	The component which is used to thoroughly separate small, fine, dust-like particulate contamination from hydraulic fluid is a/an _____.	accumulator	filter	separator	strainer	
218032	2	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	
218033	1	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	
218034	1	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	
218035	2	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	
218042	1	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	
218043	2	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	
218044	1	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	
218044	6	Which of the devices listed would be considered a hydraulic system directional control valve?	three-position valve	sequencing valve	unloading valve	counterbalance valve	
218044	2	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	
218044	7	Which of the devices listed would be considered a hydraulic system directional control valve?	Counterbalance valve	Offset, two position valve	Sequencing valve	Unloading valve	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218044	4	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	
218044	5	A valve installed in a hydraulic system to manipulate the reversal of fluid flow, is called a _____.	relief valve	reservoir valve	directional control valve	regenerative valve	
218044	8	Which of the devices listed is considered to be a hydraulic system directional control valve?	Unloading valve	Counterbalance valve	Detented position valve	Sequencing valve	
218044	3	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	
218045	1	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
218049	1	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	
218049	2	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.	
218050	3	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	
218050	2	Valve "D" indicated in the illustration is referred to as a/an _____.	relief valve	sequence valve	unloading valve	counter balance valve	GS-0049

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218050	1	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
218051	1	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	
218052	1	Most solenoid valves are actuated by _____.	a spring	an electromagnet	the force of gravity	refrigerant pressure	
218052	2	Directional control valves used in hydraulic systems may be positioned _____.	manually	mechanically	electrically	all of the above	
218053	1	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
218053	2	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
218054	4	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	
218054	6	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
218054	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218054	3	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	
218054	5	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
218054	1	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
218054	7	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	
218057	1	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	
218058	1	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	
218059	1	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	
218063	1	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
218063	2	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
218065	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218065	3	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
218065	1	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	
218070	1	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	
218071	2	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	
218072	1	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	
218072	2	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	
218075	1	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
218075	4	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
218075	3	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
218075	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218091	1	The device shown in the illustration is commonly known as a/an _____.	quad seal	soft-packing seal	spring seal	mechanical seal	GS-0071
218092	1	Which of the labeled parts would be considered as the 'dynamic seal ring' portion of the illustrated device?	A	B	E	G	GS-0071
218093	1	In application, which of the listed sealing devices is most similar to an O-ring?	V-ring	Cup seal	U-ring	Quad ring	
218094	1	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	
218130	1	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
218131	1	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
218133	1	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	
218134	1	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	
218135	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218136	1	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	
218137	3	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	
218137	2	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	
218138	1	The portion of a hydraulic hose that determines its overall strength, is the _____.	inner tube	braided inner layer(s)	outer cover	outer armor	
218138	2	The determining factor for the strength of a flexible rubber hydraulic hose is the _____.	external cover	synthetic rubber inner tube	braided layer	Teflon sleeve	
218150	2	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
218151	1	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
218152	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218152	1	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
218152	3	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
218154	1	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
218155	1	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
218156	1	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 high side pressure equalizes or is less than the set point pressure established by part _____.	A	E	I	J	GS-0040
218157	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218170	2	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
218171	1	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
218172	1	Which of the following components listed is shown in the illustration?	Heat exchanger	Variable displacement pump	Filter	All of the above	GS-0041
218173	1	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
218174	4	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
218174	1	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
218174	2	In hydraulics, the graphic symbol illustrated in Fig. A is used to represent a/an _____.	variable resistor	expansion joint	spring	flexible mount	GS-0068
218174	3	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
218178	1	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
218179	2	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
218179	3	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218180	1	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
218182	1	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
218190	1	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	
218191	2	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	
218192	1	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
218194	2	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	
218195	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218196	1	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.	
218197	2	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	
218198	2	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	
218198	1	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	
218199	1	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.	
218200	1	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	
218201	1	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	
218202	1	The delivery rate of an axial piston hydraulic pump is controlled by varying the position of the _____.	tilting box	slide block	pintle	reaction ring	
218202	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218202	3	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	
218203	3	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
218203	2	Regarding the hydraulic transmission illustrated, the "A" end is a _____.	variable stroke motor	fixed displacement pump	variable stroke pump	fixed displacement motor	GS-0057
218203	1	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
218204	1	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.	
218205	1	Hydraulic pumps most commonly used in steering systems are of the _____.	lobe type	screw type	axial piston type	volute type	
218205	2	Which of the following types of hydraulic pumps would be used in a steering system?	Lobe	Screw	Radial piston	Volute	
218209	1	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
218210	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218211	2	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
218211	3	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
218211	1	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
218212	2	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
218221	1	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
218221	2	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
218221	3	Oil is returned to the illustrated radial piston hydraulic pump piston(s) numbered as _____.	1	2	3	2 and 3	GS-0059

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218223	1	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
218223	2	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
218223	3	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	
218225	2	In a radial piston pump, reversal and control of fluid flow are accomplished by moving the _____.	central valve	radial plunger	floating ring	cylinder body	
218250	1	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	
218251	1	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	
218253	2	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
218253	12	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
218253	18	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218253	21	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
218253	1	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
218253	13	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
218253	17	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
218253	22	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
218253	14	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
218253	15	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
218253	16	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218253	19	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
218260	3	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.	
218260	1	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	
218262	1	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	
218264	1	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	
218265	1	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.	
218280	1	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	
218282	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218283	1	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	
218290	3	Which of the listed illustrations correctly represents the installation of a hydraulic hose?	A	B	C	D	GS-0063
218290	8	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
218290	6	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
218290	5	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
218290	1	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.	
218290	2	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
218290	4	Which of the listed illustrations shows the INCORRECT method for installing hydraulic tubing?	A	B	C	D	GS-0065
218290	7	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
218291	2	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218291	3	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	
218291	1	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	
218297	1	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
218297	3	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
218298	2	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	
218299	1	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
218301	1	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	
218310	1	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	
218310	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218313	1	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	
218330	3	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.	
218330	2	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	
218330	1	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	
218331	2	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	
218331	4	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	
218332	1	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.	
218333	1	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	
218334	1	With an increase in temperature, the volume of hydraulic fluid _____.	contracts	remains the same	remains constant if pressure decreases	increases	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218335	1	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	
218340	1	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.	
218340	2	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.	
218341	1	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	
218342	1	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	
218344	1	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	
218350	3	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	
218350	5	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.	
218350	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218351	1	The hydraulic oil most likely to thin out when hot and thick when cold would have a viscosity index of _____.	20	40	60	80	
218353	1	Which characteristic or condition will have the greatest effect on increasing a hydraulic oil's viscosity?	Pour point	Cloud point	Vacuum	Pressure	
218354	1	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	
218360	1	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	
218364	4	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	
218364	5	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	
218364	3	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	
218364	1	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	
218365	5	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	
218366	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218366	3	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	
218366	4	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	
218366	1	Air trapped in the hydraulic fluid of a steering system may be indicated by _____.	the steering pumps over speeding	a jammed open relief valve	a constantly occurring improper rudder response	excessive ram pressure	
218367	1	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	
218368	1	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	
218380	1	Hydraulic machinery failures are commonly caused by contamination of the hydraulic fluid and _____.	fluid friction	fluid turbulence	component misalignment	pressure surges	
218381	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218383	3	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	
218383	1	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	
218383	2	The major source of chemical contaminants in hydraulic fluid is _____.	microscopic steel shavings	abrasive waste	anti-oxidant compounds	oxidation by-products	
218390	2	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
218390	1	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
218392	1	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	
218393	1	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	
218400	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218410	1	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.	
218411	1	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.	
218412	2	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 of the following conditions represents the probable cause?	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.	
218412	3	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 statements listed 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 over speeding.	
218412	1	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 operation. Which of the following statements represents the cause?	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218420	1	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	over speeding of the hydraulic pump	extended system life	
218420	4	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
218420	2	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	
218420	3	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.	
218440	1	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	
218441	1	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	
218442	2	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	
218442	1	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	
218445	1	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	
218446	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218447	1	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
218448	1	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
218449	1	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
218450	1	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
218451	1	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
218460	1	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	
218461	2	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.	
218461	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218470	1	Energy losses occurring in a hydraulic system are ultimately absorbed by the _____.	reservoir expansion chamber	hydraulic piping flexibility	atmosphere as heat	fluid as friction	
218471	1	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	
218480	1	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	
218481	2	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.	
218482	1	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.	
218483	2	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)	
218483	3	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218484	1	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	
218485	1	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	
218486	2	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	
218487	2	According to 46 CFR, a cargo hatch fluid-power operating system is considered to be fail-safe if a component failure will result in _____.	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	
218488	1	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	
218489	1	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	
218500	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218503	1	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
218504	1	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
218505	1	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
218506	2	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: I. The length of time the steering gear pump remains on stroke is proportional to helm angle input 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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218506	1	When the helm angle position is changed, the series of corresponding events of the steering gear will include _____. I. rate of steering gear ram movement will be proportional to amount of helm angle input 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	
218510	1	Rudder position is shown on the bridge by the _____.	rudder angle indicator	follow-up gear	telemotor position	Rapson slide indicator	
218520	1	In an electro-hydraulic steering system, damage due to rudder shock is prevented by _____.	buffer springs	relief valves	oil flowing through the pumps	dashpots	
218520	3	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	
218520	2	In an electro-hydraulic steering system, rudder shock is limited by _____.	a differential gear	return springs	a hydraulic accumulator	relief valves	
218830	2	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	
218830	1	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	
218830	4	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.	
218830	5	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218830	6	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	
218830	3	Rudder motion is prevented from exceeding the movement of the steering wheel by the _____.	return springs	six-way valve	follow-up gear	differential gear	
218835	4	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
218835	3	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.	
218850	3	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
218850	1	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	
218851	2	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
218851	3	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218860	2	In an emergency, the electro-hydraulic steering units can be directly controlled by the _____.	trick wheel	rapson slide	follow-up gear	receiver unit	
218860	1	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	
218862	7	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
218862	8	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
218862	9	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
218862	16	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
218862	20	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
218862	6	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
218862	12	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218862	17	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
218862	1	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.	
218862	3	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
218862	4	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
218862	15	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
218862	19	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
218862	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218862	10	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	
218862	11	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.	
218862	13	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	
218862	14	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	
218862	21	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	
218863	1	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	
218864	1	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	
218864	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218866	1	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
218868	1	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	
218869	1	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	
218876	1	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
218880	1	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	
218881	1	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.	
218885	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218889	2	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
218891	1	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
218910	2	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	
218910	3	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	
218910	4	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	
218910	1	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	
218911	1	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	
218920	4	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218920	2	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 using the trick wheel equal movement of the variable stroke control device from neutral is available.The probable cause is _____.	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
218924	3	When air becomes trapped in the hydraulic fluid of a steering system, the _____.	rudder will respond sluggishly	hydraulic rams will over speed	sight glass will show bubbles	ram relief valves will lift	
218924	1	Air trapped in the hydraulic fluid of a steering system should be indicated by _____.	the pump over speeding	an improper rudder response	bubbles in the sight glass	ram relief valves lifting	
218924	2	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	
218927	1	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	
218950	1	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	
218951	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218951	3	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 ahead. For a 20 knot vessel, this test must be carried out at _____.	7 knots	10 knots	15 knots	20 knots	
218951	4	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	
218952	1	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	
218952	2	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	
218952	4	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218952	8	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	
218952	5	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	
218952	3	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	
218952	6	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.	
218952	7	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	
218954	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218954	3	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	
218954	4	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	
218954	2	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	
218956	1	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.	
218959	1	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	
218959	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218970	1	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	
218970	2	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	
218970	3	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	
218970	4	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	
218971	1	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	
218973	1	The part of the anchor windlass that engages the anchor chain for lifting is called the _____.	warping head	fairlead	wildcat	capstan	
218974	1	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	
218976	1	A shot of anchor chain has a length of _____.	6 fathoms	12 fathoms	15 fathoms	45 fathoms	
218977	1	A shot of anchor chain is equal to _____.	one chain link	one - 90 foot segment	90 fathoms	one - 15 foot segment	
218978	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
218979	1	All of the links in the next to the last inboard shot of chain are painted _____.	yellow	white	red	orange	
218980	1	All of the links in the last shot of anchor chain are painted _____.	yellow	white	red	orange	
218981	1	In the hydraulic anchor windlass system illustrated, pressure relief of the main pressure piping is provided by _____.	D	E	L	M	GS-0160
218982	1	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
218983	1	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
218983	2	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
218983	3	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
218985	2	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	
219000	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219001	1	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
219004	3	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
219004	1	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
219005	1	Why is electrical power preferred over mechanical power for driving heavy machinery on drilling rigs?	More fuel efficient.	More flexible.	Lighter.	Less maintenance.	
219006	1	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
219010	1	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	
219010	3	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	
219010	4	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	
219010	2	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	
219014	1	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	
219016	1	Winch gears must be maintained in proper alignment to prevent _____.	overheating of the lube oil	over speeding of the motor	wear on the braking system	damage to the teeth	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219017	1	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
219030	1	Which problems can occur if the brake band lining of a wildcat brake becomes excessively worn?	The driving engine will over speed.	The anchor will immediately drop.	The clutch will overheat.	The brake's effectiveness will be reduced.	
219031	1	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	
219040	1	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	
219050	1	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	
219051	1	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	
219051	2	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	
219060	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219061	1	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 that the _____.	replenishing pump "K" drive coupling is broken	relief valve controlled by the pilot operated directional control valve "L" is not seating properly	manual transfer valve is in the wrong position for the main pump being operated	pressure from the brake release cylinder "E" has failed to bleed off when the primary valve unit "J" is placed in the operating position	GS-0160
219062	1	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
219063	1	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
219065	4	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
219066	1	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
219067	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219100	1	The method of framing shown in the illustration utilizes the type of construction termed _____.	transverse	web	Isherwood	longitudinal	GS-0086
219100	2	In ship construction, structural hull members installed athwart ship are _____.	deck beams	stringers	girders	breasthooks	
219100	5	In a longitudinally framed ship, the longitudinal frames are held in place and supported by athwart ship members called _____.	stringers	web frames	pillars	brackets	
219100	3	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	
219100	4	The structural members of the hull extending in a fore and aft direction are called _____.	frames	joiners	longitudinals	knees	
219100	6	In ship construction, the hull frame members extending athwart ship are called _____.	deck frames	stringer frames	longitudinal frames	transverse frames	
219101	2	Vertical support members used to strengthen bulkheads are called _____.	stiffeners	panels	stanchions	brackets	
219101	3	Ship's bulkheads are reinforced against bending and bulging with the addition of _____.	stanchions	girders	stiffeners	rabbits	
219102	2	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	
219104	1	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	
219105	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219106	1	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.	
219106	2	The depth of fuel oil in a double bottom tank is measured through the _____.	vent line	depth gage	manhole cover	sounding tube	
219107	3	Vertical transverse structures in the double bottom are known as _____.	pillars	floors	ceilings	stanchions	
219107	1	A lightening hole, shown in the illustration, is identified by the letter '____.'	A	H	J	all of the above	GS-0086
219108	2	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	
219108	1	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	
219108	3	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	
219114	6	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	
219114	7	The purpose of bilge keels is to _____.	lower the center of gravity of the ship	reduce the amplitude of roll	reduce pitching	reduce yawing	
219114	8	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219114	1	The outer strake of the inner bottom on each side of the ship is called the _____.	rider plate	outer plate	margin plate	stealer plate	
219114	5	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	
219114	2	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	
219114	3	The welded joint located between two plates in the same strake of hull plating is called a _____.	bracket	scarf	lap	butt	
219114	4	The garboard strake shown in the illustration is identified by the letter '____.'	B	D	E	F	GS-0086
219120	1	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	
219120	4	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	
219120	2	In ship construction, which of the listed strengthening members act to support the decks?	Pillars	Girders	Bulkheads	All of the above	
219120	3	Vertical structural members used to support and transmit downward forces of a load are called _____.	pillars	stanchions	columns	all of the above	
219123	1	The end joint formed by adjoining plates in a hull plating strake is properly identified as a _____.	bracket	scarph	butt	seam	
219150	2	The decks of a MODU are supported by transverse members called _____.	trusses	deck longitudinals	deck beams	web frames	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219150	3	In MODU construction, beams are transverse girders which provide support to _____.	bulkheads	deckhouse structures	decks	vertical frames	
219150	4	Deck beams on a MODU are generally spaced at equal intervals and run _____.	longitudinally	vertically	transversely	intermittently	
219150	1	The deck plating on a MODU is supported primarily by deck longitudinals and deck _____.	girders	stanchions	frames	beams	
219151	3	Between the side frames of a MODU, support for the deck beams is provided by _____.	stanchions	brackets	web frames	deck stringers	
219151	4	The deck loads on a MODU are distributed through the deck beams to the _____.	frames	hull	stringers	plates	
219151	9	Lighter longitudinal stiffening frames on the MODU side plating are called _____.	stringers	side frames	side stiffeners	intercostals	
219151	2	In MODU construction, beam brackets are triangular plates joining the deck beam to a _____.	bulkhead	frame	stanchion	deck longitudinal	
219151	6	A MODU having continuous closely spaced transverse strength members is _____.	longitudinally framed	transversely framed	cellular framed	web framed	
219151	8	When the longitudinal strength members of a MODU are continuous and closely spaced, the vessel is _____.	transversely framed	longitudinally framed	intermittently framed	web framed	
219151	1	Stanchions prevent the entire deck load on a MODU from being carried by the _____.	bulkheads	stringers	frames and beam brackets	deck longitudinals	
219151	5	Support of MODU side plating is provided primarily by transverse _____.	beams	girders	frames	bulkheads	
219151	7	Reinforcing frames attached to a bulkhead on a MODU are called _____.	side longitudinals	intercostals	stiffeners	brackets	
219152	1	Joiner bulkheads on a MODU provide _____.	compartmentation	watertight integrity	structural support	tank boundaries	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219152	2	Vertical partitions providing strength and compartmentation on a MODU are called _____.	decks	bulkheads	joiner work	walls	
219152	3	Regarding MODU construction, bulkheads in the quarters are generally _____.	structural	watertight	non-structural	continuous	
219154	1	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	
219156	1	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	
219156	2	A continuous watertight bulkhead on a MODU may also be a/an _____.	structural bulkhead	exterior bulkhead	centerline bulkhead	joiner bulkhead	
219156	3	Structural bulkheads on a MODU are usually _____.	continuous	watertight	transverse	non-watertight	
219162	2	Compared to internal structural plating, the exterior hull plating on a MODU is usually _____.	stronger	thinner	more corrosion resistant	a lower grade steel	
219162	3	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.	
219162	1	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	
219169	2	On a MODU, the deck stringer is the outboard most deck _____.	plating	beam	stiffener	stanchion	
219169	1	The heavier outboard strake of deck plating on a MODU is called the deck _____.	stiffener	beam	stringer	doubler	
219170	1	Deck beams on a MODU are generally spaced at equal intervals and run _____.	longitudinally	vertically	transversely	intermittently	
219180	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219180	2	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.	
219181	6	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	
219182	1	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.	
219183	1	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	
219185	1	The location of a vessel's frame stations may be obtained from which of the listed drawings?	Profile	Base line	Cross section	Buttock	
219187	1	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	
219190	1	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	
219192	1	The rudder shown in the illustration is correctly termed a/an _____.	balanced rudder	unbalanced rudder	semi-balanced rudder	contra-guided rudder	GS-0131
219193	2	The illustrated rudder shown is commonly referred to as a _____.	spade rudder	unbalanced rudder	semi-balanced rudder	full balanced rudder	GS-0131
219194	1	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
219200	1	Ferrous metals are metals containing _____.	no iron	a large percentage of copper	a large percentage of iron	a large percentage of aluminum	
219201	1	The hulls of most modern towing vessels constructed today are fabricated from _____.	wrought iron	high alloy steel	mild steel	corrosion resisting steel	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219202	1	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	
219204	1	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	
219220	4	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	
219220	5	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	
219220	1	The construction portfolio may be included as part of the MODU _____.	general plans	operating manual	builders documentation	Coast Guard file	
219220	2	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	
219220	3	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	
219220	6	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	
219220	7	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	
219226	2	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	
219226	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219228	1	What class of bulkhead is required around the galley on a MODU?	Class A	Class B	Class C	Class D	
219228	2	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	
219230	1	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	
219231	2	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.	
219232	1	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	
219232	2	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	
219233	2	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	
219233	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219233	3	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	
219233	4	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	
219233	5	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	
219233	6	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	
219234	1	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.	
219236	1	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	
219240	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219241	1	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	
219242	1	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	
219243	1	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.	
219244	1	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	
219245	1	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	
219246	1	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	
219247	3	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219247	2	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	
219247	1	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	
219248	1	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.	
219249	1	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	
219251	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219251	2	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	
219252	1	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	
219252	2	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	
219252	3	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	
219260	1	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.	
219262	1	According to Coast Guard Regulations (46 CFR), a single steel hull cargo vessel operating exclusively in freshwater, shall be drydocked, or hauled out, at intervals not to exceed _____.	1 year	2 years	3 years	5 years	
219266	1	According to regulations (46 CFR), who may grant an extension of the tailshaft examination interval?	Officer in Charge, Marine Inspection office	Commandant CG 543	Authorized Representative of the American Bureau of Shipping	Official Representative of the Naval Pollution Control Office	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219266	2	Coast Guard Regulations (46 CFR) permit the interval required for drawing certain tailshafts to be extended by the _____.	Vessel Operator's senior Port Engineer	Senior ABS surveyor	Commandant (G-MOC)	U.S. Maritime Administration	
219268	1	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	
219269	2	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	
219269	1	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	
219270	1	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	
219270	2	The purpose of the propeller fairwater cone is to _____.	lock the propeller nut in position	minimize water turbulence	eliminate axial thrust	eliminate cavitation	
219270	3	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	
219280	1	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.	
219280	2	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.	
219281	1	Stern tube and strut bearings lined with hardwood or rubber composition materials are lubricated with _____.	saltwater	graphite	light lubricating oil	heavy lubricating oil	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219281	3	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.	
219282	3	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.	
219282	4	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
219282	1	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
219282	2	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.	
219283	3	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	
219283	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219283	2	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	
219290	1	The tail shaft of an ocean going vessel is usually supported by the _____.	spring bearings	tail bearings	stern tube bearings	propeller bearings	
219292	2	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	
219300	1	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	
219302	1	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
219304	1	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
219305	1	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	
219306	1	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
219307	2	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219310	2	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	
219310	3	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	
219320	2	Propeller pitch speed minus ship speed divided by the propeller pitch speed is termed _____.	apparent slip	true slip	pitch	propulsive efficiency	
219320	3	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%	
219320	1	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	
219330	3	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	
219330	2	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	
219330	4	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219330	6	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	
219330	1	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	
219330	5	Water leaking through the stern tube stuffing box is used to accomplish which of the following actions?	Cooling	Lubrication	Flushing	All of the above	
219360	1	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	
219361	1	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	
219371	1	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.	
219380	1	The lignum vitae in a stern tube bearing is normally lubricated with _____.	grease	oil	water	tallow	
219390	4	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	
219390	1	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	
219390	2	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	
219390	3	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219391	1	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	
219401	1	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	
219402	1	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	
219403	1	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.	
219404	1	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.	
219410	2	One of the determining factors regulating the time interval for drawing a vessel's tailshaft 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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219410	3	According to 46 CFR, the tailshafts 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	
219410	4	According to 46 CFR, the tailshafts 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	
219411	1	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.	
219412	2	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	
219414	1	According to 46 CFR Subpart 61.20 regarding the periodic tests of machinery and equipment, what is the maximum tail shaft to stern tube bearing clearance (at the after end of the stern tube) that would require rebushing for a vessel in ocean service, with an aft propulsion machinery space, a 14" diameter tail shaft, and a water lubricated stern tube bearing constructed of material other than rubber?	.2500	.3125	.3740	.4375	
219414	5	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219414	3	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 inch (.635 cm). 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.	
219415	1	Following the withdrawal of the tail shaft, which non-destructive test could be used to locate cracks? I. liquid penetrant dye II. magnetic flux	I only	II only	Both I and II	Neither I nor II	
219450	1	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	
219451	1	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	
219452	1	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	
219453	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219454	1	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 merchant mariner's document is endorsed QMED, any rating. You should _____.	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	
219470	1	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	
219474	1	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	
219474	2	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	
219475	1	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	
219475	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219476	3	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	
219476	2	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	
219477	2	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.	
219478	1	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.	
219479	3	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	
219479	1	The minimum firefighting equipment to be maintained onboard a tank vessel, can be determined from the _____.	U.S.C.G. Firefighting Manual for Tank Vessels	U.S.C.G. Equipment List	vessel's Certificate of Inspection	vessel's current articles	
219479	2	The vessel's firefighting equipment is listed on the _____.	Muster List ("Station Bill")	official ship's paper	hull certificate	Certificate of Inspection	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219517	1	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	
219518	1	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	
219518	2	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	
219520	2	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.	
219520	4	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 life boatman in charge of each lifeboat.	The location of the vessel at the time of the drill.	The time it took to lower the boat.	
219520	3	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	
219524	1	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.	
219526	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219527	3	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	
219527	4	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	
219527	1	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	
219527	2	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	
219529	1	Certificates of Inspection for offshore drilling units are issued for a period of _____.	24 months	36 months	48 months	60 months	
219540	2	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	
219540	1	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	
219540	4	How often must a U.S. Coast Guard engineering license be renewed?	Annually	Every 3 years	Every 5 years	Every 10 years	
219540	3	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	
219542	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219560	1	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.	
219560	3	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.	
219562	1	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.	
219563	1	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.	
219563	2	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.	
219564	3	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	
219564	6	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219564	8	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	
219564	2	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	
219564	4	If hot oil comes in contact with a diesel engine turbocharger, catches fire, and causes in excess of $(USA)25,000 damage to your ship, by law this must be reported to the _____.	engine manufacturer	American Bureau of Shipping	U.S.C.G. Officer in Charge, Marine Inspection at the next port	vessel underwriters	
219564	7	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	
219564	9	An air tank rusts out, explodes, and causes in excess of $(USA)25,000 damage to the engine room. By law according to 46 CFR Part 4, this accident must be reported to the _____.	owner or his agent	insurance underwriter	air tank underwriter	U.S. Coast Guard	
219565	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219566	1	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.	
219568	1	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	
219569	3	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.	
219570	1	According to 46 CFR, 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	
219570	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219580	1	Coast Guard regulations for small passenger vessels of less than 100 gross tons require drydocking 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	
219580	3	Small passenger vessels of less than 100 gross tons shall be drydocked 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	
219580	2	Small passenger vessel of less than 100 gross tons shall be drydocked 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	
219581	1	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	
219582	1	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	
219583	2	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'	
219583	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219584	1	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'	
219585	1	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"	
219586	1	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	
219587	1	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	
219588	1	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	
219589	1	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	
219590	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219600	1	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	
219601	2	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	
219602	2	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	
219603	1	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	
219604	1	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	
219605	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
219606	1	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	
219607	1	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	
219608	2	test	test	test	test	test	
219608	1	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	
222000	1	In terms of the running of a refrigeration compressor, what is meant by the term "short-cycling"?	frequently grounding out	frequently starting and stopping	running too fast	running too slow	
222000	2	If a compressor starts and stops very frequently, what term is used to describe this behavior?	long-timing	short-timing	long-cycling	short-cycling	
222001	1	When liquid reaches the compressor of a refrigeration system through the suction line, what is this condition called?	flooding back	superheating	overflowing	recycling	
222050	1	The heat gained per pound of refrigerant in the evaporator is known as what?	latent heat of vaporization	sensible heat	refrigerating effect	specific heat of vaporization	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222051	1	What is the function of a heat interchanger used in a refrigeration system?	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.	
222052	4	What is the principal purpose of subcooling liquid refrigerant prior to its entering the expansion valve?	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	
222052	3	Refrigerant is normally subcooled in a refrigeration or air conditioning system condenser for what purpose?	maintain adequate coil back pressure	prevent flashing in the liquid line	reduce refrigerant volume in the system	reduce compressor discharge line loading	
222052	5	Subcooling is a method of reducing the temperature of the liquid refrigerant below what temperature or point?	freezing point	floc point	condensing temperature	compression temperature	
222052	6	The presence of gas in the liquid line of a refrigeration system is undesirable and can be eliminated by what action?	increasing the distance between the evaporator and condenser	using a larger expansion valve	sub cooling the liquid	installing the evaporator at a higher level than the condenser	
222053	2	A liquid line to suction line heat interchanger in a refrigeration system using a reciprocating compressor serves what function?	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	
222053	1	An economizer, or heat interchanger, is installed in a refrigeration system for what purpose?	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	
222059	1	A pressure drop in the liquid line of a refrigeration system may cause what condition?	the solenoid valve to seize	the compressor to hunt	flash gas to form in the liquid line	the expansion valve to freeze open	
222059	2	A pressure drop through the refrigerant liquid line may cause what to occur?	solenoid valve to seize	compressor to hunt	formation of flash gas in the liquid line	expansion valve to freeze open	
222060	1	In a refrigeration system, the heat normally producing the flash gas at the thermostatic expansion valve, is obtained by what means?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222061	2	'Respiratory heat' is a term applied primarily to which of the following cargoes?	Fresh vegetables	Fresh meat	Frozen vegetables	Frozen meat	
222061	4	In a small refrigeration appliance using HFC-134a you would expect to see the greatest temperature drop across which system component?	evaporator	thermal expansion valve	compressor	receiver	
222061	3	In a small appliance using HFC-134a you would expect to see the greatest temperature drop across what system component?	evaporator	receiver	compressor	condenser	
222062	1	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 one pound of a solid material to a liquid or vice versa.	The amount of heat required to change one pound of a liquid material to a vapor or vice versa.	The amount of heat required to change one pound of solid material to a vapor or vice versa.	
222063	4	In consulting the R-134a pressure-temperature chart shown in the illustration, what would be the most likely normal running suction pressure for a reach-in freezer, assuming the box temperature is within normal range?	2.0 psig	6.5 psig	15.0 psig	27.8 psig	GS-RA-11
222063	7	In consulting the refrigerant pressure-enthalpy diagram shown in the illustration, what statement is true concerning the saturated liquid line?	it is the line corresponding to the 0% quality line, representing 0% vapor and 100% liquid	it is the line corresponding to the 100% quality line, representing 0% vapor and 100% liquid	it is the line corresponding to the 0% quality line, representing 0% liquid and 100% vapor	it is the line corresponding to the 100% quality line, representing 0% liquid and 100% vapor	GS-RA-20
222063	9	In consulting the refrigerant pressure-enthalpy and mechanical refrigeration system diagrams shown in the illustration, in the direction of refrigerant flow, what letters in the pressure-enthalpy diagram correspond to points 5 and 6 on the refrigeration cycle diagram?	A to B	B to E	E to F	F to A	GS-RA-21

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222063	3	In consulting the R-134a pressure-temperature chart shown in the illustration, what would be the most likely normal running suction pressure for a reach-in chill box, assuming the box temperature is within normal range?	2.0 psig	22.1 psig	30.7 psig	45.5 psig	GS-RA-11
222063	5	In consulting the R-134a pressure-temperature chart shown in the illustration, what would be the most likely normal running suction pressure for an air conditioner, assuming the space temperature is within normal range?	18.5 psig	35.1 psig	45.5 psig	75.0 psig	GS-RA-11
222063	6	In consulting the refrigerant pressure-enthalpy diagram shown in the illustration, what statement is true concerning the pressure/temperature relationship?	for every pressure, there is a corresponding temperature as long as the refrigerant is sub cooled	for every pressure, there is a corresponding temperature as long as the refrigerant is saturated	for every pressure, there is a corresponding temperature as long as the refrigerant is superheated	for every pressure, there is a corresponding temperature regardless of the condition of the refrigerant	GS-RA-20
222063	10	In consulting the refrigerant pressure-enthalpy and mechanical refrigeration system diagrams shown in the illustration, in the direction of refrigerant flow, what letters in the pressure-enthalpy diagram correspond to points 7 and 8 on the refrigeration cycle diagram?	A to B	B to D	E to F	H to I	GS-RA-21
222063	11	In consulting the refrigerant pressure-enthalpy and mechanical refrigeration system diagrams shown in the illustration, in the direction of refrigerant flow, what letters in the pressure-enthalpy diagram correspond to points 9 and 1 on the refrigeration cycle diagram?	A to B	B to E	E to F	F to A	GS-RA-21

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222063	8	In consulting the refrigerant pressure-enthalpy diagram shown in the illustration, what statement is true concerning the saturated vapor line?	it is the line corresponding to the 0% quality line, representing 0% vapor and 100% liquid	it is the line corresponding to the 100% quality line, representing 0% vapor and 100% liquid	it is the line corresponding to the 0% quality line, representing 0% liquid and 100% vapor	it is the line corresponding to the 100% quality line, representing 0% liquid and 100% vapor	GS-RA-20
222063	12	In consulting the refrigerant pressure-enthalpy and mechanical refrigeration system diagrams shown in the illustration, in the direction of refrigerant flow, what letters in the pressure-enthalpy diagram correspond to points 2 and 3 on the refrigeration cycle diagram?	A to B	B to E	E to F	G to J	GS-RA-21
222120	7	The temperature at which water vapor in the atmosphere begins to condense is called what?	dew point temperature	condensation temperature	psychometric temperature	absolute humidity temperature	
222120	8	The dew point is reached when the wet bulb temperature relates to the dry bulb temperature in what manner?	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	
222120	3	The process of removing moisture from air is known as what?	humidification	dehumidification	vaporization	evaporation	
222120	4	In reference to air conditioning, when air attains the maximum amount of moisture it can hold at a specific temperature, what term best describes the air?	superheated	saturated	condensed	convected	
222120	5	When air at a given temperature contains the maximum amount of moisture for that temperature, what term describes what the air is considered to be?	superheated	saturated	condensing	evaporating	
222120	1	If air at 95°F dry bulb temperature and 50% relative humidity is conditioned to 75°F dry bulb temperature and 50% relative humidity, this is an example of what type of process (or processes)?	cooling only	cooling and humidifying	cooling and dehumidifying	adiabatic cooling	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222120	2	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 what?	absolute humidity	specific humidity	effective humidity	relative humidity	
222120	6	The dew point of air is reached when the wet bulb temperature is what compared to the dry bulb temperature?	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	
222120	9	When air is at its dew point and there is no change in either the temperature or pressure, what is true about the air?	it has a low absolute humidity	it has the lowest relative humidity	it cannot give up its moisture	it will gain no additional moisture	
222123	1	Increasing the moisture content of conditioned air is known as what?	moisturizing	dehumidification	dampening	humidification	
222124	2	The moisture sensitive element of a humidistat can be made of what substance?	hair	copper	plastic	steel	
222124	3	Relative humidity can be determined by using a psychometric chart and what device?	hydrometer	sling psychrometer	aneroid barometer	compound barometer	
222124	1	When using a sling psychrometer to determine relative humidity, the indicated difference between the dry bulb and the wet bulb reading is known as what?	relative humidity	dew point	wet bulb 'depression'	partial saturation temperature	
222125	2	If high relative humidity is maintained in a cargo hold, there is a significant possibility that which of the following conditions could occur? I. there will be an accumulation of static electricity II. mold will grow and contaminate the cargo	I only	II only	Both I and II	Neither I nor II	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222125	3	If high relative humidity is maintained in a cargo hold, there is a significant possibility for which of the following to happen? I. there will be an accumulation of static electricity II. mold will grow and contaminate the cargo	I only	II only	Both I and II	Neither I nor II	
222125	1	The effective temperature of air is dependent upon what factor or factors? I. relative humidity II. air velocity	I only	II only	Both I and II	Neither I nor II	
222128	1	Any air mixture whose dew point remains constant will also have another unchanging property. Which of the following properties will remain unchanged?	dry bulb temperature	wet bulb temperature	specific humidity	specific volume	
222129	2	The sensible heat of air is dependent upon what quality of air?	dry bulb temperature	wet bulb temperature	saturation temperature	water vapor superheat	
222129	1	The latent heat content of water vapor in air is dependent upon which of the listed temperatures or points?	dry bulb temperature	wet bulb temperature	dew point	dry point	
222131	1	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 what?	absolute humidity	relative humidity	specific humidity	total humidity	
222134	1	If condensation collects and drips off an evaporator coil, what best describes the operating temperature of the coil?	it is at a maximum of 21°F	it is above 32°F, but below the dew point	it is at 21°F but, above the dew point	it is below 32°F and below the dew point	
222137	2	As the amount of moisture in the air increases, what will happen to the difference between the dry bulb and wet bulb temperatures?	increase	decrease	remain unchanged	be greatest at dew point	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222137	1	In air has 100% relative humidity, how would the wet bulb temperature relate to the dry bulb temperature?	be above the dry bulb temperature	be below the dry bulb temperature	be the same as the dry bulb temperature	be above the dry bulb temperature, but below the saturation temperature	
222137	3	When air contains some moisture, but is not saturated, what is true concerning the dew point?	it is between the wet and dry bulb temperatures	it is equal to the total heat of air	it is higher than the wet bulb temperature	it is lower than the dry bulb temperature	
222137	4	In terms of humidity, when air is at its dew point, which of the following is true?	the air is at its lowest absolute humidity	the air is at its lowest relative humidity	the air is at its highest absolute humidity	the air is at its highest relative humidity	
222138	1	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 up by closing the cargo hold hatch and the dry bulb temperature decreases, what will happen to the relative humidity in the space?	decrease	increase	decrease to zero	remain unchanged	
222139	1	If the air temperature increases while the atmospheric pressure remains constant, what will happen to the air?	have a greater capacity to absorb moisture	absorb less free atmospheric moisture	become supersaturated at high relative humidity	give up moisture as condensation	
222139	3	Under standard atmospheric conditions, if air is raised to a higher temperature, which of the following is true?	the capability of the air to absorb free atmospheric moisture is unaffected by a higher temperature	the air is capable of absorbing more free atmospheric moisture than it can at a lower temperature	the air will become supersaturated at lower relative humidity than exists at a lower temperature	the air is capable of absorbing less free atmospheric moisture than it can at a lower temperature	
222140	1	Vapor barrier seals used in the insulation on refrigerated space boundaries serve what function?	they prevent Freon vapor from saturating the insulation	they hold water vapor on the cold side of the insulation	they reduce the possibility of moisture laden warm air from outside the refrigerated space from entering the insulation	they reduce the possibility of moisture laden cold air from inside the refrigerated space from entering the insulation	
222141	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222150	1	The pressure difference between the system cut-in and cut-out pressures of a refrigeration unit low pressure cutout device is known as what?	opposing operational drag	pressure distribution	differential	range	
222151	1	When taking readings at the suction service valve of an operating refrigeration compressor to determine pressure and temperature, what statement is true?	The pressure is directly read on the compound gauge pressure scale and the temperature is directly read on the compound gauge saturation temperature scale as the refrigerant is saturated at this point.	The pressure is directly read on the compound gauge pressure scale and the temperature is directly read on a separate thermometer temperature scale as the refrigerant is sub cooled at this point.	The pressure is directly read on the compound gauge pressure scale and the temperature is directly read on a separate thermometer temperature scale as the refrigerant is superheated at this point.	The pressure is directly read on the compound gauge pressure scale and the temperature is directly read on the compound gauge saturation temperature scale as the refrigerant is superheated at this point.	
222160	1	Which chemical symbol represents ammonia?	AM3	AMn3	NM3	NH3	
222163	1	Considering systems with equal capacities for heat removal, which refrigeration system can employ the smallest compressor?	Ammonia	Carbon Dioxide	Dichlorodifluoromethane	Monochlorodifluoromethane	
222165	2	When used as a refrigerant, ammonia containing moisture will act as a corrosive mixture to what metal or metals?	steel only	brass and bronze	iron only	iron and steel	
222165	1	Pure anhydrous ammonia is considered noncorrosive to what metal or metals?	iron and steel only	steel only	iron, steel, and copper-bearing metals	copper-bearing metals only	
222166	1	Which piping material is recommended to be used in extra heavy duty sizes in ammonia refrigeration system construction?	Steel	Monel	Bronze	Copper	
222167	1	If ammonia vapor is lighter than air, what statement concerning the concentration of ammonia would be true should a leak occur?	the concentration would be lower near the overhead of an enclosed space	the concentration would be dependent upon available free hydrogen ions	the concentration would of minimum importance during venting procedures	the concentration would be lower near the deck of an enclosed space	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222168	1	If the temperature of the ammonia gas in the discharge piping and the condenser of a refrigeration system remains above the critical tempeature of 266°F, which of the following is true?	the refrigeration effect increases	the unit will begin to sub cool	the vapor will cease to condense	the process of sublimation will begin	
222169	1	Which of the following refrigerants will normally require a compressor that is water cooled?	R-134	Ammonia	R-22	All of the above are correct.	
222170	1	Under normal conditions ammonia refrigerant should be charged into which of the following connections of a vapor-compression system?	liquid line service connection	suction service connection	discharge service connection	expansion valve side port connection	
222170	2	Which of the listed valves should be closed when charging ammonia into a refrigeration system?	Master valve	Suction service	Discharge service	King valve	
222171	1	If your skin comes in contact with liquid ammonia refrigerant, what should be your immediate reaction?	contact physicians health care	apply an antibacterial ointment	flush the affected area with water	remove all necessary clothing	
222171	2	One of the primary steps in assisting someone who has been overcome by ammonia vapors is to do what?	loosen all clothing	provide the victim with smelling salts	rinse the affected area with water	give the patient plenty of fresh air	
222172	2	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.	
222172	1	Using a sulphur candle for leak detection for anhydrous ammonia, in the presence of an ammonia leak what color smoke will be produced?	pink	white	yellow	blue	
222172	3	An ammonia leak will turn moistened pink litmus paper to what color?	orange	red	purple	blue	
222174	1	Which refrigeration system will absolutely require the use of an oil separator located in the discharge line due to a lack of refrigerant-oil miscibility?	R-401A	R-717 (ammonia)	R-134a	R-22	
222200	1	In a refrigeration system, at what component does the refrigerant absorb the latent heat of vaporization?	compressor	condenser	receiver	evaporator	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222200	2	The component of a refrigerating system in which the refrigerant vaporizes and absorbs heat is known as what?	condenser	vapor generator	accumulator	evaporator	
222201	1	Which of the following statements is correct concerning a typical shipboard multi-coil refrigeration system?	The liquid receiver functions to collect and remove non-condensable 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.	
222250	1	Under normal conditions, the refrigerant enters the compressor in an operating refrigeration system in what condition and/or state?	liquid	dry saturated gas	wet saturated gas	superheated vapor	
222251	1	What condition listed would be associated with an excessively high suction temperature as a result of excessive superheating which produces no useful cooling?	increased capacity of the compressor	more efficient operation of the thermal expansion valve	decreased capacity of the compressor	loss of receiver capacity	
222252	1	In which of the listed refrigeration system components does superheating of the refrigerant take place?	Expansion valve	Evaporator	Drier	Receiver	
222252	2	Double trunk pistons are used in some refrigeration compressors to reduce oil foaming in the crankcase by what means?	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	
222252	3	The low-pressure refrigerant leaves the evaporator of a refrigeration system in what condition?	sub cooled liquid	high temperature liquid	oil saturated liquid	superheated vapor	
222253	1	Which of the listed types of refrigeration compressors can be designed with very short, very large diameter suction lines?	Reciprocating	Rotary	Screw	Centrifugal	
222255	1	In a mechanical refrigeration system, in addition to the high and low side pressure differential, what is the amount of refrigerant admitted to the evaporator directly related to?	the degree of opening of the king solenoid valve	the degree of opening of the water regulating valve	the degree of opening of the box solenoid valve	the degree of opening of the expansion valve	
222256	1	The refrigerant gas returning to the compressor should be in what condition?	superheated	saturated	dense	flooded	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222258	2	Refrigerant is circulated through a refrigeration system by the action of what component?	compressor	condenser	expansion valve	evaporator	
222258	1	Which of the listed refrigeration system components keeps the refrigerant circulating through the system?	Expansion valve	Condenser	Evaporator	Compressor	
222300	1	In the order of the direction of flow, the low pressure side of a refrigeration system is considered to exist between what two components?	expansion valve to the compressor	receiver to the expansion coil	expansion valve to the evaporator	condenser to the expansion valve	
222301	6	Which of the following components is the refrigeration system condenser?	"3"	"4"	"7"	"8"	GS-RA-02
222301	7	Through which of the components shown in the illustration is flash gas formation a normal occurrence?	thermostatic expansion valve	evaporator coil	condenser coil	receiver tank	GS-RA-25
222301	4	The high pressure side of the refrigeration system, as shown in the illustration, in the order of flow, is located between what two components?	"5" and "10"	"1" and "5"	"11" and "7"	"7" and "11"	GS-RA-02
222301	2	The low pressure side of the illustrated multi-evaporator refrigeration system associated with the common and freeze box circuit, shown in the illustration, is located between what two components?	37 and F	23 and A	37 and B	37 and A	GS-RA-12
222301	3	The low pressure side of the refrigeration system, as shown in the illustration, in the order of flow, is located between what two components?	"5" and "10"	"1" and "5"	"11" and "7"	"7" and "11"	GS-RA-02
222301	5	Which of the following components is the refrigeration system evaporator?	"3"	"4"	"7"	"8"	GS-RA-02
222302	1	The temperature of the refrigerant in the evaporator coil depends mostly upon what factor?	refrigerant pressure in the evaporator	cooling water temperature to the condenser	heat load in the refrigerator compartment	solenoid valve in the liquid line	
222303	1	An increase in the heat load subjected to a refrigeration system will cause what to happen?	the compressor suction pressure to decrease	the compressor suction pressure to increase	increased ice formation on the evaporator coil	excessive short cycling of the compressor	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222304	1	In a vapor compression refrigeration cycle, the temperature of the liquid refrigerant experiences its greatest decrease flowing through what component?	evaporator	compressor	expansion valve	condenser	
222305	1	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, how would the system react?	high side pressure would drop by 25 psi at the beginning of the cooling period	amount of sub cooling via the condenser would increase by approximately 5°F	low side pressure would temporarily increase	low side pressure would temporarily decrease	
222305	2	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 do what?	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	
222305	3	As compared to the temperature maintenance period when the box temperatures are within normal operating range, the beginning of a temperature pull-down period after loading stores of a multibox refrigeration system, the operating conditions of the system would require the flow rate of refrigerant circulating in the system and the suction pressure to do what?	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	
222350	2	As flowing through the valves labeled "26" and "34" in the illustrated refrigeration plant schematic diagram, what is the status of the refrigerant?	low pressure gas	low pressure liquid	high pressure gas	high pressure liquid	GS-RA-12

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222351	2	In the illustrated multi-evaporator refrigeration system associated with the common and chill box circuit, refrigerant exists as a subcooled liquid between what two components?	B and 29	B and 23	A and 29	B and 37	GS-RA-12
222351	3	In the illustrated multi-evaporator refrigeration system associated with the common and freeze box circuit, refrigerant exists as a subcooled liquid between what two components?	B and 29	B and 23	A and 29	B and 37	GS-RA-12
222352	1	In the order of the direction of flow, 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	
222354	2	In a typical refrigeration system, refrigerant leaving the receiver will then flow to what system component?	evaporator coils	liquid line strainer	back pressure regulator	condenser	
222388	1	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 which refrigrant?	either R-22 or R-115	R-22 only	R-115 only	R-502 only	
222391	2	HCFC-22 has been recovered from a refrigeration system prior to and in preparation for condenser replacement. What is true concerning the recovered refrigerant?	it may be recycled into a system that had used HCFC-11	it may be reclaimed as a low pressure system refrigerant	it may returned to the system for re-use	it must be destroyed, as it can no longer be re-used	
222400	1	In terms of the conditions associated with the boiling process, what impact does oil in solution mixed with the liquid refrigerant have?	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	
222401	2	In a typical refrigeration system, where is the temperature of the refrigerant gas at the highest?	at the compressor discharge	at the compressor suction	in the expansion valve	in the receiver	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222401	3	As shown in the illustrated multi-evaporator refrigeration system, through what labeled valve would the refrigerant temperature be the highest?	"9"	"16"	"18"	"20"	GS-RA-12
222401	4	As shown in the illustrated multi-evaporator refrigeration system, through what labeled valve would the refrigerant temperature be the lowest?	16	18	20	32	GS-RA-12
222403	2	If the valve labeled "23" in the illustration is set for a higher pressure, what will be the direct result?	chill box space temperature will increase	freeze box space temperature will increase	minimum chill box evaporator coil temperature will increase	minimum freeze box evaporator coil temperature will increase	GS-RA-12
222405	2	According to the data provided in the illustrated table, if the low side saturation temperature is maintained at 5°F and the high side saturation temperature is maintained at 86°F, what is the compression ratio of the system's compressor?	4.68 to 1	10.65 to 1	17.2 to 1	The compression ratio cannot be calculated from this data	GS-RA-23
222405	3	According to the data provided in the illustrated table, if the low side saturation temperature is maintained at -15°F and the high side saturation temperature is maintained at 100°F, what is the compression ratio of the system's compressor?	8.81 to 1	9.43 to 1	123.6 to 1	The compression ratio cannot be calculated from this data	GS-RA-23
222410	2	Refrigerants that experience fractionation when changing state are characterized as what?	azeotropic mixture of refrigerants	single component organic refrigerants	zeotropic blend of refrigerants	single component inorganic refrigerants	
222450	2	The heat removed from the refrigerant in the condenser of a refrigeration plant is known as what?	latent heat of expansion	sensible heat of condensation	heat of compression	all of the above	
222450	1	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	
222450	3	Which of the following forms of heat is removed from the refrigerant in the condenser of a refrigeration system?	Latent heat of vaporization	Heat of compression	Superheat	All of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222452	1	The only means of removing the latent heat of condensation from a refrigerant in the normal refrigeration cycle is by performing what process?	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	
222453	1	Refrigerant enters the condenser in what condition?	high pressure liquid	low pressure vapor	high pressure vapor	low pressure liquid	
222454	1	A purge-recovery unit is used in a centrifugal air conditioning or refrigeration system for what purpose?	purge lube oil from the liquid refrigerant	recover water purged from the system	separate foul gases from the receiver	purge non-condensable gases while minimizing the loss of refrigerant	
222456	1	The EPA allows a large low pressure system to be brought to atmopsheric pressure during non-major repairs by what means?	adding excess refrigerant	adding nitrogen	adding heat with controlled hot water	adding CFC-22	
222457	2	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 what pressure?	1 psig	10 psig	50 psig	100 psig	
222457	1	The high pressure cut-out switch used on refrigeration units for low pressure systems is set to shut off the compressor at which of the following pressures?	1 psig	5 psig	10 psig	15 psig	
222458	1	The inlet of the purge-recovery units used with some compressors in low pressure refrigeration systems is connected to the top of what system component?	economizer	condenser	compressor	evaporator	
222459	1	The rupture disc used on low pressure refrigerant storage containers is set for what pressure?	1 psig	5 psig	10 psig	15 psig	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222462	1	Some newly developed compound refrigerants, used to reduce stratospheric ozone depletion, are referred to as azeotropic mixtures. What does this mean?	The mixture will condense at a temperature lower than the boiling point of the component with the lowest boiling point	The mixture boils at a temperature equal to the boiling point of the component with the lowest boiling point	The mixture 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	The mixture boils at a temperature independent of any individual components in the mixture	
222470	1	Which of the following represents the chemical formula for ozone?	O	O2	O3	Oz	
222471	1	Large quantities of halogenated chlorofluorocarbons when released from refrigeration systems, will contribute to ozone depletion in which region of the atmopshere?	bathosphere	ionosphere	stratosphere	troposphere	
222475	1	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 what quantity?	15 pounds (6.8 kg)	25 pounds (11.4 kg)	40 pounds (18.1 kg)	50 pounds (22.6 kg)	
222476	1	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	
222477	2	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	
222478	1	The refrigerants referred to as CFC's are considered to be what?	fully halogenated	partially hydrogenated	partially halogenated	fully hydrogenated	
222478	2	Which refrigerant listed is considered to have the highest ozone depletion potential?	R-12	R-134A	R-123	R-22	
222498	1	CFC refrigerants exposed to high temperature or direct flame, will decompose and may produce what chemical substance?	methyl chloride	ammonia	hydrofluoric acid	ozone	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222499	1	HCFC-123 presents health threats to service technicians, which may include which of the following?	flammability as a liquid	freezing in the compressor	toxic threat	being caustic and strong offensive odor	
222500	2	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	
222500	1	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	
222550	2	A one ton air conditioning system has which of the listed operating characteristics?	It forces 2,000 lbs. of refrigerant through the evaporator coil per day.	It forces 2,000 lbs. of air per hour across the evaporator coils.	It has the cooling capacity equivalent to melting 2,000 lbs. of ice per day.	It has the cooling capacity equivalent to melting 2,000 lbs. of ice per hour.	
222551	1	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 non-condensable gases.	
222552	2	How much heat per hour 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	
222552	1	One refrigeration ton is equal to which of the following heat removal rates?	180 BTU/hr	2,000 BTU/hr	12,000 BTU/hr	2,880,000 BTU/day	
222554	2	If an air conditioning system were rated at 24,000 BTU, what would be the equivalent tonnage of the unit?	1 ton	2 tons	3 tons	4 tons	
222554	4	If a refrigeration system extracted 48,000 BTU per hour from the refriogerated space, what would be the equivalent tonnage of the unit?	2 tons	4 tons	6 tons	8 tons	
222554	1	What is the equivalent tonnage of a refrigeration system rated at 48,000 BTU per hour?	2.5	3	4	5	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222554	3	If a refrigerated space has associated with it a heat load of 60,000 BTU/hour, what size refrigeration unit would be required?	3 ton	4 ton	4.5 ton	5 ton	
222554	5	An air conditioning system, required to remove from 33,000 to 35,000 BTU per hour, should have a minimum capacity of what tonnage?	1.5 tons	2.0 tons	2.5 tons	3.0 tons	
222555	3	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 4,000 BTU/hr., and refrigeration system capacity equals 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.	
222555	1	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 45,500 BTU/hr.]	6 hours 5 minutes	13 hours 16 minutes	26 hours 48 minutes	52 hours 12 minutes	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222555	4	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 the cargo equals 0.39 BTU/LB/°F, with a container heat gain of 6,000 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	
222555	2	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? [The specific heat of cabbage is 0.94 BTU/LB/°F. The container has a heat gain of 6,000 BTU/hr, and the refrigeration system's capacity is 40,000 BTU/hr.]	Saturday at 0012 hours.	Saturday at 0724 hours.	Saturday at 1242 hours.	Saturday at 2242 hours.	
222558	1	Which of the listed statements is correct concerning refrigeration system heat removal 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	
222559	2	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 288,000 btu per day	A thermostatic expansion valve is used to control refrigerated space temperature.	The liquid receiver functions to collect and remove non-condensable gases.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222570	3	In a simple saturated cycle, an R-134a refrigeration system has a high side pressure of 123.58 psig and a low side pressure of 1.9334 psig. Using this information and the data shown in the illustration, determine the refrigeration effect per pound of refrigerant circulated, neglecting any subcooling or superheating effects.	55.41 BTU/lb	70.39 BTU/lb	90.77 BTU/lb	105.75 BTU/lb	GS-RA-23
222570	4	In a simple saturated cycle, an R-134a refrigeration system has a high side pressure of 96.626 psig and a low side pressure of 9.0751 psig. Using this information and the data shown in the illustration, determine the refrigeration effect per pound of refrigerant circulated, neglecting any subcooling or superheating effects?	62.33 BTU/lb	73.44 BTU/lb	88.29 BTU/lb	99.41 BTU/lb	GS-RA-23
222600	1	A reheater in an air conditioning system performs what function?	controls the inlet air temperature	controls the inlet air volume	maintains the relative humidity at 15%	restores the conditioned air temperature to a comfortable level	
222600	2	A reheater, as used in an air conditioning system, is designed to control what temperature?	chilled water temperature	dew point temperature	primary air temperature	dry bulb room temperature	
222650	1	In an air conditioning system, what is the name of the chamber where the duct-work originates?	exhaust chamber	plenum chamber	intake chamber	vapor chamber	
222700	2	Which of the fluids listed is normally used to condense the primary refrigerant in an indirect shipboard central air conditioning system?	Engine jacket water	Seawater or Fresh water.	Sodium Nitrate brine.	Calcium Sulfate brine.	
222703	1	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	
222703	2	Which of the refrigerants listed is considered as a suitable replacement for R-11?	R-22	R-123	R-134a	R-227	
222703	8	Which group of three refrigerants are considered low pressure refrigerants under the Clean Air act rules?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222703	4	Which of the following refrigerants is an interim retrofit replacement for R-11?	R-500	R-134a	R-12	R-123	
222703	5	Which of the following represents a low-pressure refrigerant as defined by EPA regulation?	R-12	R-22	R-502	R-123	
222750	1	A common secondary refrigerant used in air conditioning systems aboard ship is what substance?	R-123	water	nitrogen	hydrogen	
222750	2	In the illustrated R-134a high pressure centrifugal chiller refrigerant flow circuit, by what means is the heat removal capacity of the system regulated?	controlling the condenser water flow through the condenser	controlling the compressor gas flow via the inlet guide vanes	controlling the chilled water flow through the cooler	controlling the hot gas bypass flow directly from the compressor discharge to the cooler	GS-RA-26
222750	3	In the illustrated R-134a high pressure centrifugal chiller refrigerant flow circuit, what is the functional purpose of the turbine? I. functions as a metering/expansion device maintaining a pressure differential between the high and low pressure sides of the system II. functions to deliver power to the compressor by aiding the electric drive motor	I only	II only	Both I and I	Neither I nor II	GS-RA-26
222750	4	In the illustrated R-134a high pressure centrifugal chiller refrigerant flow circuit, what is the functional purpose of the refrigerant flowing as seen through the moisture indicator (item #3)? I. functions as a cooling medium for the hermetically sealed compressor drive motor II. functions as a cooling medium for the lubricating oil	I only	II only	Both I and I	Neither I nor II	GS-RA-26

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222751	1	A secondary refrigerant commonly used in shipboard air conditioning systems is what substance?	methyl chloride	treated water	carbon dioxide	trichloroethylene	
222751	2	As showin the illustrated R-134a high pressure centrifugal chiller lubricating oil circuit, what is statement is true concerning the eductor?	the eductor uses oil from the lube oil pump discharge as a working fluid, pulling a suction on the inlet guide vanes drain sump and discharging to the main lube oil sump	the eductor uses gas from the compressor discharge as a working fluid, pulling a suction on the inlet guide vanes drain sump and discharging to the main lube oil sump	the eductor uses oil from the lube oil pump discharge as a working fluid, pulling a suction on the main lube oil sump and discharging to the inlet guide vanes drain sump	the eductor uses gas from the compressor discharge as a working fluid, pulling a suction on the main lube oil sump and discharging to the inlet guide vanes drain sump	GS-RA-27
222751	4	As shown the illustrated water-cooled rotary chiller refrigerant flow and lubricating oil circuits, which of the listed thermistors is used as a sensor for the electronic control circuit for the electronic expansion valve?	suction gas thermistor	discharge gas thermistor	chilled water inlet thermistor	chilled water outlet thermistor	GS-RA-29
222751	6	As shown the illustrated water-cooled rotary chiller refrigerant flow and lubricating oil circuits, which of the listed transducers are used as a sensors for determining pressure differential in controlling the operation of the oil pump?	discharge pressure and suction pressure transducers	oil pressure and economizer pressure transducers	oil pressure and suction pressure transducers	discharge pressure and oil pressure transducers	GS-RA-29
222751	3	As shown the illustrated R-134a high pressure centrifugal chiller refrigerant flow and lubricating oil circuits, how is the lube oil temperature controlled?	with a lube oil cooler using condensing cooling water as a cooling medium	with a lube oil cooler using cooler (evaporator) chilled water as a cooling medium	with a lube oil cooler using liquid refrigerant as a cooling medium	the lubricating oil temperature is uncontrolled	GS-RA-26 GS-RA-27

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222751	7	As shown the illustrated water-cooled rotary chiller refrigerant flow and lubricating oil circuits, what is the functional purpose of the economizer? I. Provide a cooling medium for the hermetic motor windings II. Improve the overall efficiency of the plant	I only	II only	Both I and II	Neither I nor II	GS-RA-29
222751	5	As shown the illustrated water-cooled rotary chiller refrigerant flow and lubricating oil circuits, which of the listed thermistors is used as a sensor for the capacity control system loader solenoid valves?	suction gas thermistor	discharge gas thermistor	chilled water inlet thermistor	chilled water outlet thermistor	GS-RA-29
222752	1	What is one benefit of maintenance of proper air circulation in an air conditioned cargo space?	more temperature differential	increased moisture content	reduced slime and mold	increased density of the air	
222800	2	In general, the thermal bulb for a thermal expansion valve used in a reciprocating air conditioning system is usually charged with what substance?	distilled water	the same refrigerant as the system	bees wax	mercuric sulfate	
222801	1	In a two stage centrifugal air conditioning system, the liquid refrigerant passes through the condenser directly to what component?	evaporator	chiller	economizer	expansion valve	
222802	1	Flash gas formed in the liquid line of a direct reciprocating air conditioning system may cause what condition?	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	
222850	1	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, what should be done?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222850	2	In order to achieve greater dehumidification with an air conditioning system, you should perform which of the following? I. reduce the cooling coil temperature II. increase the reheater temperature	I only	II only	Both I and II	Neither I nor II	
222851	1	In order to achieve greater dehumidification, you would adjust the air conditioning system by which of the listed means? I. reducing the chill water flow through the cooling coil II. increasing the preheater temperature	I only	II only	Both I and II	Neither I nor II	
222900	1	In what room condition would a lower thermostatic temperature setting will be necessary to provide a comfort level?	where low relative humidity is maintained	where triple banded squirrel cage fans are used	where air circulation is a maximum	where high relative humidity is maintained	
222900	2	A lower thermostatic temperature setting will generally tend to cause what to happen in an air conditioned space?	lower relative humidity	lower air circulation	higher air circulation	higher relative humidity	
222901	3	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.	
222902	1	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.	
222903	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222904	1	A room humidistat initiates the lowering of the humidity of the conditioned supply air to a space, while the actual process is accomplished by what means?	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	
222905	1	In an air conditioning system, moisture is removed from the air by what means?	filters	separators	ducted traps	cooling coils	
222910	2	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 70°F with a relative humidity of 80%. Using the psychrometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air.	20 grains	30 grains	40 grains	50 grains	GS-RA-22
222910	4	The introduction of outside air to the air conditioning system is 95°F with a relative humidity of 70%. The air has been conditioned to 70°F with a relative humidity of 80%. Using the psychrometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air.	30 grains	60 grains	90 grains	120 grains	GS-RA-22
222910	3	The introduction of outside air to the air conditioning system is 95°F with a relative humidity of 70%. The air has been conditioned to 75°F with a relative humidity of 90%. Using the psychrometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air.	30 grains	40 grains	50 grains	60 grains	GS-RA-22
222911	2	If outside air at 80 degrees F and 70 percent relative humidity is conditioned, what will be the resulting dew point temperature of the air just before it comes into contact with the cooling coil?	64 degrees F	67 degrees F	70 degrees F	73 degrees F	GS-RA-22

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222911	3	What is the wet bulb temperature of air if the dry bulb temperature of the air is 90 degrees and the relative humidity is 65%?	62 degrees F	63 degrees F	77 degrees F	80 degrees F	GS-RA-22
222914	5	Which of the following is true concerning the class "G" dual duct air conditioning system shown in the illustration as used to condition the air of individual staterooms?	The dry bulb room temperature is controlled by a dual duct air mixing unit.	The reheat coil is placed in parallel with the cooling coil.	The hot air duct temperature is controlled by a dual duct air mixing unit.	The dry bulb room temperature is controlled by a steam heated reheater and its associated pneumatic control valve.	GS-RA-43
222914	3	The steam heated preheater and its associated pneumatic control valve are controlled by what device in the class "A" air conditioning system shown in the illustration as used condition the air of large public spaces?	room thermostat	duct thermostat	diverting relay	humidistat	GS-RA-09
222914	2	Which of the following is true concerning the class "A" air conditioning system shown in the illustration as used to condition the air of large public spaces?	The preheater steam flow is controlled by the space thermostat.	The reheater is not used when in the cooling mode.	It is not possible for both the cooling coil and the steam heated reheater to be used simultaneously.	The dry bulb room temperature is controlled by a steam heated reheater and its associated pneumatic control valve.	GS-RA-09
222914	4	Which of the following is true concerning the class "D" terminal reheat air conditioning system shown in the illustration as used to condition the air of individual staterooms?	The preheater steam flow is controlled by the room thermostat	In the summer mode, the duct temperature is maintained at a higher temperature than any of the room temperatures.	The supply air duct temperature is controlled by a hot water heated reheater and its associated pneumatic control valve	The dry bulb room temperature is controlled by a hot water heated reheater and its associated pneumatic control valve	GS-RA-42

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222915	3	Which of the following is true concerning the class "G" air conditioning system shown in the following illustration?	System cooling is the direct result of the Freon circuit of a direct type air conditioning unit.	The room thermostat controls the degree of mixing of the cold and hot air at the dual duct air mixing unit.	The sub master thermostat controls the steam flow through the preheat coil and its associated pneumatic control valve.	The heat load will increase by increasing the amount of recirculated air.	GS-RA-43
222915	2	Which of the following is true concerning the class "D" air conditioning system shown in the following illustration?	System cooling is the direct result of the Freon circuit of a direct type air conditioning unit.	The room thermostat controls the wet bulb temperature of the air conditioned space.	The duct thermostat determines the amount of water flow circulating through the cooling coil.	The heat load will increase by increasing the amount of recirculated air.	GS-RA-42
222920	1	To add small amounts of refrigerant to the low side of an air conditioning system, the refrigerant should be introduced through a particular valve and in a particular state. What valve and state combination is correct?	suction service valve as a vapor	suction service valve as a liquid	discharge service valve as a vapor	discharge service valve as a liquid	
222921	2	To add refrigerant to the high side of an air conditioning system, you should close the king valve and introduce the refrigerant through what valve in what state?	discharge service valve as a vapor	suction service valve as a liquid	charging valve as a liquid	condenser purge valve as a vapor	
222922	1	Routine maintenance on a Central Control Room hermetically sealed air conditioning unit should include what service procedure?	changing the air filter	recharging the system	changing compressor lubricant	renewing container vacuum	
222923	1	When pumping down an air conditioning system to test the low pressure cutout switch, assuming that the compressor is running, what should be done to initiate the test?	stop the compressor	secure the condenser	close the 'king' valve	stop the circulating pump	
222925	1	To service a 60 ton air conditioning package, what is the easiest way to determine the type of refrigerant that the unit is charged with?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
222926	2	When recovering the R-134a refrigerant from the centrifugal chiller shown in the illustration initially as a liquid using the recovery unit's compressor set up in push/pull configuration, in addition to opening valves "1a", "1b", and the compressor suction and discharge isolation valves, which of the following would be the correct valve lineup?	valves "2", "5", "6", "7", and "10" open; valves "3", "4", and "8" closed	valves "3", "4", "7", "6" and "10" open; valves "2", "5", and "8" closed	valves "3", "4", and "8" open; valves "2", "5", "6", "7", and "10" closed	valves "3", "5", and "6" open; valves "2", "4", "7", "8", and "10" closed	GS-RA-28
222926	1	When recovering the remaining R-134a refrigerant from the centrifugal chiller shown in the illustration as a vapor using the recovery unit's compressor, in addition to opening valves "1a", "1b", and the compressor suction and discharge isolation valves, which of the following would be the correct valve lineup?	valves "2", "5", "7", "8", and "10" open; valves "3", "4", and "6" closed	valves "3", "4", "7", "6" and "10" open; valves "2", "5", and "8" closed	valves "3", "4", and "6" open; valves "2", "5", "7", "8", and "10" closed	valves "3", "5", and "6" open; valves "2", "4", "7", "8", and "10" closed	GS-RA-28
223000	2	The surging that occurs in a centrifugal air conditioning compressor is a result of what conditions?	low pressure in the condenser at high load	low pressure in the evaporator at low load	low pressure in the condenser at low load	low pressure in the evaporator at high load	
223001	2	In an air conditioning system, low discharge head pressure associated with a reciprocating compressor can be the result of what condition?	leaky suction valves	insufficient cooling water to the condenser	air in the evaporator coils	air in the condenser	
223002	2	If the people in an air conditioned room complain of being too cool, what is most likely to be the trouble?	preheater has failed to cutout	air velocity is too low	relative humidity and dry bulb is high	dry bulb temperature is too low	
223003	2	The air temperature associated with a direct reciprocating air conditioning plant 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 liquid line solenoid valve has failed closed.	A liquid line solenoid valve is stuck open.	The low pressure control contacts are stuck open.	Cooling water flow to the condenser is excessive.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223004	1	The compressor used in a water-cooled air conditioning system is short cycling. A service check determines that the suction pressure remains above the normal cut-in point during cycling and that the discharge pressure rapidly builds up to the cut-out point while running and gradually falls to the cut-in point during the off cycle. What is likely the cause?	loosely fitted compressor drive belt	front seated liquid line service valve	reduction in condenser water flow (scaled condenser)	back seated discharge service valve	
223005	1	Sludge may form in the crankcase of an air conditioning compressor as a result of what condition?	excessive foaming of the oil in the crankcase	overheating and carbonization of the oil in the crankcase	lowered compressor operating temperatures	reducing the cloud or floc point of the oil	
223005	4	Sludge may form in the lubricating oil crankcase of a reciprocating air conditioning compressor as a result of what condition?	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	
223005	2	Sludge may be formed in the oil in the crankcase of a reciprocating air conditioning compressor as a result of what condition?	refrigerant bubbles in the lube oil	refrigerant reducing the lube oil viscosity	carbonization of the lube oil from overheating	reducing the floc or cloud point of the oil	
223050	2	In the multi-evaporator refrigeration system shown in the illustration, what is the proper name for the valve labeled "29"?	chill box solenoid valve	chill box evaporator pressure regulating valve	chill box thermostatic expansion valve	freeze box thermostatic expansion valve	GS-RA-12
223050	1	In the refrigeration system shown in the illustration, what component is the chill box thermal expansion valve?	"23"	"27"	"28"	"29"	GS-RA-12
223050	3	In the multi-evaporator refrigeration system shown in the illustration, what is the proper name for the valve labeled "37"?	freeze box solenoid valve	freeze box evaporator pressure regulating valve	chill box thermostatic expansion valve	freeze box thermostatic expansion valve	GS-RA-12
223051	1	Rather than design an infinite variety of thermostatic expansion valve sizes to accommodate different capacities for heat removal, some manufacturers use a few standard valve body sizes in conjunction with what other feature?	an externally adjustable superheat to accommodate different heat removal capacities	a flexible diaphragm to accommodate different heat removal capacities	internal needle valve orifices of various sizes to accommodate different heat removal capacities	internal equalizers to accommodate different heat removal capacities	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223052	10	What is the main purpose of the valves shown in the illustration?	maintain a constant degree of superheat in the gas leaving the evaporator coil	regulate refrigerant condensation rate in the condenser coil	control the quantity of liquid refrigerant leaving the evaporator coil	control the operation of the box solenoid valve	GS-RA-06
223052	1	What parameter is the thermostatic expansion valve designed to maintain constant?	refrigerant flow	box temperature	evaporator superheat	evaporator pressure	
223052	4	What is he primary purpose of the thermostatic expansion valves in a typical multi-box shipboard refrigeration system?	they control the individual refrigerated space temperatures	they regulate the compressor suction pressure	they regulate the amount of refrigerant superheat leaving the individual evaporators	they control the refrigerant temperature entering the individual evaporators	
223052	6	What is the primary purpose of the thermostatic expansion valve as used in most refrigeration plants?	regulate the box temperature	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	
223052	8	What will remain constant during operation when a properly adjusted thermostatic expansion valve exhibits stable operation without any appreciable hunting of the valve?	condenser sub cooling	liquid line sub cooling	evaporator outlet superheat	compressor discharge gas superheat	
223052	2	Constant superheat is maintained at the evaporator coil outlet of a refrigeration system or unit by the action of what device?	solenoid valve	low pressure cutout switch	king valve	thermal expansion valve	
223052	3	In a refrigeration system, the amount of superheat absorbed by the refrigerant flowing through the evaporator coil is adjusted at what device?	the box solenoid	the box thermostat	the low pressure cut-out	the thermal expansion valve	
223052	5	What does the thermal expansion valve used in a refrigeration system regulate?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223052	11	Which of the following statements best describes the operation of the refrigeration valve shown in the illustration?	Turning the adjustment screw "I" counterclockwise, as viewed facing the adjusting screw, results in an increase in the evaporator superheat setting.	The sensor bulb "C" detects changes in box temperature.	The temperature of the refrigerant passing through the device is colder at the inlet "A" than at the outlet "B".	Refrigerant pressure acting through the external equalizer connection "K" is always acting to close the valve.	GS-RA-07
223053	1	Besides the evaporator pressure, the thermal expansion valve reacts directly to changes in what parameter?	temperature of the space being cooled	liquid refrigerant pressure at the solenoid valve	pressure drop across the evaporator coils	temperature of the evaporator coil outlet	
223055	4	Which of the following illustrated expansion valves senses evaporator superheat by the use of thermistor probes?	A	B	C	D	GS-RA-24
223055	2	The actual position of the needle valve in the device shown in the illustration is dependent upon which of the following conditions?	The net force of the combined forces of the bulb pressure and the evaporator pressure as opposed by the superheat adjusting spring	The net force of the combined forces of the evaporator pressure and the superheat adjusting spring as opposed by the bulb pressure	The force of the superheat adjusting spring only.	The net force of the combined forces of the bulb pressure and the superheat adjusting spring as opposed by the evaporator pressure	GS-RA-07
223055	5	Which of the following illustrated expansion valves would be most suitable for use in variable capacity systems rated at 50 tons of refrigeration and over?	A	B	C	D	GS-RA-24
223055	3	Which of the following illustrated expansion valves is designed to maintain a constant evaporator pressure rather than a constant evaporator superheat?	A	B	C	D	GS-RA-24

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223056	3	Which of the following illustrated thermal expansion valves would be appropriate to use on an evaporator coil with a 2 psi pressure drop, where externally adjustable superheat and a replaceable power element are both desired?	A	B	C	D	GS-RA-06
223056	2	The refrigeration system valve shown in the illustration is used to directly control what?	the box temperature	the evaporator coil pressure	the 'on-off' cycling of the compressor	the evaporator superheat	GS-RA-07
223056	4	Which of the following illustrated thermal expansion valves would be appropriate to use on an evaporator coil with an 8 psi pressure drop, where externally adjustable superheat and a replaceable power element are both desired?	A	B	C	D	GS-RA-06
223057	1	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	
223057	2	What is one function of the thermal expansion valve used in a refrigeration system?	act as a pilot controlling the box solenoid valve	regulate the amount of refrigerant flow to the evaporator coil	regulate the water flow to the water-cooled condenser	turn the compressor off and on	
223058	2	When a refrigeration compressor is in the 'off' cycle, how will the thermal expansion valve respond?	it will remain open if the compressor is controlled by a low pressure cutout and evaporator pump down is featured	it will attempt to control superheat as if the system was still in operation	it will close if the compressor is controlled by a thermostat and evaporator pump down is not featured	all the above	
223058	3	When a refrigeration compressor is in the 'off' cycle, the thermal expansion valve will react in what way?	it will always open wide regardless of whether or not the system employs a pump down cycle	it will always completely close regardless of whether or not the system employs a pump down cycle	it will always remain in the same position just prior to the cycling off of the compressor	it will continue to function as a result of the net balance of forces acting on the diaphragm	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223058	4	In the normal operation of a refrigeration system, when the refrigeration compressor cycles "off", the thermal expansion valve will react in what manner?	immediately open wide	immediately completely close	close to a preset minimum opening	respond according to operating forces acting on the valve	
223059	2	In a refrigeration system, the pressure within the power element of a thermostatic expansion valve depends directly upon what factor?	temperature in the box	temperature of the evaporator coil outlet	compressor suction pressure	heat transferred from the saturated liquid in the evaporator	
223060	2	In a refrigeration system, the bulb for the thermal expansion valve is always located where?	in the middle of the evaporator coils	at the evaporator coil outlet	at the evaporator coil inlet	at the beginning of the bottom row of the evaporator coils	
223060	1	In multi-box refrigeration systems, the sensing bulb of the thermostatic expansion valves used on the refrigerated boxes with elevated temperatures should be located where?	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	
223060	3	A thermostatic expansion valve is designed to respond directly to changes in which of the following parameters?	refrigerated space temperature	compressor suction pressure	liquid line temperature	evaporator superheat	
223061	1	Concerning the proper installation of the sensing bulb of a thermal expansion valve that is attached to the evaporator tail coil on a horizontal run, what statement is true?	the bulb should be attached so that the pinched off tubing should be oriented down and the capillary tube running to the valve diaghragm should be oriented up	the bulb should be attached so that the pinched off tubing should be oriented up and the capillary tube running to the valve diaphragm should be oriented down	the bulb should be attached so that the pinched off tubing should be oriented to one side and the capillary tube running to the valve diaphragm should be oriented to the opposite side	the bulb should be attached with no regard to the orientation of the pinched off tubing or the capillary tube running to the valve diaphragm	
223063	2	In a refrigeration system, the thermal expansion valve sensing bulb is properly secured and insulated at what location?	near the evaporator coil outlet	near the evaporator coil inlet	on the liquid line strainer	at the solenoid valve outlet	
223063	3	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 coil outlet.	The external equalizing pipe is connected to the liquid receiver.	GS-RA-07

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223064	1	When the sensing bulb of a thermostatic expansion valve is charged with a fluid different from the charge used in the system, what name of the charge is associated with the power element?	blended charged	straight charged	mixed charged	cross charged	
223065	1	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.	
223066	2	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.	
223067	1	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 for the purpose of prevention of overloading of the compressor driver?	Crankcase pressure regulator	High pressure cutout	Solenoid valve	Low pressure cutout	
223068	1	Refrigerant flow through a thermostatic expansion valve is greatest under what conditions?	when the evaporator has just begun feeding at relatively high box temperature	just before the evaporator stops feeding at relatively low box temperature	when the low side and high side pressures are equal	when the low side pressure and the bulb pressure are equal	
223069	1	In a vapor compression type refrigeration cycle, the refrigerant temperature decreases the most when passing through which system component?	evaporator	condenser receiver	compressor	expansion valve	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223070	1	A large evaporator coil has been determined to have a pressure drop exceeding 5 psig. How can this be compensated for in maintaining 10 degrees of evaporator superheat as the system requires and avoid starvation of the evaporator? I. adjusting the TXV spring compression and raising the super heat value II. installing an externally equalized TXV	I only	II only	Both I and II	Neither I nor II	
223072	4	Which of the listed conditions would cause the thermal expansion valve to further open in a refrigeration system?	a rise in the temperature at the evaporator outlet	a drop in the condenser cooling water temperature	a drop in the box temperature	a drop in the temperature at the evaporator outlet	
223072	2	What are the opening and closing forces acting on a thermostatic expansion valve?	the opening force is evaporator pressure and the closing forces are bulb pressure and superheat spring compression	the opening force is bulb pressure and the closing forces are evaporator pressure and superheat spring compression	the opening forces are evaporator pressure and superheat spring compression and the closing force is bulb pressure	the opening forces are bulb pressure and superheat spring compression and the closing force is evaporator pressure	
223072	3	The thermostatic expansion valve in a refrigeration system further opens when the diaphragm flexes downward. With all other conditions being the same, what single condition causes this?	an increase in the evaporator pressure	a decrease in sensing bulb temperature	an increase in sensing bulb temperature	increasing the superheat setting of the valve	
223073	1	In refrigeration systems with multiple evaporators, the metering of refrigerant to each refrigerated space evaporator is accomplished by what device?	the king valve	the individual thermal expansion valves	the individual box solenoid valves	the individual back pressure regulating valves	
223074	2	Where would you find the greatest amount of refrigerant superheat in an operating refrigeration system?	the evaporator outlet	the condenser outlet	the receiver outlet	the compressor outlet	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223076	1	In a refrigeration system, what component is installed directly downstream of the thermal expansion valve?	evaporator coil	receiver	compressor	box solenoid valve	
223100	1	Refrigeration system isolation valves are specially designed with a back-seat, as well as a front-seat. For what purpose are these valves designed in this way?	allow for operation as a suction or discharge valve	permit repacking the valve stem under pressure without shutting down	allow for operation as a liquid or vapor valve	allow for removal and replacement of the valve without shutting down	
223101	2	Which lettered component, shown in the illustration, indicates the location of the receiver?	A	B	C	F	GS-RA-12
223102	1	The receiver used in a refrigeration system performs what function?	stores liquid refrigerant and acts as a surge tank to compensate for changes in system load	serves as a collection point and release vent point for air and non-condensable gases	allows refrigerant sub cooling since without a receiver the refrigerant cannot be sub cooled	prevents compressor surging by preventing an excessive pressure difference across the compressor	
223102	2	In a refrigeration plant, what is one vital purpose of the receiver?	cool the refrigerant gas	superheat the refrigerant liquid	store the refrigerant charge	condense the refrigerant	
223103	1	What would be an example of a small appliance as defined in the EPA Clean Air Act rules?	a hermetically sealed water cooler with a 2 lb. refrigerant charge	a self-contained walk-in freezer with a 60 lbs. refrigerant charge	a 25 ton air conditioning system set up as a split plant with the condensing unit on deck	a 200 ton low pressure centrifugal chiller for cargo hold air conditioning	
223117	2	In addition to the indicated gauge pressure, what other information is presented on the compound gauge for the hypothetical refrigerant illustrated?	the actual temperature of the refrigerant at the point of measurement	the saturation temperature of the refrigerant that corresponds to the gauge pressure at the point of measurement	the absolute pressure of the refrigerant at the point of measurement	the metric pressure equivalent of the refrigerant at the point of measurement	GS-RA-16
223118	1	The receiver used in a refrigeration system performs what essential function?	holds the entire refrigerant charge after system pump down	collects air and non-condensable gases	allows the refrigerant to be superheated	prevents liquid refrigerant from flooding back to the compressor	
223119	2	For most multi-box refrigeration systems, the refrigerant sight glass would be located where in the system?	before the compressor in the suction line	after the compressor in the discharge line	after the condenser in the drain line to the receiver	after the receiver in the liquid line	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223200	3	When all the individual box solenoid valves in a multi-box refrigeration plant are closed by collective the action of all the individual box thermostats, by what means will the compressor normally be stopped?	low water cutout switch	low pressure cutout switch	high pressure cutout switch	low temperature cutout switch	
223200	1	What is the purpose of the refrigeration system low pressure cutout switch?	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	
223200	2	What is the purpose of the low pressure cut-out switch as used as a primary controller for a refrigeration system or unit?	maintain a preset low-side pressure for the system	maintain a preset suction pressure to the compressor	start and stop the compressor as needed	control the capacity of the compressor	
223200	4	If only the chill box solenoid valve remains open in a multiple-box refrigeration plant, the refrigeration compressor will eventually be stopped shortly after it closes once the minimum desired chill box temperature is reached. What device actually directly stops the compressor?	chill box thermostatic temperature switch	low water cutout switch	low pressure cutout switch	high pressure cutout switch	
223203	1	The sensing line for the low pressure cutout switch for a refrigeration system is typically connected at what location?	at the inlet side of the receiver	at the outlet side of the receiver	at the suction side of the compressor	at the discharge side of the compressor	
223204	3	The operating principle of a low pressure cut-out switch used as a primary controller in controlling the refrigeration compressor start/stop operation is based on which of the following actions?	compressor suction pressure acting on a bellows	compressor discharge pressure acting on a bellows	compressor suction temperature acting on a bimetallic element	compressor discharge temperature acting on a bimetallic element	
223204	1	The refrigeration system low pressure cutout switch is actuated by which of the following?	changes in condenser shell pressure	a sensing bulb at the tail coil of the evaporator	changes in suction line pressure	changes in condenser water supply pressure	
223204	2	Which of the listed operations will cause an automatically controlled refrigeration compressor to restart if the system features a pump-down cycle?	Closing of the solenoid valve	Closing of the expansion valve	An increase in the suction pressure	Decreasing the suction pressure	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223206	3	The low pressure cutout switch settings vary with the refrigerant used and the temperature application. If the low pressure cutout switch for a particular application is set with a cut-in pressure of 5 psig, what would be the cut-out pressure if the differential is 7.5 psig?	5" Hg	0 psig	2.5 psig	12.5 psig	
223206	1	A refrigeration system low pressure cut-out switch has an adjustment advisory that states that the cut-out is the cut-in minus the differential. Currently the compressor starts a few moments after the thermostatically controlled box solenoid re-opens and begins feeding the evaporator meaning the cut-in value is properly set. As the box solenoid closes when the minimum desired box temperature is reached, the compressor stops almost instantly. As a result, the compressor short-cycles a few times before the pump-down is complete. What must be done to correct this?	the range adjustment must be adjusted upward	the differential adjustment must be adjusted to lower the cut-out	the range adjustment must be adjusted downward	the differential adjustment must be adjusted to raise the cut-out	
223206	4	The low pressure cutout switch will cause the compressor in a refrigeration system to short cycle under what condition?	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	
223206	2	The normal operation of a refrigeration compressor should be to cycle on and off by the action of the primary controller. If the compressor cycles off as a result of system pumpdown, what is true?	the compressor cycles on in response to the low pressure cutout switch and off in response to the high pressure cutout switch	the compressor cycles on in response to the high pressure cutout switch and off in response to the low pressure cutout switch	the compressor cycles on and off in response to the low pressure cutout switch	the compressor cycles on and off in response to the high pressure cutout switch	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223206	5	In a direct expansion type multi-box refrigeration system, the compressor is set up to cycle on and off by the action of what device?	thermostatic expansion valve	high pressure cutout	king solenoid valve	low pressure cutout switch	
223207	8	Which of the lettered components shown in the illustration indicates the high pressure cutout?	W	X	Y	Z	GS-RA-12
223207	4	A relief valve is designed to protect the physical integrity of a refrigeration system as a result of over-pressurization. What device is designed to stop a running compressor before the relief valve lifts?	low pressure cutout switch	back pressure cutout switch	high pressure cutout switch	oil-failure switch	
223207	5	If the head pressure of a reciprocating refrigeration compressor is steadily building and becomes excessive, for protection purposes, what should occur?	the relief valve should lift open before the high pressure cutout stops the compressor	the relief valve should lift open and allow the excess refrigerant to flow to the receiver	the high pressure cutout switch should shut down the compressor before the relief valve lifts open	the relief valve should lift open and allow the excess refrigerant to relieve to the atmosphere	
223207	7	The safety device which normally stops a running refrigeration compressor before the relief valve starts to open is known as what?	low pressure cutout switch	back pressure cutout switch	high pressure cutout switch	relief valve bypass	
223207	10	Which of the listed components shown in the illustration is the low pressure cut-out?	W	X	Y	Z	GS-RA-12
223207	6	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 which of the following would happen FIRST?	compressor discharge valves would be damaged	condenser tubes would rupture	system relief valve would open	high pressure cutout switch would stop the compressor	
223207	9	Which of the listed components shown in the illustration is the oil failure switch?	W	X	Y	Z	GS-RA-12

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223207	11	Which of the listed components, shown in the illustration is designed to close when the refrigerant low side pressure reaches its upper normal limit and, in turn, start the compressor?	"6"	"11"	"13"	"19"	GS-RA-05
223250	1	The safety heads of most large reciprocating compressors used in refrigeration systems are held in place by what means?	discharge pressure in the relief valve return line	large Teflon gaskets	heavy coil springs	tack welding on the sides	
223272	1	Hard drawn copper tubing is used in commercial refrigeration systems rather than steel for what reason?	copper is inherently stronger and can withstand higher pressures than steel	copper is corrosion resistant and easier to work with than steel	hard drawn copper tubing is easily bent, whereas steel is not	copper is compatible with anhydrous ammonia, whereas steel is not	
223272	2	Hard drawn copper tubing is commonly used in larger refrigeration systems. What statement concerning its use is true?	Hard drawn copper tubing is easily flared, so flare fittings are commonly used.	Hard drawn copper tubing is easily bent, so elbow fittings are rarely used in changing direction.	Hard drawn copper tubing is easily swaged, so reducing fittings are rarely used in changing line size.	Hard drawn copper tubing is not easily flared, bent, or swaged, so brazed fittings are commonly used.	
223274	1	Hard drawn copper tubing connections for refrigeration systems may be made by which of the following means?	flaring	brazing	electric arc welding	threading	
223275	1	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.	
223275	2	At ambient temperature and atmospheric pressure, what is the status of R-134a?	corrosive liquid	sub cooled gas	odorless gas	superheated liquid	
223276	2	Traditionally, 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	
223276	4	Which of the refrigerants listed is considered ideal for most marine applications?	Carbon dioxide	Ammonia	R-22	Sulfur dioxide	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223276	1	R-22 has been a suitable refrigerant for use in high temperature (air conditioning) applications with which of the following compressor types?	reciprocating compressors	rotary compressors	centrifugal compressors	all of the above	
223276	3	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	
223277	2	For safe storage, the maximum allowable temperature to which refrigerant bottles should be exposed is what temperature?	100°F	125°F	150°F	175°F	
223277	1	How is the amount of refrigerant in a storage cylinder measured?	pressure	volume	weight	temperature	
223278	5	A partially fouled liquid line strainer in the refrigeration system will cause which of the follwing changes in the system? I. further superheating of the suction gas II. further subcooling of the liquid	I only	II only	Both I and II	Neither I nor II	
223278	1	Subcooling of the refrigerant to reduce the percent of flash gas present in the liquid line is accomplished by what means? I. proper sizing of the condenser II. use of a liquid liquid line to suction line heat interchanger	I only	II only	Both I and II	Neither I nor II	
223278	2	The presence of flash gas in the high pressure liquid lines of a refrigeration system is undesirable due to which of the following reasons? I. erosion of the TXV valve seat will be increased II. refrigeration system capacity will be decreased	I only	II only	Both I and II	Neither I nor II	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223278	4	A partially fouled liquid line strainer in the refrigeration system will cause which of the following conditions? I. a loss of refrigeration effect II. the strainer outlet piping to be cooler than the inlet piping	I only	II only	Both I and II	Neither I nor II	
223279	1	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.	
223280	1	Which of the fluids listed is suitable for use as a secondary refrigerant?	Methyl alcohol	Brine	Carbon dioxide	Cuprous chloride	
223281	2	If a condenser coil of an air-cooled container refrigeration system becomes dirty and requires cleaning, what would be an acceptable method of cleaning?	'Binks' gun with weak acid solvent	high pressure water wash	copper wire rotary brush	all of the above	
223281	1	Refrigerant leaving the metering device in a refrigeration system is in which of the following conditions?	sub-cooled liquid only	superheated vapor only	saturated liquid/vapor mixture	superheated liquid/vapor mixture	
223300	5	In addition to removing water from a refrigerant and neutralizing acids, most dehydrators also effectively remove what other substance?	solid impurities	air	dichlorodifluoromethane	desiccant	
223300	2	Why are dehydrators usually located in the liquid line of refrigeration systems?	remove oil from the refrigerant	prevent icing of the expansion valve	reduce compressor discharge line sweating	prevent liquid slugging in the suction line	
223300	4	What is the name of the device used to remove moisture from a refrigeration system?	humidifier	aerator	dehydrator	trap	
223300	3	What is the purpose of a dehydrator installed in a refrigeration system?	to remove non-condensable gases and vapors	to separate oil from the refrigerant	to separate refrigerant from the oil	to remove moisture from the system	
223300	1	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.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223301	1	Which of the devices listed will indicate whether or not a refrigeration system's dehydrator continues to be capable of removing moisture from the circulating refrigerant?	Dryer sensing bulb	McLeod gage	Particulate test	Liquid line moisture indicating sight glass	
223302	1	In addition to moisture, a suction line dehydrator installed in a system after a burnout has occurred is designed to remove what additional substance?	damaged refrigerant	acids	non-condensable gases	refrigerant oil	
223302	2	In a refrigeration system, silica gel is found in what component?	condenser/receiver	dehydrator or combination filter/drier	moisture indicating liquid line sight glass	compressor suction scale trap	
223302	5	Which of the listed substances is used as an adsorbing agent in the shipboard dehydration of refrigeration systems?	Ethylene glycol	Sodium bromide	Silica gel	Methyl glycol	
223302	6	The dessicant material used as a dehydrating agent within refrigeration system filter/driers and dehydrators is which of the following?	slaked lime	sodium chloride	activated alumina	calcium chloride	
223307	2	Cylindrical, replaceable silica gel core dehydrators installed in halocarbon refrigerant systems are typically arranged in what way?	so that the liquid enters at the top and leaves at the bottom when located vertically in the liquid line	so that the liquid enters at the bottom and leaves at the top when located vertically in the liquid line	horizontally if a liquid drying agent is also used	horizontally if the drying agent is calcium oxide	
223307	1	Which of the locations listed would be considered as the most common place to find a dehydrator or filter/drier in a refrigeration system?	between the compressor and the condenser	between the thermal expansion valve and the evaporator	between the evaporator and the compressor	between the receiver and the thermal expansion valve	
223307	3	The device shown in the illustration which is used for removing moisture from the liquid refrigerant in the system is labeled with what letter?	B	C	D	E	GS-RA-12
223311	1	If a liquid drying agent is used in a refrigeration system already equipped with a solid drying agent, the liquid drying agent will cause what type of reaction?	it will release the moisture already trapped in the solid drying agent	it will react violently with the solid drying agent	it will cause toxic gases to form in the refrigerated space	it will solidify the refrigerant oil in the compressor crankcase	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223312	1	Which of the devices listed is used to limit frosting of chill box evaporator coils on multiple box installations served by one compressor?	evaporator pressure regulating valve	low or high side float valve	capillary tube	box solenoid valve	
223312	7	What is the primary function of the evaporator pressure regulator valves installed in a multi-box refrigeration system?	limit the minimum evaporator coil pressure on those so fitted to prevent excessively low evaporator temperatures	limit the maximum evaporator coil pressure on those so fitted to prevent excessively high evaporator temperatures	maintain equal evaporator pressures among all system evaporators despite differences in box temperatures	maintain a constant compressor suction pressure regardless of changes in system demand	
223312	10	Concerning the evaporator pressure regulator drawing shown in the bottom of the illustration, what statement is true?	"P" refers to an internal pilot passage sensing evaporator pressure	"P" refers to an internal pilot passage sensing suction line pressure	"Q" refers to an external pilot connection used simultaneously with the internal pilot passage "P"	"A" refers to the adjusting stem used to set the maximum allowable evaporator pressure	GS-RA-65
223312	16	Which of the following items shown in the illustration is a discharge muffler?	"2"	"3"	"9"	"10"	GS-RA-05
223312	2	An evaporator pressure regulating valve (back pressure regulator) is installed in the evaporator coils of some refrigeration systems for what purpose?	prevent compressor overload	maintain at least a minimum evaporator pressure	control liquid refrigerant pressure	regulate refrigerant outlet superheat	
223312	4	The two-temperature evaporator pressure regulating valves used in a multi-temperature, multi-box refrigeration system served by one compressor perform what function?	it limits the minimum pressure in the colder evaporators to a preset value	it limits the minimum pressure in the warmer evaporators to a preset value	it limits the maximum pressure in the warmer evaporators to a preset value	it limits the maximum pressure in the colder evaporators to a preset value	
223312	9	The valve shown in the illustration is commonly identified as what type?	thermal expansion valve	evaporator pressure regulating valve	water regulating valve	king valve	GS-RA-67
223312	12	Which of the following items shown in the illustration is a liquid line filter/drier?	"2"	"10"	"17"	"18"	GS-RA-05
223312	15	Which of the following items shown in the illustration is an oil separator?	"2"	"3"	"9"	"17"	GS-RA-05
223312	13	Which of the following items shown in the illustration is an evaporator pressure regulator?	"8"	"13"	"16"	"20"	GS-RA-05
223312	14	Which of the following items shown in the illustration is an accumulator?	"3"	"9"	"17"	"18"	GS-RA-05

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223312	11	Which of the following items shown in the illustration is a replaceable core suction line dehydrator?	"3"	"10"	"17"	"18"	GS-RA-05
223317	1	Moisture is removed from a refrigeration system by what action?	draining refrigerant from the bottom of the condenser	opening a drain petcock on the oil separator	condensing the water in the heat exchanger	cutting in the dehydrator	
223318	1	When two refrigerated spaces in a refrigeration system are served by a single compressor and condenser, yet are maintained at different temperatures, what is true concerning an installed back pressure regulating valve?	it maintains a higher pressure in the evaporator coil of the colder box	it maintains a higher pressure in the evaporator coil of the warmer box	it maintains a lower pressure in the evaporator coil of the warmer box	it maintains equal pressures in the evaporator coils of both boxes	
223318	2	In a refrigeration system, where multiple evaporators are operating at different temperatures, and serviced by a single compressor and condenser, the control of individual evaporator coil temperature minimums should be carried out by adjustment of which individual valve?	thermostatic expansion valve superheat setting	evaporator pressure regulating valve pressure setting	thermostatic expansion valve maximum pressure setting	box thermostat temperature setting	
223318	3	When multiple refrigeration evaporators are served by the same compressor and operate at different temperatures, what is true concerning the pressure of the coldest evaporator?	it is higher than the pressure in warmest evaporator	it is the same as any other evaporator in the system	it is lower than the pressure in the warmest evaporator	it is controlled by adjusting the thermal expansion valve	
223319	1	In addition to adjusting the box thermostat, for a direct expansion multiple-evaporator refrigeration system, a chill box may be converted to a freeze box by performing what action?	controlling the feed with the hand expansion valve	throttling the compressor suction isolation valve	bypassing the box solenoid valve	bypassing the back pressure regulating valve	
223320	1	A multiple evaporator system is equipped with a evaporator back pressure regulating valve on the warmer of the two boxes. This valve must be bypassed when pumping down the system for repairs because reduction of suction pressure would cause the valve to do what?	rupture	open	close	chatter	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223321	1	Standard filter/driers used in many cmmercial type refrigeration units may contain what type of substance?	activated charcoal	alcohol based liquid drying agents	activated alumina or silica gel desiccant beads	all of the above may be used	
223330	1	A box solenoid valve used in a refrigeration system should be installed in what manner?	with the axis of the solenoid horizontal, controlled by a thermostat sensing the temperature of the box, and upstream of the thermal expansion valve	upright, controlled by a thermostat sensing the temperature of the box, and upstream of the thermal expansion valve	upright, controlled by a thermostat sensing the temperature of the box, and downstream of the thermal expansion valve	upright, controlled by a thermostat sensing evaporator superheat, and upstream of the thermal expansion valve	
223331	1	In a large refrigeration system having more than one evaporator, a king solenoid valve should be installed in what location?	just after the receiver	before the condenser	between the condenser and receiver	before the back pressure regulating valve	
223332	1	In a vapor compression refrigeration system with freeze, produce, and dairy boxes, along with a thaw room, a solenoid valve should be found to be installed where in the system?	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	
223332	2	In a multi-evaporator refrigeration system, a solenoid valve is installed in the liquid line prior to what device?	the receiver	each expansion valve	the condenser	the oil separator	
223333	2	A liquid line solenoid valve controls refrigerant flow to the evaporator by what means?	throttling the refrigerant	fully opening or closing	sensing the superheat in the tail coil	sensing the temperature in the liquid line	
223333	1	Which of the listed components for a refrigeration system is required to be installed on the outlet of the freeze box evaporator and the outlet of the chill box evaporator of a two evaporator refrigeration system?	the outlet of both evaporators would have evaporator pressure regulators installed	the outlet of both evaporators would have check valves installed	the outlet of the freeze box evaporator would have an evaporator pressure regulator installed and the outlet of the chill box evaporator would have a check valve installed	the outlet of the freeze box evaporator would have a check valve installed and the outlet of the chill box evaporator would have an evaporator pressure regulator installed	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223334	3	When multiple refrigerated boxes are maintaining individual temperatures and supplied by a single refrigeration compressor, the individual box temperatures are controlled by what action?	unloading and loading of the compressor	opening and closing of box solenoid valves	throttling of thermal expansion valves	changing compressor speed	
223334	4	The liquid line, thermostatically controlled, box solenoid valve is operated in response to changes in what?	superheat in the tail coil	temperature of the box	compressor suction temperature	compressor discharge temperature	
223334	6	The thermostat controlling a refrigerated walk-in box solenoid valve typically senses what parameter?	evaporator coil inlet temperature	the refrigerated space temperature	evaporator coil outlet temperature	degree of evaporator superheat	
223334	1	In a multiple-box refrigeration plant, when the temperature in a walk-in box rises above the cut-in point of the box thermostat, which of the listed actions should occur FIRST?	The thermal expansion valve will close.	The compressor will start.	The box solenoid valve will open.	The automatic defrost timer will activate.	
223334	5	When a refrigerated compartment of a multi-box system served by one compressor reaches the correct temperature, temperature control in that one compartment is achieved by what means?	operation of that compartment's thermal expansion valve	operation of that compartment's back pressure regulating valve	operation of that compartment's thermostatically controlled box solenoid	operation of that compartment's low pressure cutout switch	
223334	2	The thermostat controlling the operation of the solenoid valve to a refrigerated box evaporator senses what temperature?	evaporator coil inlet temperature	evaporator coil outlet temperature	compressor discharge temperature	the refrigerated box temperature	
223335	1	When a refrigerated space reaches the minimum desired temperature in a multi-box refrigeration system, which of the listed actions will occur FIRST after opening of the box thermostat?	The box 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.	
223335	3	The individual box temperatures of a multibox refrigeration system are directly controlled by what means?	thermostatic expansion valves	thermostatically controlled solenoid valves	back-pressure valves	regulation of the cooling water	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223335	2	In a refrigeration system featuring low-side pumpdown prior to the automatic shut down of the compressor, the temperature of the refrigerated space is controlled by the action of a thermostat wired to what device?	suction line solenoid	thermostatic expansion valve	liquid line box solenoid	low pressure cutout switch	
223336	1	What is the primary purpose of a thermostatically controlled box solenoid valve used in a multi-box refrigeration system?	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	
223336	4	Which of the following valves remains open during normal cycling of the compressor on and off by the action of the low pressure cut-out and but closes in the event of any compressor safety shutdown?	"14"	"17"	"28"	"36"	GS-RA-12
223336	5	Which of the components shown in the illustration indicates a liquid line solenoid valve?	"8"	"11"	"13"	"16"	GS-RA-05
223336	3	Which of the following statements is true?	Valve "14" is the king solenoid, valves "28" and "36" are both chill box solenoids.	Valve "14" is the king solenoid, valves "28" and "36" are both freeze box solenoids.	Valve "14" is the king solenoid, valve "36" is the chill box solenoid, and valve "28" is the freeze box solenoid.	Valve "14" is the king solenoid, valve "28" is the chill box solenoid, and valve "36" is the freeze box solenoid.	GS-RA-12
223337	4	The primary purpose of the liquid line strainer used in a refrigeration system is to prevent dirt and scale from entering what system component(s)?	thermal expansion valves	compressor and oil separator	condenser and receiver	evaporator coil piping	
223338	1	A box solenoid valve used in a mult-box rerigeration system is operated by electro-magnetic action by what control device?	suction pressure actuated pressure switch	box temperature actuated thermostat	evaporator outlet temperature actuated thermostat	discharge pressure actuated pressure switch	
223339	1	A thermal expansion valve installed in a refrigeration system is controlled by the action of what device?	the box solenoid valve operating coil	the compressor unloader mechanism	the TEV sensing bulb mounted on the evaporator tail coil	the receiver level controller	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223340	1	How do modulating valves, found in some container refrigeration systems, differ in operation from conventional solenoid valves found in the same system?	A conventional solenoid valve is either open or closed, whereas a modulating valve can achieve any degree of opening.	A modulating valve is either open or closed, whereas a conventional solenoid valve can achieve any degree of opening.	A conventional solenoid valve is either open or closed, whereas a modulating valve has three positions: open, closed, or half-open.	A modulating valve is either open or closed, whereas a conventional solenoid valve has three positions: open, closed, or half-open.	
223340	2	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 infinitely 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.	
223341	5	On a modern refrigerated container unit employing suction modulation for the purposes of capacity control and capacity limitation, what happens when the applied voltage and current draw associated with the normally open (NO) suction modulation valve located in the suction line both increase?	the valve will further open, lowering evaporator pressure and raising suction pressure	the valve will further open, raising evaporator pressure and lowering suction pressure	the valve will further close, raising evaporator pressure and lowering suction pressure	the valve will further close, lowering evaporator pressure and raising suction pressure	
223350	3	Zinc plates commonly found in refrigeration systems and used as sacrificial anodes are located where?	saltwater side of the condenser	refrigerant side of the condenser	evaporator coils	cooling water suction strainer	
223350	2	Zinc rods are installed in the refrigeration system in what location?	liquid line strainer	liquid line receiver	seawater cooled condenser heads	evaporator tail coil	
223352	1	Seawater or low temperature central fresh water is typically provided to a ship's stores refrigeration plant for what purpose?	cool the expansion valve	prevent refrigerant superheating	condense the refrigerant gas	prevent motor overheating	
223355	3	Heat is removed from the refrigerant circulating through the refrigeration system, shown in the illustration, by which component?	A	B	J	K	GS-RA-12

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223409	1	A flapper valve, also known as a beam valve, is frequently used in refrigeration compressor discharge valves, and is used for what purpose?	feed discharge pressure to the suction line for capacity control	aid in hot gas defrosting	prevent compressor damage by passing any liquid slugs	equalize system pressure for easier compressor startup	
223410	2	In the illustrated refrigeration system, what is the proper name for the component labeled "A"?	accumulator	compressor	filter drier	condenser	GS-RA-12
223411	1	What is the purpose of running a refrigeration compressor in short intermittent spurts or throttling the suction isolation valve when starting the system after a prolonged shutdown?	allow refrigerant vapor cycling time	prevent liquid slugging or overloading the compressor	let the refrigerated compartment cool gradually	determine actual compressor oil level	
223412	1	A device used to hold open the refrigeration compressor suction valve during starting to reduce the compression load is called what?	discharge line bypass	cylinder unloader	suction line bypass	relief valve	
223413	1	To prevent motor overload during start-up of a hermetically sealed centrifugal refrigeration system, what is true concerning the compressor suction gas variable inlet guide vanes?	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	
223414	1	When starting a reciprocating refrigeration compressor that has been shutdown for a period of time, you should manually throttle which valve?	sea water valve	king valve	suction valve	expansion valve	
223421	1	The carbon seal ring of a refrigeration compressor crankshaft mechanical seal is held in position against the stationary ring face by using what device?	spring	snap ring	woodruff key	thrust washer	
223455	8	If the valve labeled "D" in the illustration is a discharge service valve, what will the port labeled "7" be connected to?	to the line connected to the condenser inlet	to the line connected to the condenser outlet	to the inlet of the compressor	to the outlet of the compressor	GS-RA-08
223455	9	Among the illustrated service valves, which service valve is represented as fully front-seated?	A	B	C	D	GS-RA-08

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223455	11	If a refrigeration unit is fitted with suction and discharge services valves constructed similarly to the valve labeled "D" in the illustration, what statement is true concerning the valve status when servicing is complete and the gauge manifold set is removed, with the unit in normal operation, assuming that no permanently installed gauges or pressure switches are connected to the service port "1".	The valves are fully back-seated, with the packing tightened, and the seal cap in place.	The valves are fully front-seated, with the packing tightened, and the seal cap in place.	The valves are cracked off their back-seats, with the packing tightened, and the seal cap in place.	The valves are cracked off their front-seats, with the packing tightened, and the seal cap in place.	GS-RA-08
223455	7	If the valve labeled "D" in the illustration is a suction service valve, what will the port labeled "7" be connected to?	to the line connected to the evaporator inlet	to the line connected to the evaporator outlet	to the inlet of the compressor	to the outlet of the compressor	GS-RA-08
223455	10	Among the illustrated service valves, which service valve is represented as fully back-seated?	A	B	C	D	GS-RA-08
223456	1	When opening or closing compressor service and line isolation valves on a typical refrigeration system that is fitted with packed valves, what must you do?	you should turn valves slowly to avoid thermal stresses due to low temperatures	you must first remove the stem seal cap	you should replace the gasket each time the valve position is changed	you should never loosen or tighten the packing gland	
223500	1	What is the most important consideration in selecting a lubricating oil for use in a refrigeration compressor?	have a low viscosity index	have a high wax content	have a high freezing point	have a low pour point	
223501	1	Properties of a good refrigeration compresor lubricating oil include which of the following?	low wax content	high pour point	high viscosity	all of the above	
223502	1	What is the purpose of heating the oil in the crankcase of a refrigeration compressor during the off cycle?	reduce the absorption of refrigerant by the lubricating oil	prevent acidic pitting of compressor parts	reduce the absorption of moisture by the lubricating oil	prevent the formation of wax and gum	
223502	2	The lubrication oil in the crankcase of a refrigeration compressor that is shut down is heated. For what purpose is this done?	reduce absorption of refrigerant by the oil	prevent refrigerant vaporization	remove entrained water	remove wax and gum	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223503	3	The oil separator (trap) used in a large shipboard refrigeration system would be located between what two system components?	the compressor and the condenser	the condenser and the receiver	the receiver and the king valve	the receiver and the expansion valve	
223503	1	Oil separators installed in large refrigeration systems serve what function?	remove excess oil from the system	remove oil entrained in high pressure liquid lines	return oil entrained in the discharge gas back to the compressor crankcase	return oil entrained in the suction gas back to the evaporator inlet	
223503	2	An oil separator is a device used to remove oil from which of the following?	hot suction gas	warm high pressure liquid	hot discharge gas	cold discharge gas	
223505	1	When checking the oil level in a refrigeration compressor, under what conditions would the most accurate reading be obtained?	immediately after start-up	immediately after adding oil	after being shutdown for 3 hours with the crankcase heater secured	several minutes after shutdown following a prolonged period of operation	
223506	2	The sudden reduction of pressure occurring within the crankcase of a refrigeration compressor during starting causes what condition?	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	
223507	2	Unless the system is designed for such operation, two compressors should not be operated in parallel in a refrigeration system for what reason?	operation of two compressors will overload the expansion valves	condenser pressure will be too high causing condenser failure	lubricating oil may be transferred from one compressor to the other	the evaporators would fail due to excessively low suction pressure	
223507	1	If it becomes absolutely necessary to operate two compressors in parallel in order to maintain the box temperatures, a careful watch should be kept on what parameter?	discharge pressure gauges of both compressors	suction pressure gauges of both compressors	oil pump discharge pressures of both compressors	oil levels in both compressor crankcases	
223508	2	In which of the following lines is an oil separator most likely to be?	suction line	discharge line	hot gas bypass line	liquid line	
223601	1	An arrow stamped on the valve body of a water regulating valve indicates which of the following?	direction of the plunger slide	closed position	open position	direction of the flow	
223602	12	If it is necessary to increase the operating head pressure of the refrigeration system using the device shown in the illustration, what should be done?	"2" should be turned to further compress the spring	"2" should be turned to relax the compression of the spring	"4" should be rotated to compress the enclosed bellows	"4" should be rotated to relax the enclosed bellows	GS-RA-14

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223602	2	In a refrigeration system fitted with a water-cooled condenser, what is the purpose of the water regulating valve?	to maintain a constant condenser cooling water pressure	to maintain a constant head pressure	to maintain a constant suction pressure	to maintain a constant discharge gas temperature	
223602	5	The water regulating valve installed in a refrigeration system featuring a water-cooled condenser is designed to control what parameter?	compressor discharge temperature	compressor discharge pressure	compressor suction temperature	compressor suction pressure	
223602	6	In a refrigeration system, the condenser cooling water regulating valve is directly controlled by changes in what parameter or condition?	temperature of the inlet cooling water	compressor discharge pressure	amount of refrigerant in the system	temperature of the refrigerant after expansion	
223602	4	Water regulating valves are installed to vary the water flow through the water cooled refrigeration condensers in response to changes in what parameter?	compressor speed	compressor discharge temperature	compressor discharge pressure	condenser discharge temperature	
223602	1	A water regulating valve controls the refrigeration condenser cooling water flow in response to what aspect of the condenser?	cooling water inlet temperature	liquid refrigerant outlet temperature	condenser head water pressure	condenser shell refrigerant pressure	
223603	1	The purpose of the water failure switch in a water-cooled refrigeration system is to react to a loss of cooling water pressure and function to protect the system from high pressure. When a loss of cooling water pressure causes the water failure switch to open, what is the result?	stopping the compressor	bypassing refrigerant to the receiver	closing the high pressure cutout switch	opening the high pressure cutout switch	
223603	2	In a refrigeration system that is not protected by a water failure switch, if the cooling water to the condenser fails, what will be the result for protective purposes?	the box temperature solenoid valve will close initiating a pump down	the expansion valve will close due to high superheat	the compressor will shutdown by the action of the high pressure cutout switch	the king valve will open	
223609	1	In a refrigeration system, the valve shown in the illustration is used for what purpose?	thermostatic expansion valve	evaporator pressure regulating valve	head pressure regulating valve	suction pressure regulating valve	GS-RA-14

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223610	3	The set point adjustment of the device shown in the illustration is made by rotating what component?	"1"	"2"	"3"	"4"	GS-RA-14
223610	5	The device in figure "A" of the illustration is used to control the flow of water through a water cooled condenser of a refrigeration unit. Where would the pressure connection be made leading to the control bellows?	compressor crankcase gas connection	condenser shell gas connection	condenser water inlet connection	condenser water outlet connection	GS-RA-15
223610	6	The device in figure "B" of the illustration is used to control the flow of water through a water cooled condenser of a refrigeration unit. Where would the thermal bulb sensing well be located?	condenser refrigerant inlet gas stream	condenser refrigerant outlet liquid stream	condenser water inlet stream	condenser water outlet stream	GS-RA-15
223650	2	Capacity control of a centrifugal refrigeration compressor can be accomplished by what means?	varying the speed of the compressor	varying the position of the suction inlet damper vanes	varying the position of the hot gas bypass valve	all of the above	
223652	2	The device shown in the illustration is used for what purpose?	refrigeration compressor capacity control unloading mechanism	air conditioning proportional-plus-reset, humidity/ temperature ratio controller	multi-box back pressure regulator with surge chamber	combined box temperature thermostat and thermal expansion device	GS-RA-13
223654	5	The fluid used to act against hydraulic relay piston to control how many cylinders are unloaded in the refrigeration compressor capacity control system illustrated, is obtained from where?	control oil pressure	gas discharge from the compressor	compressor lube oil pump discharge pressure	crankcase pressure	GS-RA-13
223654	2	The fluid used as a source of actuating power against the underside of the unloader power element piston of the refrigeration compressor capacity control mechanism illustrated is obtained from where?	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	GS-RA-13

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223654	4	The fluid used to act against the range adjusting spring and to directly control the position of the capacity control valve of the refrigeration compressor capacity control system illustrated, is obtained from where?	high side liquid receiver	gas discharge from the compressor	compressor lube oil pump discharge pressure	crankcase pressure	GS-RA-13
223655	6	During operating periods of a multi-box refrigeration system using a capacity controlled compressor, when only one of the evporators of a four box plant are actively being fed with liquid refrigerant, the control oil pressure acting on the hydraulic relay piston will be at what value?	the lowest	at its mid-range	the highest	of no consequence as the lube oil is not used in the operation of the unloader	GS-RA-13
223655	5	During operating periods of a multi-box refrigeration system using a capacity controlled compressor, when half of the evaporators of a four box plant are actively being fed with liquid refrigerant, the control oil pressure acting on the hydraulic relay piston will be at what value?	the lowest	at its mid-range	the highest	of no consequence as the lube oil is not used in the operation of the unloader	GS-RA-13
223655	4	During operating periods of a multi-box refrigeration system using a capacity controlled compressor, when all of the evaporators of a four box plant are actively being fed with liquid refrigerant, the control oil pressure acting on the hydraulic relay piston will be at what value?	the lowest	at its mid-range	the highest	of no consequence as the lube oil is not used in the operation of the unloader	GS-RA-13
223656	4	A compressor used in a multi-box refrigeration system has 4 of its 6 cylinders controlled for variable loads. Assuming that the controlled cylinders are unloaded singly in incremental steps, if four of five boxes are currently feeding, what will be compressor capacity at step 1 of incremental unloading?	83.3%	66.7%	50%	33.3%	GS-RA-13

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223656	7	A compressor used in a multi-box refrigeration system has 4 of its 6 cylinders controlled for variable loads. Assuming that the controlled cylinders are unloaded singly in incremental steps, if three of five boxes are currently feeding, what will be compressor capacity at step 2 of incremental unloading?	83.3%	66.7%	50%	33.3%	GS-RA-13
223700	1	Refrigeration systems using forced air circulation evaporators have a tendency to cause rapid dehydration of produce in chill boxes. Which of the following will minimize this dehydration?	the air is circulated rapidly over a small evaporator with a maximum temperature differential	the air is circulated rapidly over a small evaporator with a minimum temperature differential	the air is circulated slowly over a large evaporator with a minimum temperature differential	the air is circulated slowly over a large evaporator with a maximum temperature differential	
223701	1	In a dry-type direct expansion refrigeration evaporator, what is true concerning the evaporator coils?	the coils are covered on the outside with insulation	the coils are coated on the inside with insulation	the coils are surrounded on the outside by air	the coils are surrounded on the outside by refrigerant	
223755	1	When the relief valve opens on a refrigeration compressor discharge line, it discharges high pressure refrigerant vapor to what location?	liquid strainer	refrigerant inlet of the condenser	inlet side of the evaporator	suction side of the compressor	
223756	1	According to 46 CFR Part 58, for protection purposes, what is required of all refrigeration systems?	high pressure cut-out	refrigerant receiver	pressure relief device	low pressure cut-out	
223757	3	The rupture disc on a low pressure centrifugal refrigeration unit is used as an over pressure protection device and is set to relieve at 15 psig and is most likely to lift when the compressor is idle? Where is the rupture disc located?	at the top of the upper chamber of the economizer	on top of the condenser shell	at the discharge of the compressor	on top of chiller evaporator shell	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223900	1	When hot gas defrosting a refrigeration system evaporator coil, where the hot gas flow direction is in the same direction that liquid flows during normal cooling, liquid flood back to the compressor is a real danger. One way to overcome the possibility of a large slug of liquid refrigerant entering the compressor suction is to use what installed device?	sub cooler	liquid extractor	re-evaporator	drain lines	
223900	2	Some 'hot gas' defrost systems reheat the refrigerant just prior to its returning to the compressor for what purpose?	to increase the circulation of liquid refrigerant	to prevent chill shocking the compressor suction valves	to improve the efficiency of the expansion valve	to prevent the damaging effects of liquid slugging	
223901	2	What is true concerning frost build-up on the evaporator coils of a multi-box direct expansion refrigeration system?	the frost can be quickly removed by simply shutting down the compressor	the frost will increase the refrigeration effect	the frost can be removed by passing hot gas through the coils or energizing defrost heaters with the evaporator fan shut down	the frost can be removed by passing hot gas through the coils or energizing defrost heaters with the evaporator fan still running	
223901	1	Hot gas bypass is one of the methods used to produce what effect?	relieve excessive compressor head pressure	produce flash gas at the expansion valve	reduce flooding of the receiver at low loads	defrost the evaporator coils	
223903	1	Concerning frost appearing on one set of evaporator coils of a multi-box, direct expansion type refrigeration system, what is true?	the frost will increase the value of superheat to the fluid leaving the coils	the frost will assist in increasing the refrigeration effect	the frost can be removed by passing hot vapors through the coils	the frost can be quickly removed by simply shutting off fluid flow to the coils	
223930	1	When checking zinc plates, or pencil zincs in the refrigerating system condenser, what should you do?	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	
223951	2	Which of the precautions listed should be taken before opening any part of a refrigeration system for the purpose of accomplishing non-major repairs?	Bring the part of the system to be opened to 0 psig.	Bring the part of the system to be opened to a pressure corresponding to the ambient temperature.	Set the high pressure cutout on manual to prevent automatic starting.	Use the hot gas defrost line to remove any frost on the evaporator coils.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223951	1	Prior to making non-major repairs (such as replacing a main liquid line dehydrator dessicant cartridge) of a large, multi-box refrigeration system, what should be done before opening the system?	recover the entire refrigerant charge to a suitable recovery cylinder, then isolate the dehydrator	pump down the low side and liquid line to the deepest achievable vacuum by closing the king valve, then isolate the dehydrator	pump down the low side and liquid line to 0 psig by closing the king valve, then isolate the dehydrator	isolate the dehydrator then release the remaining refrigerant in the dehydrator to the atmosphere	
223952	1	The pressure, in a low pressure refrigeration system about to be opened for a major repair, should be brought to what value before the system can be opened for repairs if the recovery unit was manufactured on or after Nov. 15, 1993?	10 to 12 psig	4 to 7 psig	0 to 1 psig	25 mm of Hg absolute	
223952	2	The pressure or vacuum in a small appliance refrigeration system about to be opened for repair regardless of when the recovery device was manufactured should be brought to what value?	15 inches Hg	14.7 psig	1 to 2 psig	4 inches Hg vacuum	
223952	3	The pressure in the part of a high pressure refrigeration system about to be opened for a non-major repair should be brought to what value?	1 to 2 psig	4 to 7 psig	11 to 12 psig	0 psig	
223953	1	Overfilling a refrigerant container is extremely dangerous because of the high pressures generated. The generation of pressure is the result of what?	vapor pressure of the refrigerant at saturation temperature	discharge pressure of the recovery compressor	hydrostatic pressure of the expanding liquid	discharge pressure from the recovery cylinder	
223955	1	The FIRST thing to do to ensure that a refrigeration unit will not start while undergoing repairs is to do what?	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	
223992	1	What must be done, at a minimum, before a system can legally be opened up for repairs while adhering to the prohibition against the venting of halogenated fluoro-carbon refrigerants to the atmosphere?	recovery of the refrigerant	reclamation of the refrigerant	recycling of the refrigerant	destruction of the refrigerant	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
223993	2	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	
223994	1	In a low pressure refrigeration system, excessive running of the purge recovery unit generally indicates which probable condition?	faulty purge system vent valve	overcharged system	system leaks on the low side	system leaks on the high side	
223995	1	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	
223997	1	In a low-pressure centrifugal chiller, 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.	
223998	1	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	
223999	1	During normal operation, traditionally, how has most of the refrigerant released to the atmosphere from low pressure systems?	through water-side system leaks	through the purge unit vent	through a leaking rupture disk	through the compressor shaft seal	
224000	3	A refrigeration plant has been prepared for opening up the system for non-major repairs by performing a system pumpdown and bringing the part of the system to be opened to 0 psig. At the completion of the repairs and after re-closing the system what is the recommended procedure?	performing a dehydration evacuation on that part of the system which was open with a deep vacuum pump	performing an evacuation on that part of the system which was open with a self-contained refrigerant recovery unit	purging that part of the system which was open with dry nitrogen	introduce the system charge into that part of the system which was open	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224000	6	In the refrigeration system shown in the illustration, which of the valves indicated should be used to purge the system of air and non-condensable gases?	"5"	"6"	"11"	"17"	GS-RA-12
224000	4	A purge connection installed on the refrigerant side of a water cooled condenser at the top of the condenser shell is used for what purpose?	free tubes of accumulated scale	charge the system with refrigerant	remove non-condensable gases	ensure positive air circulation	
224000	5	Purging is the process used to do what?	eliminate moisture from the refrigeration system	separate refrigerant from oil	remove non-condensable gases from the refrigeration system	decrease the total amount of refrigerant in the system	
224000	2	In a refrigeration system, from what location would air and non-condensible gases be removed?	expansion valve equalizer connection	compressor oil fill connection	the bottom of the receiver drain connection	the top of the condenser purge connection	
224002	4	Loss of refrigerant during the process of purging of air and non-condensible gases can be kept to a minimum by what action?	purging through a dehydrator	purging through the discharge service valve rather than the top of the condenser	cracking the purge valve briefly and allowing the refrigerant to re-settle between purges	purging through the top of the receiver rather than the top of the condenser	
224003	2	Personnel servicing refrigeration systems and subject to the exposure to commonly used refrigerants should wear what type of personal protective equipment?	goggles and gloves	a respirator	rubber soled shoes	an all purpose gas mask	
224003	1	When handling contaminated oil from a hermetically sealed refrigeration compressor unit that has suffered from a motor burnout, what should be done?	store the oil in a clean refrigerant drum	wear goggles and rubber gloves	circulate the oil through a filter drier	remove the oil with a portable charging cylinder	
224005	1	Why is a purge recovery unit typically fitted on low pressure centrifugal chillers?	Such a chiller can operate at a pressure below atmospheric pressure on the low side thus drawing in air through any low-side leaks.	Evacuation of the air from a low pressure chiller prior to charging with refrigerant is not possible.	Low pressure chillers are routinely opened for maintenance thus introducing air at each opening.	Low pressure chillers use extremely low boiling point refrigerants.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224007	1	Immediately before the actual process of adding oil to a compresssor cranckase is started, the oil charging hose should be properly prepared. How is this done?	the hose should be purged with refrigerant vapor	the hose should be purged with nitrogen gas	the hose should be cleaned with an approved solvent	the hose should be baked in an oven	
224007	3	When adding oil to a refrigeration system using a oil charging hand pump, what precaution must be taken?	all air is purged from the pump and hoses using clean refrigeration oil or refrigerant vapor	all air is purged from the pump and hoses using dry nitrogen	all refrigerant vapor is purged from the compressor crankcase using dry nitrogen	all refrigerant vapor is purged from the compressor crankcase using clean refrigeration oil	
224007	2	Before charging a refrigeration unit, unless quick disconnect fittings are used, the refrigerant charging hoses should be prepared in what way?	they should be flushed with clean refrigerant oil	they should be purged with refrigerant	they should be cleaned with carbon tetrachloride	they should be warmed in an oven	
224007	4	When adding oil to compressor crankcase of a refrigeration system with a hand pump, what precaution must be taken?	the compressor crankcase pressure must not be too high	all air must purged from the pump and charging hose using clean oil or refrigerant vapor	the high pressure cutout switch must be held open to prevent accidental starting	the condenser must be completely isolated first	
224007	10	When adding oil to a refrigeration system, what precautions must be taken?	the compressor suction pressure should not be too high	all air is purged from the pump and charging hose with clean oil	the high pressure cutout switch is held open to prevent accidental starting	the compressor must be running	
224008	1	The process of removing refrigerant from a system and storing it without testing or processing it in any way is known as what under the EPA Clean Air Act rule definitions?	reclaiming	recouping	recycling	recovering	
224009	2	Which of the hand valve configurations for the gauge manifold set is the correct set up for charging refrigerant into the low side of the system as a vapor?	A	B	C	D	GS-RA-03

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224009	4	Which of the hand valve configurations for the gauge manifold set is the correct set up for removing the remaining refrigerant from the gauge manifold set with the discharge service valve back-seated in preparation for removing the gauge manifold set?	A	B	C	D	GS-RA-03
224009	3	Which of the hand valve configurations for the gauge manifold set is the correct set up for monitoring both the low and high system pressures?	A	B	C	D	GS-RA-03
224010	1	The safest and quickest method of adding refrigerant to a refrigeration system is to add the refrigerant through which valve and in what state?	as a vapor using the discharge service valve service port	as a liquid using the suction service valve service port	as a liquid using the liquid line charging valve port	as a vapor using the liquid line charging valve port	
224010	2	Concerning the charging of refrigerant into a vapor compression refrigerating system, which of the following is true?	when charging as a vapor it should be directly to the receiver only	when charging as a liquid it should be to the low side only	when charging as a liquid it should be to the high side only	when charging as a liquid it may be to the low or high side	
224011	2	When a refrigeration system is being topped off with a small amount of refrigerant through the low side with the compressor running, what should be done?	the refrigerant should be charged into the system as a vapor	the suction service valve must be back seated	the discharge service valve must be front seated	the refrigerant charging cylinder should be turned upside down	
224011	1	Low side passive charging of a refrigeration system may be speeded up by what process?	warming the service cylinder with a torch	warming the service cylinder with warm water	inverting the service cylinder	inclining the service cylinder	
224012	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224013	1	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 what amount?	$5,000	$10,000	$25,000	$50,000	
224015	1	Alkylbenzene ISO 32 cSt synthetic refrigerant oil is miscible and suitable to use with which of the following refrigerants?	R-22	R-32	R-134a	R-143a	
224016	2	With regards to shipboard refrigeration systems, after July 1, 1992, what action became illegal?	intentionally venting class I or II refrigerants to the atmosphere	working on a refrigeration system without permission of the Officer in Charge Marine Inspection	mixing R-12 and R-22	producing a class I refrigerant	
224017	1	If you mistakenly change from a lower pour point lubricant to a higher pour point lubricant in a refrigeration system, what will be the result?	compressor lubrication will be improved	oil will not leave the crankcase	compressor valves will be damaged	oil may congeal in the evaporator	
224018	1	The best time to check the oil level in the compressor in a typical refrigeration system is when shortly after the compressor has stopped after a long period of running. Why is this so?	oil has had time to mix properly with the refrigerant and migrate throughout the system	oil in migration has had sufficient time to return back to the crankcase via the suction line	the oil separator has had sufficient time to fill	the crankcase heater is secured when the compressor is shutdown; thereby, ensuring that a false level is not read	
224019	5	With a service gauge manifold set connected to a refrigerant compressor as shown in the illustration, which arrangement of the gauge manifold set valves and compressor service valves would allow for simultaneous reading of the compressor suction and discharge pressures?	Valves "2" and "5" both open, along with valves "1" and "6" both front-seated.	Valves "2" and "5" both closed, along with valves "1" and "6" both cracked open off their back-seats.	Valves "2" and "5" both closed, along with valves "1" and "6" both back-seated.	Valves "2" and "5" both open, along with valves "1" and "6" both open in the mid-position.	GS-RA-03

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224020	1	All shipboard personnel responsible for the maintenance and repair of air conditioning systems using refrigerants covered under the EPA Clean Air Act venting prohibition, must be certified through an approved Enviromental Protection Agency (EPA) program to do which of the following?	before they can pump down the system in preparation for shifting over to the standby condensing unit	before they can set the operating controls of the system	before performing maintenance, service or repair that could reasonably be expected to release Class 1 or Class 2 refrigerants into the atmosphere	before performing any maintenance or repair regardless of the actual procedure	
224021	1	Under the definitions under the EPA Clean Air Act rules, how can refrigerant recovery equipment that is considered as being system dependent best be described?	the recovery equipment must have its own power source	the recovery equipment recovers refrigerant with the aid of components in the system	the recovery equipment can only recover vapor refrigerant	the recovery equipment can only recover liquid refrigerant	
224022	2	In addition to pressure, most compound and standard pressure gauges used for refrigeration service are also provided with a scale indicating what parameter?	saturated refrigerant temperature	superheated refrigerant temperature	sub cooled refrigerant temperature	absolute pressure	
224022	3	In a water-cooled ship's stores refrigeration plant using a high pressure refigerant as defined under the EPA Clean Air Act rules, which of the following applications would be appropriate for a permanently intalled compound pressure gauge?	compressor suction pressure	compressor discharge pressure	lube oil pump discharge pressure	condenser cooling water supply pressure	
224022	1	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. What are these other scales?	actual pressure scales for different refrigerants	saturation pressure scales for varying ambient temperatures	actual temperature scales for different refrigerants	saturation temperature scales for different refrigerants	
224023	1	Refrigerant entering the compressor of a refrigeration system should be in which of the following conditions?	High pressure liquid	High pressure vapor	Low pressure vapor	Low pressure liquid	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224024	1	In a refigeration system, once the gage manifold hoses are attached to the compressor service valve connections and properly purged, what should be the status of the manifold valves and the service valves when the purpose for attachment is to read system pressures?	both manifold hand valves should be open and the compressor service valves should both be front-seated	both manifold hand valves should be open and the compressor service valves should both be back-seated	both manifold hand valves should be closed and the compressor service valves should be cracked-off their back seats	both manifold hand valves should be open and the compressor service valves should be cracked-off their back seats	
224025	1	When purging a refrigeration gage manifold using system pressure as the source of refrigerant for purging, which of the fittings listed is normally tightened LAST?	the high pressure hose fitting at the discharge service valve service port	the high pressure hose fitting at the gage manifold high pressure connection	the low pressure hose fitting at the suction service valve service port	the low pressure hose fitting at the gage manifold low pressure connection	
224030	1	What is the correct color coding of refrigerant recovery cylinders regardless of the refrigerant contained within?	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	
224031	1	EPA Clean Air Act rules permit refrigerant to be released to the atmosphere under which of the following conditions?	when testing a system for leaks using R-12 and nitrogen	when release is considered 'de minims'	when adding oil to a compressor	during replacement of a compressor	
224032	1	Inhalation of high concentrations of chlorofluorocarbon refrigerants (CFCs) may have which of the following effects?	drowsiness	loss of concentration	cardiac arrhythmias	all of the above	
224033	2	What is true concerning highly contaminated refrigerant recovered from burned out small appliances?	The recovered refrigerant should be sent to a designated reclamation facility for processing.	The recovered refrigerant may be blended with new refrigerant for eventual re-use.	The recovered refrigerant must be destroyed by the refrigeration technician.	The recovered refrigerant may be used to clean out systems that have suffered from a burn-out.	
224033	1	What is true concerning the recovery of refrigerant from small appliances as defined in the EPA Clean Air Act rules?	the recovered refrigerant must be sent to a designated reclaim facility for processing	the recovered refrigerant must be conveyed to a refillable recovery device	the recovered refrigerant must be destroyed as unusable	the recovered refrigerant must recycled locally for processing	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224034	1	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%	
224035	1	Refillable tanks used to ship CFC and HCFC refrigerants or used to recover these refrigerants must meet the standards of what entity?	the United States Coast Guard	the United States Department of Transportation	the Underwriters Laboratories	the Environmental Protection Agency	
224036	1	When using nitrogen to pressure leak test a system, the nitrogen cylinder should always be equipped with what device or feature?	temperature indicator	blue top	level indicator	pressure regulator	
224037	1	Consultation should be made prior to beginning the conversion of an existing CFC-12 system to HFC-134a with what entity?	the Environmental Protection Agency	the system's manufacturer	the United States Coast Guard	the owner of the system	
224038	1	Persons recovering refrigerant from small appliances must be certified as what type of technician under the EPA Clean Air Act rules?	Type II technician	Type III technician	Type I or Universal technician	All of the above	
224039	1	According to the EPA Clean Air Act rules, what is true concerning refrigerant leaks in a small hermetically sealed shipboard water cooler with a 20 ounce charge weight?	The leaks must be repaired within 30 days.	The leaks must be repaired if the annual leak rate exceeds 35% of the total charge.	The leaks must be repaired if the annual leak rate exceeds 15% of the total charge	Legally, the leaks are not required to be repaired, but morally it is advisable to repair the leaks.	
224042	1	How should small appliances with less than three pounds of refrigerant be charged with refrigerant?	liquid charged	vapor charged	either vapor or liquid charged	initially liquid charged and then topped with a vapor charge	
224043	1	The amount of HCFC-123 in a storage cylinder is measured by what means?	saturation pressure	volume	weight	saturation temperature	
224044	1	Moisture is removed from recovered refrigerant using a recycling machine by what means?	purging non-condensables off the top of the recovery cylinder	opening a drain petcock on the oil separator	condensing the moisture in the condenser	circulating the refrigerant through a dehydrator	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224047	1	An untagged refrigerant cylinder is found in your storage area. Since it is color coded light (sky) blue, what refrigerant is contained within?	CFC-12	CFC-11	HCFC-22	HFC-134a	
224050	1	The most cost-effective method of recovering refrigerant from a low pressure chiller with more than 500 lbs of refrigerant and to meet EPA requirements is to recover the refrigerant using what protocol?	recovering using a liquid pump only	recovery using a vacuum pump based vapor recovery machine only	liquid recovery using a liquid pump, followed by vapor recovery using a vacuum pump based recovery unit	vapor recovery using a vacuum pump based recovery unit followed by liquid recovery using a liquid pump	
224053	1	In reclaiming recovered refrigerant, which type of contamination will the reclamation process be unable to separate?	mixed refrigerants	acid	moisture	air	
224054	1	What is the maximum volume to which refillable refrigeration cylinders should be filled?	60% full	70% full	80% full	90% full	
224056	1	In a refrigeration system, the push-pull technique can be used for the recovery of the refrigerant in what state?	both liquid and vapor	liquid only	vapor only	should never be used with low pressure systems	
224057	1	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.	
224060	1	Charging liquid HCFC-123 into a system under a deep vacuum could cause what to happen unless necessary precautions are taken?	the purge unit to operate	system secondary refrigerant to freeze	air and moisture to enter the receiver	rupture disk to rupture	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224061	1	What differentiates 'system-dependent' and 'self-contained' recovery devices in refrigeration systems?	self-contained recovery devices can only be used on large CFC 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	
224064	1	If when observing the troublehsooting indicators of a mechanical refrigeration system, you ascertain that the system has a significant leak resulting in a loss of refrigerant, what should be your FIRST action?	recover the refrigerant	charge the system	look for traces of oil to pinpoint the leak	evacuate the system	
224066	1	If passive recovery is used on a small appliance fitted with a capillary tube as a metering device with a non-operating compressor, the recovery should be made through what means?	recovery from the high side only	recovery from the low side only	recovery from both the high and low sides	by venting to atmosphere, cannot be recovered	
224067	2	In preparation for repairing a leaking refrigeration system normally containing 50 lbs.of a class II refrigerant, it has been determined that the system pressure is presently 0 psig. In terms of refrigerant recovery, which of the following statements is true?	recover the refrigerant as a vapor only	recover the refrigerant first as a vapor, then as a liquid	recover the refrigerant first as a liquid, then as a vapor	do not attempt to recover any refrigerant	
224067	3	If you find the pressure of a refrigeration system containing a Class I or Class II refrigerant to be opened for the accomplishment of repairs is 0 psig, what must be done?	only recover the vapor refrigerant	only recover the liquid refrigerant in the system	recover liquid and vapor refrigerant and have it reclaimed	do not attempt to recover the refrigerant and repair the leak before pulling a vacuum on the system	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224067	4	Prior to making repairs on a refrigeration system containing a refrigerant covered under the EPA Clean Air Act rules, if system leaks prevent reaching the required levels of evacuation for recovery of refrigerant, what will need be to be done?	only recover the refrigerant vapor from the system	only recover the liquid refrigerant from the system	repressurize the system with refrigerant to locate the leak	isolate non leaking components and evacuate to mandated levels wherever possible	
224069	1	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	
224070	2	If the discharge reed valves used in a refrigeration compressor are leaking badly, what should be done?	the compressor suction isolation valve should be throttled to compensate	the reed valves should be replaced as necessary	the compressor may continue to operate at minimum efficiency	the high pressure cut-out should be readjusted to compensate	
224070	3	If the discharge reed valves used in a refrigeration compressor are leaking badly, what statement is true?	the reed valves should be reground and relapped	the reed valves should be replaced	the low side pressure will indicate below normal	the high pressure cut-out setting should be lowered	
224100	1	In addition to the drive belt itself, a V-belt that is tensioned too tight will cause excessive wear to what other drive component?	the shaft of the prime mover	the compressor drive pulley	motor shaft and compressor main bearings	the prime mover drive pulley	
224101	1	When one drive belt of a drive belt set breaks, what is the criterion for replacement?	a new belt would be longer than the old belts and would not be subjected to any appreciable load, therefore all the belts should be replaced	a new belt would be shorter than the old belts and would be subjected to the entire load, therefore all the belts should be replaced	by adjusting the pulley, it is possible to even the belt tensions even if only one belt is replaced	for reasons of maintenance economy it is recommended to replace only the broken belt	
224101	2	When one belt of a multiple V-belt drive requires replacing, what will be required?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224102	1	When installing a mechanical shaft seal on a refrigeration compressor, extreme care must be taken to prevent what from happening?	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 spring from being damaged by the corrosive effects of excessive handling	any lubricant from contacting the stationary seal face that would cause etching of the face surface	
224150	2	A thermostatic expansion valve is properly controlling evaporator superheat. Adjusting this valve to lower the evaporator superheat setting will result in which of the following?	the evaporator pressure will decrease	the evaporator feed will increase	the expansion valve will further close	the expansion valve diaphragm will rupture	
224150	1	When a change in superheat setting adjustment to a thermostatic expansion valve is performed, which of the following is true?	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	
224150	3	Thermostatic expansion valves can be adjusted for which of the following?	suction pressure only	head pressure only	evaporator superheat only	suction pressure and box temperature	
224151	1	When replacing a thermostatic expansion valve power element, what is true concerning the thermal bulb?	apply a light film of oil to increase heat transfer	with steel wool or an abrasive cloth remove oxidation on the bulb and suction line	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	
224152	2	If the evaporator coil horizontal return line of a container refrigeration system is less than 0.875" (2.21 cm) in diameter (considered small), the thermostatic expansion valve sensing bulb should be attached where on the return line?	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	
224153	1	Expansion valve maintenance should include which of the following procedures?	Cleaning of in-line strainers as necessary.	Ensuring that the thermal bulb is in good contact with the suction line and insulated.	Checking that the thermal bulb is in the proper location.	All of the above.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224154	1	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.	
224155	1	Which of the installation steps listed is necessary for the proper operation of the thermostatic expansion valve?	Attach the thermal bulb to the suction line using plastic ties.	Clean off oxidation from the surface of the suction line and sensing bulb with fine abrasive cloth or steel wool.	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.	
224156	2	Which of the listed statements describes the method used to determine the amount of superheat present in the suction gas leaving the evaporator coil?	Note the low side pressure, determine the corresponding saturation temperature, and subtract it from the temperature measured with a thermometer at the thermostatic expansion valve sensing bulb.	Note the low side pressure, determine the corresponding saturation temperature, and subtract it from the temperature measured with a thermometer at the compressor suction inlet.	Note the low side pressure, determine the corresponding saturation temperature, and add it to the temperature measured with a thermometer at the thermostatic expansion valve sensing bulb.	Subtract the temperature measured at the thermostatic expansion valve sensing bulb from the saturation temperature corresponding to the low side pressure.	GS-RA-16
224200	2	One cause of high head pressure occurring in a refrigeration system can be which of the following?	insufficient cooling water flow to the condenser	a low refrigerant charge in the system	the expansion valve 'stuck' in too open a position	excessive evaporator superheat	
224200	4	The refrigeration system compressor is short cycling on high head pressure. When checked, the sea water cooling inlet temperature to the water-cooled condenser is 72°F. In this situation, what should you do?	check for sufficient cooling water flow through the condenser	purge non-condensable gases from the receiver	reset the thermostatic expansion valve	completely purge the high pressure side of the system	
224200	5	If a refrigeration compressor is short cycling on high head pressure, what should you do?	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224200	1	Which of the problems listed would cause the discharge pressure and temperature of an R-134a air-cooled refrigeration unit to increase above normal for existing conditions?	Thermal expansion valve frozen open.	Suction gas heat exchanger bypassed.	Condenser clogged or fouled.	High pressure cutout switch inoperative.	
224200	3	The compressor in the ship service refrigeration system is short cycling on the high pressure cutout switch. What is a probable reason for this?	discharge valves are leaking excessively	discharge valves are leaking slightly	condenser is getting insufficient cooling water flow	system is low on refrigerant	
224200	6	Which of the following problems could cause the high pressure cutout switch to shut down the compressor in a refrigeration system?	A shortage of refrigerant charge.	Excessive frost build-up on the evaporator.	Excessive condenser cooling water flow.	Insufficient condenser cooling water flow.	
224202	1	High suction pressure accomapnied by low suction temperature to a refrigeration system compressor is caused by which of the following?	the expansion valve is insufficiently opened	the expansion valve being open too wide	the king valve is insufficiently open	a clogged liquid-line strainer	
224203	1	Which of the conditions listed could cause excessively low refrigerant pressure at the compressor suction of a TXV controlled refrigeration system?	Insufficient flow of condenser cooling water.	The system is low on refrigerant.	The box solenoid valve 'stuck' in the open position.	The high pressure cutout switch is inoperative.	
224204	2	When a refrigeration compressor has developed a high head pressure as a result of a refrigerant overcharge, what should be done to compensate for or to correct this situation?	increase the amount of cooling water to the condenser	decrease the amount of cooling water to the condenser	raise the high pressure cut-out opening pressure	remove some refrigerant from the system	
224205	3	If the discharge valve plates on a refrigeration compressor are leaking badly, in terms of the compresssor, what would be the operating symptom?	run continuously	not start	have high discharge pressure	short cycle on the high pressure switch	
224205	6	If any of the discharge valves on a refrigeration compressor are leaking slightly, the compressor will have a tendency to exhibit which of the following behaviors?	run continuously	not start	short cycle on the low pressure cut-out switch	short cycle on the high pressure cut-out switch	
224205	2	Low compressor head pressure in a refrigeration system can be caused by which of the following?	insufficient condenser cooling water flow	excessive condenser cooling water flow	air in the refrigeration system	excessive refrigerant in the system	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224205	4	In a refrigeration system equipped with a reciprocating compressor and a water cooled condensing unit, leaking compressor discharge valves will result in what operating condition?	high suction pressure and high discharge pressure	high suction pressure and low discharge pressure	low suction pressure and low discharge pressure	low suction pressure and high discharge pressure	
224205	1	A low compressor discharge pressure for a refrigerator can be caused by which of the following?	warm food in the refrigerator	wasted zinc plates in the condenser	leaky compressor discharge valve plates	faulty door gaskets on the refrigerator	
224205	5	Badly leaking refrigeration compressor discharge valves will cause which of the following to happen?	overfeeding of the expansion valve	damage to the condenser	constant running of the compressor	flooding of the receiver	
224207	1	If the refrigeration compressor was developing higher than normal discharge pressure, this could be a result of which of the following?	air or non-condensable gases in the system	leaking discharge valves	leaking suction valves	liquid refrigerant flooding back to the compressor from the evaporator coil	
224207	4	Air trapped in a refrigeration system using a water-cooled condenser is usually indicated by what operating symptom?	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	
224207	2	An increasing head pressure in a refrigeration system, without any corresponding change in the cooling water inlet temperature, would probably be caused by which of the following?	restriction in refrigerant piping associated with the liquid line	air and non-condensable gases in the condenser	water in the refrigerant	flooding back of liquid refrigerant to the compressor from the evaporator	
224207	3	Air entering an air-cooled refrigeration system is indicated by what operating symptom?	frosting of the liquid line	higher than normal head pressure	a clear sight glass	abnormally cold reefer boxes	
224209	3	'Flooding back' is a condition where the liquid refrigerant does what in a refrigeration system?	vaporizes in the condenser	reaches the compressor through the suction line	flashes in the liquid line	condenses in the receiver	
224209	1	If a refrigeration compressor had a higher than normal suction pressure, the problem could be a result of which of the following?	a minor accumulation of air or non-condensable gases in the system	a constant loss of refrigerant	leaking compressor suction valves	a slightly higher than normal liquid level in the receiver	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224209	2	If a refrigeration compressor had developed a slightly high suction pressure accompanied with an abnormally low suction temperature, the problem could be a result of which of the following?	a minor accumulation of air or non-condensable gases in the system	a leaking king valve	a clogged sub cooler	liquid refrigerant flooding back from the cooling coil	
224211	1	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 which of the following?	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	
224212	1	If the running suction pressure for an operating refrigeration compressor of a TXV controlled refrigeration system is below normal, the cause may be which of the following?	an excess of liquid refrigerant	the expansion valve overfeeding	a fouled compressor suction strainer	insufficient condensing medium flow	
224212	2	If the running suction pressure at the refrigeration compressor of a TXV controlled air-cooled refrigeration system is below normal, which of the following can be a cause?	refrigerant overcharge	overfeeding by the expansion valve	a restricted liquid-line strainer	a dirty condenser	
224214	6	The compressor of an air-cooled condensing unit of a refrigeration system is short cycling on the high pressure cutout switch. What is a probable reason for this?	system is overcharged with refrigerant	system is low on refrigerant	discharge valves are leaking excessively	discharge valves are leaking slightly	
224214	4	If a refrigeration system is overcharged with refrigerant, what would be the result?	low suction pressure	higher than normal compressor head pressure	increased system operating efficiency	short cycling on the low pressure cutout	
224214	5	The refrigeration compressor in a water cooled refrigeration system is short cycling on the high pressure cutout switch. Which of the following could be cause for this condition?	system is low on refrigerant	high pressure cutout switch is improperly adjusted	discharge valves are leaking slightly	discharge valves are leaking excessively	
224214	1	Which of the conditions listed is one indication of an excessive amount of refrigerant in a TXV controlled refrigeration system?	Relief valve lifting	Prolonged compressor running periods	Short-cycling of the compressor on the high pressure cutout	Unusually high oil level in the crankcase	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224214	2	An excessive charge of refrigerant in a thermostatically controlled, air-cooled, refrigeration system using a TXV as an expansion device can cause which of the following?	oil foaming in the compressor	lower than normal box temperature	higher than normal discharge pressure	the compressor to run continuously	
224214	3	Overcharging an air-cooled refrigeration unit will result in which of the following?	the relief valve will lift	the compressor will tend to run continuously	the system will automatically change over to the hot gas defrost cycle	the compressor will short-cycle on the high pressure cut-out	
224215	1	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	
224216	1	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 absorbed 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.	
224219	1	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 what condition?	the expansion valve overfeeding the evaporator	a leaking compressor suction valve	an incorrectly adjusted high pressure cutout	refrigerant flooding the condenser	
224220	1	Leaking suction valves in a refrigeration compressor are indicated by which of the following?	higher than normal suction pressure	lower than normal suction pressure	lower than normal evaporator temperature	noticeable increase in compressor noise	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224223	1	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 which react in which way?	rising and falling with each stroke	increasing with each stroke	decreasing with each stroke	decreasing to a vacuum	
224228	4	If a refrigeration system were moderately short of refrigerant charge, the condition would result in what operating symptom?	continuous running of the compressor	high suction pressure	high discharge pressure	short cycling of the compressor on the high pressure cutout	
224228	1	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.	
224228	3	If a refrigeration compressor in a multi-box system runs continuously, which of the following might be a cause?	the high pressure cut-out switch is 'stuck' in the closed position	the system is overcharged with refrigerant	the system has a shortage of refrigerant	one of the TXV power elements has lost its charge	
224228	2	If a refrigeration compressor using a thermostat as a primary controller is running continuously without significantly lowering the temperature in the refrigerated space, which of the following is most likely the trouble?	a shortage of compressor oil	warm food in the refrigerator	excessive condenser cooling water	a shortage of refrigerant	
224229	1	During tests to discover why a refrigeration compressor is running continuously, it is determined that the refrigerated space temperature is slightly above normal without ever reaching the desired minimum temperature. Suction and discharge pressures are normal for the corresponding box temperature. In this situation, what should you suspect?	leaking door gaskets	high cooling water temperature	air in the system	a shortage of refrigerant	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224230	1	Unusal noise coming from a refrigeration compressor can be caused by which of the following conditions?	worn bearings and piston pins	slugging due to flooding back	too much oil in circulation	all of the above	
224231	1	If a refrigeration system were short of refrigerant, besides an elevated box temperature, what would be an observable symptom?	continuous running of the compressor	high suction pressure	high discharge pressure	short cycling of the compressor on the water failure switch	
224250	1	What is the color of the flame produced by a halide torch when there is no halogenated refrigerant present at the location of the exploring tube?	orange	blue	purple	green	
224251	1	Some chlorinated fluorocarbon refrigerants may decompose into a toxic irritating gas under what condtions?	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	
224252	1	R-22 is generally considered to be a safe, nontoxic, nonflammable, and nonexplosive refrigerant. It can, however, become highly toxic under what conditions?	superheated outside the system	in contact with an open flame	heated to the boiling point	all of the above	
224252	2	In the presence of an open flame or hot surfaces, chlorinated fluorocarbon refrigerants decomposes and form what chemical substance?	petroleum crystals	phosgene gas	water vapor	carbon monoxide	
224252	4	Monochlorodifluoromethane (R-22) when vaporized in the presence of an open flame, will form what chemical substance?	carbon dioxide gas	phosgene gas	trichlorodifluoromethane	sulphur dioxide	
224252	3	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224253	1	Ammonia when used as a refrigerant is valuable because of its high efficiency, due to its high latent heat of vaporization value. It is, however, a hazardous substance. Which of the following properties is associated with ammonia?	toxic	flammable	explosive	all of the above	
224253	2	People familiar with ammonia refrigeration systems become accustomed to its odor and may forget that the vapors have which of the following properties?	in a low concentration can cause death	will dissolve in perspiration and cause caustic burns	will burn or explode	all of the above	
224256	6	Which of the following leak detectors is fitted with a copper reaction plate?	A	B	C	D	GS-RA-04
224256	4	Which of the following leak detectors requires the introduction of a fluorescent additive to the system?	A	B	C	D	GS-RA-04
224256	5	Which of the following leak detectors has a sensitivity adjustment to compensate for the presence of background refrigerant in the vicinity?	A	B	C	D	GS-RA-04
224256	2	Which of the following leak detectors would be appropriate for use in detecting leaks on a system currently in a vacuum?	A	B	C	D	GS-RA-04
224256	3	Which of the following leak detectors would be appropriate for use in detecting leaks on a system currently pressurized with nitrogen?	A	B	C	D	GS-RA-04
224258	1	Which of the following statements is correct concerning the testing of an R-22 refrigeration system for leaks in an enclosed compartment with a halide torch?	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-22.	Halide torches are useful in locating very small R-22 leaks.	Halide torches are not suitable for detecting R-22 leaks.	
224259	1	To test for a suspected large refrigerant leak from an R-22 refrigeration system in an enclosed area, how should this be done?	perform a standing vacuum test	apply a soap solution to fittings seen to have oil residue	use an electronic leak detector to check all fittings for leaks	perform a hydrostatic test with water	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224260	1	What is a quick method used to test a water cooled condenser for the presence of a refrigerant leak without actually pinpointing the actual location?	test the cooling water for proper pH	test the receiver for water content	check the drains on the condenser heads with a halide torch	test the condenser tubes hydrostatically	
224261	1	If you find a refrigerant leak while using a halide torch, what will happen to the flame as the exploring tube approaches the leak?	it will change from blue to orange	it will change from green to blue	it will change from blue to green	it will stay blue	
224262	1	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 a halogenated refrigerant.	A refrigerant gas mask must be worn while using the torch.	
224262	2	When you find a small refrigerant leak in a system fitted with a halogenated refrigerant with a halide torch, the color of the torch flame will change to what color?	orange	blue	white	green	
224267	1	Excessive, prolonged oil foaming in the crankcase of a refrigeration compressor at start up can cause what to happen?	compressor damage from a lack of proper lubrication	formation of sludge in the crankcase	increased viscosity in the lubricant	carbon deposit on the compressor suction valves	
224267	2	The term 'oil foaming' in refrigeration practice, is used to describe what event?	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	
224268	1	What must be done to use standard leak detection methods on a low pressure refrigeration system charged with refrigerant?	lower the pressure in the system below atmospheric	raise the pressure in the system above atmospheric	cool the refrigerant	add nitrogen to the system	
224300	1	Excessive circulation of the lubricating oil with the refrigerant in a refrigeration system will cause what operating symptom?	carbon deposits on the compressor suction valves	poor evaporator heat transfer	rapid corrosion of the thermal expansion valve	no operating problems	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224302	1	An evaporator coil of a single evaporator, air cooled refrigerator is accumulating excessive frost due to a failure of the defrost mechanism. If the refrigerator features a thermostatically controlled box solenoid and a low pressure cutout controlled compressor, as well as a high pressure cutout, in terms of the compressor, what would be the most likely operating symptom?	run continuously	short cycle on low pressure cutout	short cycle on high pressure cutout	fail to start	
224303	2	If increasing the cooling water flow to a refrigeration condenser fails to lower the condenser pressure, the probable cause may be due to what condition?	an evaporator coil in need of defrosting	a low level of Freon in the receiver	partially blocked thermal expansion valve	excessive amount of non-condensable gases trapped in the condenser	
224304	2	If an abnormally large difference is maintained between the evaporator refrigerant temperature and the box air temperature within the refrigerated compartment, what will be the result?	the compressor will tend to trip out on high head pressure	the evaporator coil will tend to excessively frost	the compressor will tend to overheat due to high suction temperature	the box temperature will be pulled down too low	
224305	1	What is true concerning the accumulation of air and other noncondensable gases in a refrigeration system?	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	
224307	2	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 effect on the system.	
224309	1	Concerning the operation of refrigeration systems, frosting or sweating of a liquid line is usually indicative of what condition?	high relative humidity surrounding the liquid line	a liquid line restriction	the refrigerant contaminated with moisture	proper cooling taking place	
224350	1	If one box in a multiple box, direct expansion type refrigeration system was experiencing an excessively low temperature, this could be a result of which of the following?	liquid refrigerant returning to the compressor	excessive frost on the cooling coils	a leaking hand expansion valve	an oversized expansion valve	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224352	4	If a liquid sight flow indicator in a refrigeration system shows gas bubbles in motion passing inside of the glass, what does this indicate?	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	
224352	1	In an operating refrigeration system low on refrigerant, what will be the indication as viewed in the liquid line sight glass?	it will be clear	it will be blue	it will be light green	it will show bubbles	
224352	2	A liquid sight flow indicator in a refrigeration system is examined and gas bubbles are noted in motion with the fluid flow. What does this mean?	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	
224352	3	In the refrigeration system, a shortage of refrigerant is indicated by which of the following?	the compressor short cycling on high pressure cut out switch	high suction pressure	high head pressure	bubbles in the sight glass	
224353	2	If a refrigeration system compressor crankcase is exhibiting an unusual degree of sweating or frosting and is operating noisily, what should be done?	add refrigerant to the system	check the evaporator superheat	add oil to the crankcase	open the hand expansion valve	
224353	3	An unusual degree of refrigeration system compressor crankcase sweating is an indication of what possible condition?	insufficient lube oil circulating through the system	excessive circulation of lube oil through the system	insufficient refrigerant in the system	an overworked compressor	
224353	4	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.	
224353	1	The presence of bubbles in a refrigeration system liquid line may produce what effect?	promote refrigerant dehydration	be absorbed in the receiver	cause low condensing pressure	erosion of the TXV needle and seat	
224353	5	If the thermal bulb of an expansion valve is incorrectly placed at the center of the evaporator coil instead of the end (tail coil), it will have which of the following effects?	increase the heat removal capacity of the evaporator coil	increase the superheat present at the bulb location	deliver more refrigerant to the evaporator coil	decrease the heat removal capacity of the evaporator coil	
224354	1	If a refrigeration system compressor were short cycling on the low pressure cutout switch, what might be the cause?	the system was overcharged with refrigerant	the system was low on refrigerant	the suction valves were leaking slightly	the relief valve was leaking slightly	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224354	4	If a refrigeration compressor will not start even though the box temperature is high, which of the following would be a probable reason for this?	the pressure regulating valve is not closing	an excessive lack of refrigerant in the system	badly leaking discharge valves	worn piston rings	
224354	2	If a refrigeration compressor were short cycling on the low pressure cutout switch, what is the most probable cause?	the system was overcharged with refrigerant	the high pressure switch was improperly adjusted	the expansion valve strainers were fouled	the suction valves were leaking slightly	
224354	3	A constant hissing sound at the thermal expansion valve will always indicates what condition?	proper refrigerant control	a faulty refrigerant control valve	a lack of refrigerant	the flow of 100% liquid refrigerant passing to the evaporator	
224354	5	If a refrigeration compressor were short cycling on the low pressure cutout switch, what might be the cause?	the system was overcharged with refrigerant	the crankcase was low on oil	the suction valves were leaking slightly	the system was low on refrigerant	
224356	1	When a refrigeration compressor motor fails to start, the FIRST thing that should be checked for is what?	loose expansion valve control bulb	low differential setting on the H.P. cutout	blown fuse or tripped circuit breaker in the motor circuit	faulty suction pressure regulator	
224357	1	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, how will a typical moisture indicator respond?	automatically cut in the driers	change color	secure the compressor	add a predetermined amount of liquid drying agent	
224359	1	A refrigeration unit will tend to short cycle when operating under what conditions?	under heavy loads	during hot gas defrost	lack of refrigerant	during starting conditions	
224360	3	Moisture in the refrigerant may produce what effect?	freeze within the expansion valve	emulsify the oil in the condenser	freeze in the king valve	clog the oil separator	
224360	1	Which of the problems listed represents the major difficulty encountered with thermal expansion valve operation?	Lube oil passing through the system.	Moisture in the system or foreign matter collecting at the valve inlet valve screen..	Variable spring tension caused by the changing temperature.	Frost on the liquid line.	
224360	2	Moisture entering a typical refrigeration system will most likely produce what effect?	boil in the condenser	be removed by the liquid line strainers	cause sweating and frost on the evaporator coils	freeze in the expansion valve	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224360	4	A refrigeration system contaminated with moisture can lead to what condition?	acid formation leading to corrosion	sludge formation in the crankcase	ice formation internal to the expansion valve	all of the above	
224361	1	A warmer than normal compressor suction line might be caused by what condition?	insufficient lubrication	insufficient refrigerant	excess refrigerant	excessive opening of the expansion valve	
224363	2	Which of the following conditions will occur if the power element of the thermostatic expansion valve shown in the illustration loses its charge?	The valve will fail closed, providing no cooling capacity.	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.	GS-RA-07
224364	1	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.	
224365	2	If the superheat setting of a thermostatic expansion valve is set too low, what would be the result, assuming that the system has a single evaporator?	the suction line will be abnormally cold and liquid may flood back to the compressor	the suction line will be abnormally warm due to a reduced amount of refrigerant returning back to the compressor	the box temperature will be pulled way down below the normal temperature range	the receiver level will be abnormally high due to a reduced amount of refrigerant returning back to the compressor	
224365	1	If a thermostatic expansion valve is adjusted for too low a superheat setting, what will be the result?	the efficiency of the unit will be increased	liquid may flood back to the compressor	the box temperature will decrease causing an expansion of the volume of air	the refrigeration effect will increase contributing to uncontrolled box temperatures	
224367	1	If a thermostatic expansion valve is adjusted for too high a superheat value in a TXV controlled single evaporator refrigeration system what will be the result?	all of the system liquid will flow to and flood 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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224367	2	If the superheat value of the thermostatic expansion valve is adjusted too high, what would be the result?	the heat removal capacity of the evaporator will increase	the evaporator will be overfed with liquid refrigerant	the suction line of the compressor will be abnormally warm	the suction line of the compressor will be abnormally cold	
224373	1	A small obstruction at the thermostatic expansion valve inlet will result in which of the following conditions?	Lower than normal suction pressure.	Higher than normal 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.	
224374	1	An obstructed expansion valve may be indicated by an incompletely cooled evaporator and what other symptom?	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	
224375	1	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.	
224376	1	When a thermostatic expansion valve is installed in a refrigerated container unit, the sensing bulb almost always requires insulation. Why is this so?	the insulation prevents air stream temperatures from influencing the bulb temperature	the insulation prevents the bulb from vibrating loose	the insulation prevents oil entrained in the suction gas from influencing the bulb temperature	the insulation protects the clamp and screws from corrosion	
224378	4	If the needle and seat assembly is excessively eroded, the valve cage assembly can be replaced. In replacing the original valve cage assembly rated at 5 tons, what would be the result if the replacement valve cage was undersized at 1/2 tons?	The evaporator would be starved producing consistently excessive superheat.	The expansion valve would function normally, with the presentation of no problems.	The expansion valve would hunt excessively, alternately starving and overfeeding the evaporator coil.	The evaporator would be overfed producing consistently insufficient superheat.	GS-RA-07
224378	3	If the needle and seat assembly is excessively eroded, the valve cage assembly can be replaced. In replacing the original valve cage assembly rated at 1/2 tons, what would be the result if the replacement valve cage was oversized at 5 tons?	The evaporator would be starved producing consistently excessive superheat.	The expansion valve would function normally, with the presentation of no problems.	The expansion valve would hunt excessively, alternately starving and overfeeding the evaporator coil.	The evaporator would be overfed producing consistently insufficient superheat.	GS-RA-07

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224378	5	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 superheat.	Reset the compressor cut-in setting.	GS-RA-07
224379	2	It is necessary to replace the defective thermal expansion valve in a refrigeration system. If the valve is improperly sized, what could be the result? I. starvation of the evaporator coil if the valve is undersized II. constant hunting of the TXV and pressure surging if the valve is oversized	I only	II only	Either I or II	Neither I nor II	
224379	4	In a direct expansion type refrigeration system, an externally equalized thermal expansion valve in installed in which of the following situations?	when the refrigerant pressure drop through the evaporator coil is less than 4 psig	when the air pressure drop across the evaporator is less than 4" of water column	when the refrigerant pressure drop through the evaporator coil exceeds 4 psig	when the air pressure drop across the evaporator exceeds 4" of water column	
224379	5	The coil temperature measured at the expansion valve sensing bulb of an operating system is 10°F. The low side pressure with the compressor running as shown on the gauge illustrated indicates 15 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.	GS-RA-16
224400	1	If the compressor is heard to knock while pumping down the low side for repairs, but otherwise the compressor sounds normal, this is a possible indication of what condition?	worn piston rings	faulty bearings	air being introduced to the system	foaming of the crankcase oil	
224401	3	Which of the following dehydrators or combination filter/driers features a core that can be replaced when the dessicant becomes saturated with moisture?	A	B	C	D	GS-RA-10

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224401	2	Which of the following dehydrators or combination filter/driers is most likely to be used in the suction line of a refrigeration unit?	A	B	C	D	GS-RA-10
224401	5	If the liquid line filter/drier pictured in figure "C" of the illustration becomes saturated with moisture, what would be the indication?	the moisture indicating liquid line sight glass downstream would show bubbles	the moisture indicating liquid line sight glass downstream would change to the "wet" color	the item would be warm on the inlet, but cold on the outlet	the moisture indicating liquid line sight glass downstream would change to the "dry" color	GS-RA-10
224401	6	If the liquid line filter/drier pictured in figure "C" of the illustration becomes mechanically restricted with solid impurities, what would be the indication?	the moisture indicating liquid line sight glass upstream would show bubbles	the moisture indicating liquid line sight glass upstream would change to the "wet" color	the item would be warm on the inlet, but cold on the outlet	the moisture indicating liquid line sight glass upstream would change to the "dry" color	GS-RA-10
224401	4	Which of the following dehydrators or combination filter/driers is most likely to be used in a refrigeration sytem using a capillary tube as a metering device?	A	B	C	D	GS-RA-10
224402	2	While troubleshooting a refrigeration system for low suction temperature and excessive suction line frosting, liquid refrigerant flooding backto the compressor from the evaporator is determined to be the cause. What should you do?	determine if the evaporator coil is in need of defrosting	remove refrigerant from the system	purge air from the condenser	add oil to the crankcase	
224402	1	To correct the condition of slugging and flooding back in a refrigeration system, it may be necessary to perform which of the following?	re-adjust the discharge pressure	clean the expansion valve screen	add refrigerant	adjust the expansion valve	
224405	10	If the suction line between the evaporator and compressor is heavily frosting up and the trouble is attributed to the thermal expansion valve, what would most likely be the cause?	thermal bulb coming loose from the suction line	the needle valve is stuck closed	the power element has lost its charge	internal ice formation within the expansion valve	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224405	6	Unusually heavy frosting or sweating of the suction line of a reciprocating refrigeration compressor indicates a condition which could result in severe damage due to what condition?	minor amounts of oil circulating with the refrigerant	liquid flood back to the compressor	insufficient refrigerant charge	ice formation internal to the expansion valve	
224405	1	A refrigeration system compressor crankcase is sweating, frosting or unusually cold. This is a possible indication of what condition?	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	
224405	2	If the refrigeration compressor crankcase is sweating or frosting and is operating with an unusual noise, what is most likely the cause?	a shortage of refrigerant	the compressor running continuously	liquid refrigerant returning to the compressor	the compressor short cycling on the high pressure cutout	
224405	3	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	
224405	4	A possible cause of excessive crankcase sweating or frosting of a refrigeration system compressor may be caused by which of the following conditions?	a stuck open box solenoid valve	a shortage of refrigerant	too much oil in circulation resulting in an oil-logged evaporator	too much superheat	
224405	7	If a refrigeration compressor crankcase is sweating or frosting and this is accompanied by unsusual noises coming from the compressor, what is most likely the cause?	excessive evaporator superheat	a minor amount of air in the system	normal oil circulation with the refrigerant	the expansion valve being stuck in the open position	
224407	2	Excessive, pronlonged oil foaming in the crankcase of a refrigeration compressor can result in what condition?	overheated compressor bearings	excessively high lube oil viscosity	carbon deposits on the compressor piston rings	wax crystals forming in the thermal expansion valve	
224407	4	Foaming of the oil in a refrigeration compressor crankcase is caused by what condition?	refrigerant boiling out of solution from the lube oil	refrigerant vapor condensing in the crankcase	lube oil viscosity being increased by refrigerant dilution	compressor suction pressure suddenly increasing	
224407	3	In a refrigeration system, prolonged foaming of the crankcase oil may cause what condition to occur?	the expansion valve to overfeed	the compressor to knock	the water regulating valve to fail	the crankcase drains to plug	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224407	1	Excessive oil foaming in the crankcase of a refrigeration compressor is most likely to occur under what compressor operating condition?	has run continuously for a long period	suction pressure is below normal	oil level is below normal	starts after a long idle period	
224411	1	Moisture in a refrigeration system can cause which of the following conditons?	freezing the expansion valve closed	corrosion of system piping	hermetic motor burnout	all of the above	
224412	2	A liquid indicator sight glass is useful in determining whether or not a refrigeration system is sufficiently charged. Where is it generally located in the system?	high pressure liquid line	low pressure liquid line	high pressure vapor line	low pressure vapor line	
224412	1	A sight glass is installed in the liquid line to indicate the condition of the refrigerant charge and may also indicate what else?	condition of the expansion valve	moisture in the system	condition of the compressor suction valves	condenser temperature	
224413	1	Which of the problems listed could cause erosion of the expansion valve needle and seat?	Overcharging the system with refrigerant	Faulty compressor suction valve operation	Failure of the high pressure cutout	Flash gas formation in the liquid line	
224414	2	Vapor bubbles present in the liquid upon arrival to the thermal expansion valve in a refrigeration system may cause erosion of the expansion valve's needle and seat. This, in turn, could cause what condition?	TXV overheating	TXV hunting	TXV freezing shut	TXV freezing open	
224420	1	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 the desiccant core and replace with new drier cartridge.	Purge the entire system to the atmosphere, replace the drier cartridge, and recharge the system with refrigerant.	Using a vacuum pump, draw the entire system down to 1,270 microns for a period of three hours.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224421	6	Pertaining to the illustrated refrigerated container unit piping diagram, if the current box temperature is considerably above set point, to achieve a quicker pulldown in box temperature, what would be the status of the economizer and unloading solenoid valves?	economizer solenoid valve: open unloading solenoid valve: closed	economizer solenoid valve: open unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: closed	GS-RA-18
224421	2	What is the purpose of the discharge pressure regulating valve as shown in the illustration?	it prevents the head pressure from becoming too high during high ambient temperature conditions	it prevents the head pressure from becoming too low during low ambient temperature conditions	it prevents the head pressure from becoming too low during high ambient temperature conditions	it prevents the head pressure from becoming too high during low ambient temperature conditions	GS-RA-17
224421	4	What is the purpose of the quench valve as shown in the illustration?	it injects suction gas into the liquid line during low load conditions	it injects liquid into the suction line during low load conditions	it injects suction gas into the liquid line during high load conditions	it injects liquid into the suction line during high load conditions	GS-RA-17
224421	5	What statement is true concerning the host and remote evaporators of the illustrated refrigerated container unit piping diagram?	the host and remote evaporators are mounted on opposite ends of the refrigerated container to maintain a more uniform temperature distribution	the host and remote evaporators are associated with a divided container unit with two boxes maintained at different temperatures, each containing its own evaporator	the host and remote evaporators are piped in series for the purposes of being able to pull a lower temperature in the container box	the host and remote evaporators are mounted high and low on the front wall of the refrigerated container to maintain a more uniform temperature distribution	GS-RA-17
224421	8	Pertaining to the illustrated refrigerated container unit piping diagram, if the current box temperature is above, but fairly close to set point and the ambient temperature is relatively low, what would be the status of the economizer and unloading solenoid valves?	economizer solenoid valve: open unloading solenoid valve: closed	economizer solenoid valve: open unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: closed	GS-RA-18

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224421	3	What is the purpose of the pressure transducer as shown in the illustration?	it senses compressor discharge pressure and controls the suction modulation valves	it senses compressor discharge pressure and controls the quench valve	it senses compressor suction pressure and controls the suction modulation valves	it senses compressor suction pressure and controls the quench valve	GS-RA-17
224421	7	Pertaining to the illustrated refrigerated container unit piping diagram, if the current box temperature is above, but fairly close to set point and the ambient temperature is relatively high, what would be the status of the economizer and unloading solenoid valves?	economizer solenoid valve: open unloading solenoid valve: closed	economizer solenoid valve: open unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: open	economizer solenoid valve: closed unloading solenoid valve: closed	GS-RA-18
224422	3	The color and/or condition of the oil observed in the sight glass of an operating refrigeration compressor experiencing bearing wear or piston scoring would be which of the following?	gray or metallic	black	clear, because the heavier particles would gravitate to the bottom of the sump	as a light blue-green	
224422	1	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 what condition?	copper plating caused by moisture in the system	bearing wear or piston scoring	carbonization resulting from air in the system	gasket breakdown	
224422	2	The oil observed in the sight glass of an operating refrigeration compressor appears to be brownish in color. What is this an indication of?	carbonization caused by air in the system	bearing wear or piston scoring	head gasket breakdown	copper plating caused by moisture in the system	
224423	1	When repairing a refrigeration system, a swaging tool set would be used to carry out which of the following operations?	Swaging tools are used to remove any sweated edges formed on the tubing while soldering.	Swaging tools are used during the breaking-in of refrigeration compressors and drive motors.	Swaging tools are no longer used with repairing refrigeration systems due to progressive changes in the tool industry.	Swaging tools can be used to expand an end of one tube to fit onto a tube of the same original outside diameter.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224425	2	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.	
224439	1	Which of the following electrically operated refrigeration system valves would be most appropriate for use as a liquid line solenoid valve?	A	B	C	D	GS-RA-19
224439	2	Which of the following electrically operated refrigeration system valves would be most appropriate for use as a 2 position diverting hot gas bypass solenoid valve?	A	B	C	D	GS-RA-19
224439	3	Which of the following electrically operated refrigeration system valves would be most appropriate for use as a reverse-cycle solenoid valve?	A	B	C	D	GS-RA-19
224439	4	Which of the following electrically operated refrigeration system valves would be most appropriate for use as an electronic expansion valve?	A	B	C	D	GS-RA-19
224446	2	Which of the following statements is true concerning the gauge labeled "A" of the illustrated gauge manifold set?	The gauge labeled "A" is a compound gauge and is usually color-coded red.	The gauge labeled "A" is a compound gauge and is usually color-coded blue.	The gauge labeled "A" is a standard pressure gauge and is usually color-coded blue.	The gauge labeled "A" is a standard pressure gauge and is usually color-coded red.	GS-RA-01
224446	3	Which of the following statements is true concerning the gauge labeled "B" of the illustrated gauge manifold set?	The gauge labeled "B" is a compound gauge and is usually color-coded red.	The gauge labeled "B" is a compound gauge and is usually color-coded blue.	The gauge labeled "B" is a standard pressure gauge and is usually color-coded blue.	The gauge labeled "B" is a standard pressure gauge and is usually color-coded red.	GS-RA-01

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224447	4	Using the device shown in the illustration, which of the following statements is true when monitoring both the high and low side pressures of the refrigeration system.	The hose labeled "K" should be connected to the suction service valve service port, the hose labeled "H" should be connected to the discharge service valve service port and the valves labeled "C" and "G" should both be closed.	The hose labeled "K" should be connected to the suction service valve service port, the hose labeled "H" should be connected to the discharge service valve service port and the valves labeled "C" and "G" should both be open.	The hose labeled "H" should be connected to the suction service valve service port, the hose labeled "K" should be connected to the discharge service valve service port and the valves labeled "C" and "G" should both be closed.	The hose labeled "H" should be connected to the suction service valve service port, the hose labeled "K" should be connected to the discharge service valve service port and the valves labeled "C" and "G" should both be open.	GS-RA-01
224447	3	Using the device shown in the illustration, which of the following statements is true when adding refrigerant as a vapor to the low side of the refrigeration system.	The hose labeled "K" should be connected to the suction service valve service port, the hose labeled "J" should be connected to the vapor valve on the refrigerant cylinder and the valve labeled "C" should be closed.	The hose labeled "K" should be connected to the suction service valve service port, the hose labeled "J" should be connected to the vapor valve on the refrigerant cylinder and the valve labeled "C" should be closed.	The hose labeled "H" should be connected to the suction service valve service port, the hose labeled "J" should be connected to the vapor valve on the refrigerant cylinder and the valve labeled "G" should be closed.	The hose labeled "H" should be connected to the suction service valve service port, the hose labeled "J" should be connected to the vapor valve on the refrigerant cylinder and the valve labeled "G" should be open.	GS-RA-01
224448	2	Which of the following statements is true concerning the illustrated gauge manifold set?	The valves labeled "G" and "C" must both be open to read system pressures on the respective gages labeled "A" and "B".	Closing the valve labeled "G" isolates the hose labeled "H" from the hose labeled "J".	Closing the valve labeled "G" isolates the hose labeled "H" from the gauge labeled "A".	Opening fully and back seating the valve labeled "G" isolates the gauge labeled "A" from the hose labeled "H".	GS-RA-01

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
224500	1	The watch engineer finds the cargo refrigeration compressor has blown the shaft seal, with the noticeable presence of oil leaking. In this situation, what should be done?	shut down the compressor at once and then close the suction and discharge valves	pump the system down and then isolate the leak by closing the suction and discharge valves	close the suction valve, pump the compressor down, then shut down the compressor	tighten the shaft seal packing to reduce leakage, slow the compressor, and operate the expansion valves by hand until repairs can be made	
224501	1	Excessively tight drive belts installed between a motor and a refrigeration compressor pulley may cause what condition?	premature wear of the pulley end motor shaft bearing, but normal wear of the pulley end compressor crankshaft main bearing	normal wear of the pulley end motor shaft bearing, but premature wear of the pulley end compressor crankshaft main bearing	premature wear of both motor shaft bearings and both compressor crankshaft main bearings due to belt slippage	premature wear of both the pulley end motor shaft bearing and the pulley end compressor crankshaft main bearing due to overloading	
224550	1	If a refrigeration system, equipped with a reciprocating compressor, has a liquid-line solenoid valve that is leaking during the 'off' cycle, what would this cause?	low suction pressure	high superheat in the outlet coil	noisy compressor operation upon starting	refrigerant slugs in the receiver	
225001	1	Coast Guard Regulations (46 CFR) require a method for the relieving pressure 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.	
225002	1	Coast Guard Regulations (46 CFR) require refrigerated spaces that can be locked from the outside and that cannot be opened from the inside to have an audible alarm. Where is the audible alarm required to be?	the chief steward's berthing quarters	the galley	the wheelhouse	a manned location	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
225003	2	According to USCG regulations pertaining to cargo and miscellaneous vessels, on all vessels equipped with ammonia refrigeration units to refrigerate cargo spaces, for protection against refrigerants, what is required?	a self-contained breathing apparatus must be provided for use as protection against gas leaking from the refrigeration unit if the refrigerated spaces exceed a volume of 20 cubic feet	a self-contained breathing apparatus must be provided for use as protection against gas leaking from the refrigeration unit if the refrigerated spaces exceed a volume of 1000 cubic feet	a gas mask must be provided for use as protection against gas leaking from the refrigeration unit if the refrigerated spaces exceed a volume of 20 cubic feet	a gas mask must be provided for use as protection against gas leaking from the refrigeration unit if the refrigerated spaces exceed a volume of 1000 cubic feet	
225004	1	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	
225005	1	According to 46 CFR Part 58, each pressure vessel, which is capable of isolation, containing a refrigerant, must be protected by what means?	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	
225010	1	The gas that exists in the stratosphere forming a protective shield that helps to protect the environment from the harmful effects ultraviolet radiation is called what?	radon	oxygen	ozone	nitrogen	
225011	1	What is the chemical in CFC refrigerant that destroys stratospheric ozone?	fluorine	carbon	hydrogen	chlorine	
225012	1	Stratospheric ozone gas found in the atmosphere is a oxygen molecule of what composition?	one oxygen atom	two oxygen atoms	three oxygen atoms	four oxygen atoms	
225013	1	What is the physical state and pressure condition of refrigerant as it enters the condenser of a typical refrigeration system.	low pressure liquid	high pressure vapor	low pressure vapor	high pressure liquid	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
225014	1	What is the physical state and pressure condition of refrigerant as it leaves a receiver in a typical refrigeration system ?	high pressure liquid	low pressure liquid	high pressure vapor high pressure vapor	low pressure vapor	
225015	1	R-134a is often the replacement for which older type of refrigerant?	R-12	R-22	R-11	R-123	
225016	1	The "tare weight" of a refrigerant storage cylinder refers to what weight?	the weight of a cylinder AND its current contents	the maximum weight of the refrigerant allowed	the total weight of a fully charged cylinder	the weight of an empty cylinder	
225017	1	Which of the following substances is normally classified as a low pressure refrigerant?	R-12	R-123	R-22	R-134A	
225018	1	What is the color coding for a storage container of R-134a refrigerant?	green	grey	purple	light blue	
225019	1	Which of the following refrigerants is chlorine free and safe regarding atmospheric ozone depletion?	R-134a	R-12	R-22	R-11	
225020	1	If there is a "large" release of R-134a refrigerant gas in a confined area, which of the following statements would be true?	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	
225021	1	A "hygroscopic" lubricant used in refrigeration compressors would have what characteristic?	losing its lubrication qualities at higher temperatures	being highly toxic	decreasing in viscosity at low temperatures	having a high affinity for moisture which requires it to be kept in a sealed container.	
225022	1	What is the pressure and physical state of the refrigerant leaving the condenser of a R-22 refrigeration system?	low pressure liquid	low pressure vapor	high pressure vapor	high pressure liquid	
225022	2	What is the pressure and condition of the refrigerant entering the receiver of a refrigeration system?	superheated low pressure vapor	superheated high pressure vapor	sub cooled low pressure liquid	sub cooled high pressure liquid	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
225023	1	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.	
225024	1	Why do low pressure refrigerant chillers usually require purge-recovery units ?	They normally operate below atmospheric pressure.	They draw in air through gaskets and seals.	Either A or B	Neither A nor B	
225025	1	The purge-recovery unit of a low pressure refrigeration chiller draws gas from what location?	the rupture disk	the suction of the compressor	the top of the evaporator	the top of the condenser	
225026	1	What is the short term replacement for R-11 refrigerant, as used in low pressure centrifugal chillers?	R-22	R-123	R-500	R-134a	
225027	1	Why would one use refrigerant vapor rather than liquid, to initially charge an evacuated low pressure air conditioning chiller unit?	to prevent a safety shut down	to prevent any water within tubes from freezing	to keep pressure at a minimum	to protect the rupture disc from rupturing	
225028	1	The recovery of refrigerant from refrigerant absorbed in oil can be maximized by what practice?	draining out the oil	heating the oil	cooling the oil	flushing out the oil with solvent	
225029	1	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	
225030	1	Most of the liquid refrigerant to be removed from a pumped down system during a refrigerant recovery procedure would be found in what location?	condenser	receiver	hoses and lines	evaporator	
225031	1	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	
225032	1	What would the pressure and physical state of the refrigerant residing in the system receiver?	high pressure vapor on top of high pressure liquid	high pressure liquid on top of high pressure vapor	low pressure vapor on top of low pressure liquid	low pressure liquid on top of low pressure vapor	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
225033	1	Any noncondensable gases in a TXV controlled refrigeration system will eventually accumulate in the top of the system condenser. What condition does this cause?	decrease in the low side pressure	increase in the high side pressure	decrease in the high side pressure	increase in the low side pressure	
225034	1	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	
225035	1	The process of recovering refrigerant from an air conditioning or refrigeration system may be accelerated by what action?	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	
226001	2	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	
226050	2	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
226051	1	In the illustrated heating system, what is the maximum height the heater should be mounted above the deck?	5"	6"	12"	24"	GS-0150
226052	1	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
226053	2	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
226053	1	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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
226055	1	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	
226056	3	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	
226057	1	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.	
226100	1	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
226102	1	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	
226102	2	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.	
226103	1	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.	
226300	1	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
226301	2	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	
226301	1	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	
227250	1	The component labeled "B" in the illustration is the _____.	suction line	vent	fill line	fresh water sprinkler for fluidizing of pulverized material	GS-0163
227251	1	The component labeled "F" in the illustration is a _____.	differential valve	fill connection	pneumercator	support stanchion	GS-0163
227251	2	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
227252	1	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
227252	2	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
227253	1	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
227253	3	A valve attached to line "H" in the illustration, should be opened _____.	to back flush 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

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
227253	2	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
227260	1	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	
227260	2	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	
227260	3	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	
227260	4	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	
227261	2	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	
227261	3	Supply air pressure to an oilfield supply boat 'P-tank' system should generally not be above _____.	15 psi	50 psi	100 psi	150 psi	
227262	5	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	
227262	3	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
227262	4	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	
227262	1	The operation of a P-tank depends upon _____.	moving the dry barite with a liquid mud pump	using nozzles to recalculate the dry bulk material	aerating the barite	All of the above	
227266	2	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	
227266	1	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	
227266	3	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	
227267	2	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	
227267	3	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	
227279	1	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	
227341	2	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	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
233656	3	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 are currently feeding, what percentage of the total number of compressor cylinders will be loaded after start up?	100%	50%	25%	0%	
250035	1	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	
267804	1	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	
268400	1	Which of the following problems will occur if a manually cleaned 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.	
268401	1	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	
281025	1	In order to maximize the performance of an operating centrifuge, you can adjust the fuel oil _____. I. Viscosity II. through put	I only	II only	Both I and II	Neither I nor II	
290001	3	The most likely location for a liquid cargo fire to occur on a tanker would be _____.	in the midships house	at the main deck manifold	at the vent header	in the pump room	
290001	4	On a tanker, the most likely location for a liquid cargo fire to occur would be _____.	in the midships house	at the main deck manifold	at the vent header	in the pump room	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
290051	11	The chief source of spontaneous combustion aboard tankers is _____.	JP4 cargo	gasoline cargo	kerosene cargo	oil soaked rags or rubbish	
290702	3	According to CFRs, how many emergency outfits are required to be carried onboard all tankships over 1,000 gross tons?	One emergency outfit	Two emergency outfits	Three emergency outfits	Four emergency outfits	
291408	3	A tankship has 40 gallons of 6% foam concentrate aboard. Approximately how much foam solution can be produced from this supply?	200 gallons	420 gallons	667 gallons	986 gallons	
297103	7	Where would you expect to find a "charged mist" on a tanker?	In a common vent header during tank ballasting.	In a cargo tank during "Butterworthing".	In a cargo tank during inerting operations.	In the overflow line while topping off.	
297201	2	To prevent over pressurization when loading liquid petroleum products, cargo tanks must be fitted with a/an _____.	pressure-vacuum valve	ullage opening	over pressurization valve	equalizing line	
297202	2	Tankers carrying cryogenic cargoes, such as LNG, are fitted with gas detector systems alarmed at 30% of the lower explosive limit. If the gas detector alarms sounds, this means _____.	the detector sensor is sampling a space where the cargo vapor concentration is 30 percent by volume	an explosion is about to take place	the detector is sampling a space in which 30 percent of the atmosphere is explosive	a flammable vapor concentration exists at the sample point, but it is too lean to burn	
297204	2	Span gas is used aboard liquefied natural gas carriers to _____.	inert the barrier spaces	calibrate the gas leak detectors	odorize the cargo	detect leaks in cargo piping	
297250	3	Pressure-vacuum relief valves on tank vessel cargo tanks should be kept in good working order to prevent _____.	escape of explosive vapors	oil spillage on deck	contamination from other tanks	damage to tank boundaries	
297254	2	According to Pollution Prevention Regulations (33 CFR), you are required to test cargo discharge piping every _____.	6 months	12 months	18 months	24 months	
297307	2	According to Coast Guard Regulations (46 CFR), pump room ventilation on a U.S. flag tanker may be accomplished by _____.	steam or air actuated gas ejectors	power blowers	natural ventilators	all of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
297308	2	"Line Displacement" is a procedure that is followed at an oil terminal facility, when there is a change of _____.	cargo lines at the terminal before loading	product before the start of loading	product during the final phase of loading	product after the final discharge	
297310	4	To determine if all requirements of the Declaration of Inspection are met for oil transfer operations prior to bunkering from a shoreside facility, _____.	the vessel is responsible to provide an inspected oil hose	the bunker facility must be inspected by the designated person-in-charge of the vessel and vice versa for the vessel	vessel and bunker facility must be independently inspected by the designated persons-in-charge	vessel and bunker facility must be inspected by a representative of the Coast Guard Captain of the Port	
297313	2	The term "load on top" is used on many crude oil carriers, is to provide a method for _____.	calculating the ullage in the cargo tanks	loading ballast by gravity	the loading of new cargo into a decanted slop tank as a procedure to minimize pollution	calculating the ratio of cargo expansion in a cargo tank	
297319	3	The "oil transfer procedures", required by the Coast Guard Oil Pollution Prevention Regulations (33 CFR), must include _____.	any special procedures inherent to that particular vessel for topping off tanks	the location, size, and barrel capacity of each tank that is capable of carrying oil	the emergency cleanup and containment procedures to be followed in the event of an oil spill	All of the above	
297320	2	If you are loading a petroleum cargo which is below average ambient temperatures, you must insure that _____.	there is room for expansion	the vents are sealed	vapor baffles are installed	all of the above	
297330	3	According to Coast Guard Regulations (46 CFR), when loading, or discharging oil in bulk at a dock, which of the following signals must be displayed?	A red flag (day), red light (night)	A yellow flag (day), red light (night)	A green flag (day), green light (night)	A signal is not required for discharging oil, only gasoline	
297334	4	In order for you to operate your vessel's crude oil wash system, the cargo tanks to be washed must be _____.	opened to the atmosphere for ventilation	gas free	inerted	full of cargo	
297336	2	Fire hydrant valves on a crude oil tanker shall be isolated from the crude oil washing system by _____.	spade blanks	face blanks	non-return valves	automatic closing valves	
297400	3	To prevent the overflow of cargo tanks due to expansion, you should top off _____.	to the bottom of the expansion trunk	to within 1% to 3% of its capacity	to within 1 to 3 inches of its capacity	1 to 3 inches from top of the vent pipe	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
297505	3	Each inert gas system must be designed to supply the cargo tanks with a gas, or mixture of gases, that has an oxygen content by volume of _____.	5% or less	10% or less	15% or less	20% or less	
297507	3	The blowers of an inert gas generation system aboard a tanker, will be automatically secured if _____.	normal water supply at the water seal is lost	the temperature of the inert gas being delivered to the cargo tanks is more than 150°F	the cooling water supply to the scrubbers is lost	all of the above	
297508	4	The combined fan discharge rate in an inert gas system is related to the _____.	shore side loading rate	maximum cargo pump discharge rate	boiler forced draft fan rate	size of the largest cargo tank	
297508	5	What is the required gas supply capacity of an inert gas system?	125% of forced draft rate	125% of shore side loading rate	125% of cargo pump capacity	125% of fan capacity	
297508	6	On a tanker vessel, what is the required combined capacity of the inert gas generating system as compared to the total capacity of all the cargo pumps which can be operated simultaneously?	50%	75%	100%	125%	
297511	6	An inert gas system on a tanker should be used to _____.	prevent the generation of flammable or combustible gas in tanks	blow out cargo lines to prevent gas concentrations	dilute tank atmospheres to keep gas concentrations below the lower explosive limit	prevent fires in the pump room by continually displacing flammable vapors	
297511	4	An inert gas system is designed to reduce the possibility of tank explosions by _____.	eliminating sparks and fire in the vicinity of cargo tanks	removing all hydrocarbon gases from the cargo tanks	blanketing cargo tanks with inert foam	reducing the oxygen concentration below levels necessary for combustion	
297511	5	How does an inert gas system on a tanker function to prevent explosions in cargo tanks?	De-energizes the "charged mist" effect.	Maintains a positive pressure on the vent header to cool the flammable vapors.	Inert gas filters out the flammable vapors from the cargo tank spaces.	Inert gas dilutes the flammable vapor and air concentrations to keep them below the lower explosive limit.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
297512	2	Which of the following methods is used to supply inert gas from a flue gas system to the cargo tanks?	Exhaust gas pressure	High capacity fan	Inert gas compressor	Natural aspiration	
297517	2	Excessive recirculation of inert gas is _____.	highly recommended	undesirable and it may lead to high oxygen content of the inert gas	likely to over pressurize the cargo tanks	likely to over heat the deck water seal	
297518	2	Which of the following conditions will result in an automatic shut down of the flue gas inert gas system?	Oxygen content of the gas falls below 5%.	Low temperature water leaving the scrubber seal.	High temperature gas entering the scrubber.	High temperature gas discharge from inert gas blowers.	
297525	3	When the inert gas system is temporarily unable to maintain a positive pressure, or an oxygen content less than 8%, cargo operations should _____.	continue at a slower rate until these requirements are met	continue only under "Emergency Procedures"	be shut down immediately	monitored more frequently	
297525	4	If the inert gas system was not in operation while loading crude oil on a tank vessel, what action would you take?	Immediately stop loading.	Continue loading under "Emergency Procedures".	Continue loading, as this is a normal procedure.	Immediately start up the inert gas system and admit gas to the deck main when oxygen content is below 8%.	
297530	2	Tankers that are in service carrying "sour crudes" are faced with additional problems for their safe operation. One such problem is called "polyphoric oxidation" and results in _____.	additional time for tank cleaning.	a second scrubber, known as an alkaline scrubber, to be added in series to the "normal" scrubber.	particles of rust in the tanks reaching a high temperature during "gas free" operations.	a lighter grade of crude being needed for tank washing.	
297531	2	When discharging clean ballast, prior to entering the loading port, if the ballast is determined by the oil monitor to exceed 15 parts per million of oil, the deballasting must _____.	be completely discharged in order to load	be terminated automatically	be stopped until the oil can settle out, then resumed at a slower discharge rate	be completed only after "load on top" has been completed	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
297661	2	While in a foreign port, burning and welding repairs are to be carried out on a section of heating coil located in a tank having last contained a grade "D" product. Which of the following procedures should be followed when a certified marine chemist is not available?	It is solely the chief engineer's responsibility to ensure all safety precautions are observed, and all entries are to be made in the engine room log.	The repair work cannot be done at this time due to the lack of the chemist's certificate.	Prior to any hot work, an inspection must be made by the senior officer present, and an entry made in the official logbook.	Repairs should proceed as scheduled since a chemist's certificate is not required for that type of work.	
297662	4	Where grades A, B, C, and D liquid cargoes are involved, power-driven or manually-operated spark producing devices shall not be used in the cargo pump room unless _____.	the compartment itself is gas free	the vessel is gas free	all cargo tanks are empty	all cargo tanks have been inerted	
298000	4	According to the Coast Guard Pollution Prevention Regulations (33 CFR), what is the minimum number of bolts required in a temporarily connected standard ANSI coupling?	2 bolts	4 bolts	6 bolts	8 bolts	
298006	2	To prevent oil from escaping into the sea when ballasting through the cargo piping system, you should FIRST _____.	open sea suction valves, then start the cargo pump	start the cargo pump, then open sea suction valves	open block valves, then start the cargo pump	open sluice valves, then start the cargo pump	
298009	5	The term "segregated ballast" is defined in the Pollution Prevention Regulations (33 CFR) as ballast water introduced into a/an _____.	tank that is completely separated from the cargo oil and fuel oil systems	fuel settling tank for segregation from lighter fluids	oily water separator for segregation	isolated tank for analysis because of its noxious properties	
298010	3	Pollution Prevention Regulations (33 CFR) state that when a tank vessel is discharging cargo, each sea suction valve connected to the vessel's oil transfer, ballast, or cargo tank systems must be _____.	sealed or lashed closed	fitted with a blank flange	fitted with an anti-siphon device	lined up for immediate use	
298011	8	According to Pollution Prevention Regulations (33 CFR), if a cargo hose shows a small leak in its fabric, you may transfer oil after _____.	the terminal foreman is notified	the hose is replaced	the hose leak is securely wrapped	a drip pan is placed under the leak	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298014	4	The most frequent incidents of tanker pollution occurring during tanker operations is _____.	due to collisions	routine discharge of oil during ballasting and tank crude oil washing	loading and discharging	due solely to groundings	
298018	6	According to Pollution Prevention Regulations (33 CFR), the maximum allowable working pressure (MAWP) for each hose assembly used for transferring oil must be _____.	at least 600 psi (4.14 MPa)	more than the sum of the pressure of the relief valve setting	at least four times the sum for the pressure of the relief valve setting	more than the maximum pump pressure when a relief valve is not installed	
298018	7	According to Pollution Prevention Regulations (33 CFR Part 154), the pump being used for cargo transfer has a relief valve setting of 65 psi and a static head of 10 feet. The vessel's cargo hose used for the transfer must have a maximum allowable working pressure of at least _____.	55 psi	65 psi	75 psi	98 psi	
298018	8	According to Pollution Prevention Regulations (33 CFR), the pump being used for cargo transfer has a relief valve setting of 65 psi and a static head of 10 feet. The vessel's cargo hose used for the transfer must have a maximum allowable working pressure of at least _____.	55 psi	98 psi	at least four times the sum for the pressure of the relief valve setting plus static head pressure	at least more than the sum of the pressure of the relief valve setting plus the static head pressure	
298024	4	According to the Pollution Prevention Regulations (33 CFR), which of the following conditions would disqualify a nonmetallic hose as being suitable for use in transferring oil?	A cut in the cover which makes the reinforcement visible.	A blown gasket when hydrostatic test pressure is applied.	Evidence of internal or external deterioration.	All of the above.	
298024	3	According to the Pollution Prevention Regulations (33 CFR Part 156), which of the following conditions would disqualify a nonmetallic hose as being suitable for use in transferring oil?	A small cut in the hose cover which just pierces the reinforcement.	An slight oil seepage between the hose and flange connection.	Evidence of internal or external deterioration.	All of the above.	
298026	2	According to Pollution Prevention Regulations (33 CFR), how much hose should you use in transferring oil in bulk?	Twice the distance between ship and dock.	One and one half times the distance between ship and dock.	Not over 300 feet (91.4 m) of hose.	Sufficient for maximum vessel movement without straining the hoses.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298031	2	The Federal Pollution Prevention Regulations (33 CFR) that apply to ships are enforced by the _____.	Port Authority	U.S. Coast Guard	Corps of Engineers	State Pollution Board	
298033	3	According to Pollution Prevention Regulations (33 CFR), the "Discharge of Oil Prohibited" placard is required on all _____.	foreign vessels not in U.S. navigable waters	U.S. Vessels 26 feet or more in length	Foreign vessels when engaged in noncommercial service	U.S. vessels less than 26 feet in length	
298036	2	While loading bulk oil, you notice oil on the water near the barge. Which of the following actions should you carry out FIRST?	Search the vessel for leaks	Notify terminal superintendent	Stop loading	Notify the Coast Guard	
298046	2	Which of the following vessels is NOT exempt from mandatory requirements on ballast water management for control of non-indigenous species in waters of the United States?	United States Navy frigate.	A vessel engaged in the foreign export of Alaskan North Slop Crude Oil.	A passenger vessel equipped with a USCG approved system designed to kill aquatic organisms in ballast water.	A crude oil tanker engaged in the coastwise trade.	
298101	4	To comply with the Pollution Prevention Regulations (33 CFR Part 155), regarding fuel oil discharge containment, a vessel of 300 or more but less than 1600 gross tons must have a fixed container or enclosed deck area under or around each fuel oil tank vent that has at least a _____.	5 U.S. gallon capacity	3 barrel capacity	2 barrel capacity which may be bolted in place below the loading manifold valves	one-half barrel capacity	
298104	2	According to the Coast Guard Pollution Prevention Regulations (33 CFR Part 155), which of the following statements is correct regarding the fuel oil containment around loading manifolds?	They may be fixed or portable, depending upon the age of the vessel.	The containment drains must have quick-closing valves to be closed in the event of leakage or failure of any part of the transfer connection.	All containment drains must lead to a common fixed drain tank.	Containment drains are prohibited from leading to a common tank.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298105	4	According the Pollution Prevention Regulations, a tank vessel with a total capacity of over 250,000 barrels of cargo oil, having two loading arms with a nominal pipe size diameter of 10 inches, must have under each loading manifold a fixed container or an enclosed deck area having a minimum capacity of _____.	126 gallons	168 gallons	252 gallons	491 gallons	
298106	2	The Pollution Prevention Regulations (33 CFR) requires that no person may transfer oil to or from a vessel unless _____.	all necessary components of the transfer system are lined up before the transfer begins	all unnecessary parts of the transfer system are open and drained	the transfer system is connected to a flexible overflow fuel hose	the transfer system is connected to an automatic back pressure shutoff nozzle	
298109	2	A tank vessel with an oil cargo capacity of 5000 barrels is required by regulations to have a fixed container, or enclosed deck area under or around each oil loading manifold and each oil transfer connection point. The capacity of these containment areas is based upon _____.	cargo oil service pressure	inside transfer hose diameter or loading arm nominal pipe size diameter	number of cargo oil tank vents, overflows and fill pipe connections	all of the above	
298112	2	According to the Coast Guard Pollution Prevention Regulations (33 CFR), no person may transfer oil to or from a vessel unless _____.	each part of the transfer system not necessary for the transfer operation is securely blanked or shut off	the discharge containment is in place	each scupper or drain in a discharge containment system is closed	all of the above	
298208	5	The Pollution Prevention Regulations (33 CFR) require that all oil spills in United States waters be reported immediately to the _____.	local port authority	Corps of Engineers	U.S. Coast Guard	state pollution board	
298300	4	The Pollution Prevention Regulations (33 CFR) requires an emergency means of stopping the flow of oil during oil transfer operations. The emergency means must be operable from the _____.	usual operating station of the person-in-charge	bridge	engine room	emergency operating station of the person-in-charge	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298300	6	According to Pollution Prevention Regulations (33 CFR), tank vessels are required to have a means of emergency shutdown. This device _____.	shuts off the main propulsion plant	shuts off the firefighting foam systems	stops the flow of oil to shore facility or other vessel	secures electrical power to all motors	
298300	7	The Pollution Prevention Regulations (33 CFR) requires an emergency means of stopping the flow of oil during oil transfer operations. That emergency means may be a/an _____.	manually-operated quick-closing valve	self-closing automatic disconnect fitting	emergency pump control on the cargo deck	automatic pressure-sensitive oil flow regulator	
298303	2	The emergency shutdown requirements of Pollution Prevention Regulations (33 CFR Part 155) apply to _____.	condensate pumps	air compressors	induced draft fans	cargo transfer systems	
298305	2	Which of the following represents an emergency procedure used to stop the oil flow aboard tank vessels, of 250 tons or greater, as required by Pollution Prevention Regulations (33 CFR)?	Quick-acting power actuated valve	Self-closing emergency disconnect fitting	Pressure-sensitive oil pressure controller	Manually-operated quick-closing valve	
298306	7	When you notice oil on the water near your vessel while taking on fuel, you should FIRST _____.	stop loading	notify the senior deck officer	notify the terminal superintendent	determine whether your vessel is the source	
298307	2	For all loading operations, the terminal must supply the vessel with a means in which the vessel's designated person-in-charge may stop the flow of oil to the vessel, insuring immediate shutdown in the event of a hose rupture, tank overflow, etc. Which of the following choices will accomplish this task as required by 33 CFR?	electrically	pneumatically or mechanically	via an electronic communications device in continuous operation, and monitored	All of the above.	
298309	2	While loading bulk liquid cargo, a tank valve jams open. You should FIRST _____.	unplug the deck scuppers	run out the vessel's fire hose	order the shore facility to shut down	call the chief engineer	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298400	4	According to the Pollution Prevention Regulations, any discharge of oil, or oily mixture into the sea from any oil tanker, or from any ship of 400 gross tons and above, other than an oil tanker, is prohibited while in a "special" area. These "special areas" are designated in _____.	33 CFR 151	33 CFR 153	33 CFR 156	33 CFR 159	
298400	3	According to the Pollution Prevention Regulations, any ship operating under the authority of the United States which engages in coastwise or international voyages is prohibited from discharging any oil or oily mixture overboard while in a "special area". The descriptions of the "special areas" are designated in _____.	33 CFR 150	33 CFR 151	33 CFR 156	33 CFR 159	
298500	3	The term "oil", as used in the Pollution Prevention Regulations (33 CFR), means _____.	fuel oil only	crude oil only	liquefied petroleum gas	petroleum oil of any kind	
298502	4	According to the Pollution Prevention Regulations (33 CFR), which of the following qualifies as a discharge of oil?	Leakage of oil to the water by an improperly blanked transfer hose.	Spilling oil on the main deck and having it flow over the side.	Pumping oil overboard through a fixed piping system.	All of the above.	
298556	2	International Oil Pollution Prevention (IOPP) Certificates are required for each U.S. oil tanker at or above _____.	100 gross registered tons	150 gross registered tons	300 gross registered tons	400 gross registered tons	
298600	2	Pollution Prevention Regulations (33 CFR) require that on the completion of oil transfer operations all _____.	hoses shall be blown down with air	soundings shall be entered in the oil record book	valves used during transfer shall be closed	persons on duty during oil transfer shall be accounted for	
298601	6	According to Coast Guard Regulations (46 CFR), no vessel can come alongside or remain alongside a tank vessel while it is loading A, B, or C grade cargo without having the permission of the _____.	officer-in-charge of the vessel which is loading	USCG captain of the port	terminal manager	tank ship owner	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298601	5	According to Pollution Prevention Regulations (33 CFR), no person may transfer oil to or from a vessel unless _____.	each hose is supported in a manner that prevents strain on its coupling	each part of the transfer system necessary to allow the flow of oil is lined up for transfer	each oil transfer hose has no loose covers, kinks, bulges, or soft spots, and no gouges, cuts or slashes that penetrate the hose reinforcement	All of the above.	
298603	3	According to Pollution Prevention Regulations (33 CFR), no person may connect or disconnect an oil transfer hose or engage in any other critical oil transfer operation on a tank vessel unless _____.	the designated person-in-charge supervises that procedure	that person holds a tankerman assistant endorsement	that person holds a license as master, mate, or engineer	that person holds a valid port security card	
298603	4	According to Pollution Prevention Regulations (33 CFR), no person may connect or disconnect an oil transfer hose or engage in any other critical oil transfer operation on a tank vessel unless _____.	the designated person-in-charge supervises that procedure	that person holds a tankerman assistant endorsement	that person holds a license as master, mate, or engineer	that person holds a valid port security card	
298604	2	According to Pollution Prevention Regulations (33 CFR), when may a person serve as the person-in-charge of both a vessel and a facility during oil transfer operations?	When authorized by the Captain of the Port.	When licensed as a certified refueling officer.	Whenever the vessel is short of manpower.	Whenever the facility is unmanned.	
298605	3	Pollution Prevention Regulations (33 CFR Part 156), state that no person may transfer oil to or from a vessel unless _____.	oil residue has been drained from all hoses	the maximum amount of oil to be transferred has been recorded on the declaration of inspection	the maximum transfer rate and pressure has been established	a representative sample has been taken from the oil being received	
298605	4	Pollution Prevention Regulations (33 CFR Part 156), state that no person may transfer oil to or from a vessel unless _____.	oil residue has been drained from all hoses	the maximum amount of oil to be transferred has been recorded on the declaration of inspection	the maximum transfer rate and pressure has been established	a representative sample has been taken from the oil being received	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298605	5	Pollution Prevention Regulations (33 CFR Part 156), state that no person may transfer oil to or from a vessel unless _____.	oil residue has been drained from all hoses	an oil containment boom is available for immediate use	all parts of the transfer system have been properly lined up	a representative sample has been taken from the oil being received	
298607	7	According to the Pollution Prevention Regulations (33 CFR), the declaration of inspection is the _____.	paper issued by the Coast Guard marine inspector which allows you to conduct a transfer operation	application you must complete and submit to the Coast Guard to have an inspector visit your vessel	document signed by vessel and shore facility persons-in-charge declaring that all transfer requirements have been met	annual report submitted by vessel personnel to the Coast Guard declaring that all transfer equipment has been inspected	
298607	8	Prior to transfer of fuel, the Declaration of Inspection required by Coast Guard Regulation (33 CFR) _____.	is the same as the Certificate of Inspection	describes the procedure for draining the sumps of oil lubricated machinery into the bilges of U.S. vessels	must be signed by both the person-in-charge of the pumping and the person-in-charge of receiving	requires the "Discharge of Oil Prohibited" placard to be posted at the gangway	
298607	5	The Pollution Prevention Regulations (33 CFR) state that a person may not transfer oil or hazardous materials to or from a vessel unless each person-in-charge has signed the _____.	machinery log	oil record book	valve inspection record	Declaration of Inspection	
298607	6	According to the Pollution Prevention Regulations (33 CFR), no person may transfer oil to or from a vessel unless each person in charge has signed the _____.	oil record book	certificate of inspection	valve inspection record	declaration of inspection	
298608	2	According to the Pollution Prevention Regulations (33 CFR), who makes the final decision of when oil transfer may begin?	The senior deck officer present	The designated person-in-charge	The captain of the port	Any local Coast Guard representative	
298609	2	The Coast Guard Pollution Prevention Regulations (33 CFR) require a meeting before starting any oil transfer operation. That meeting must be between the _____.	master of the vessel and the terminal superintendent	master and chief engineer of the vessel and the terminal supervisor	terminal supervisor, Master of the vessel and the Coast Guard	person-in-charge of the oil transfer operations on the vessel and the person-in-charge of the oil transfer operations at the facility	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298611	2	According to the Pollution Prevention Regulations (33 CFR), the person-in-charge of transfer operations, both ashore and on the vessel, must agree on _____.	the identity of the product to be transferred	the size of the slop tank required under 155.330	the status of the oily water separator	whether or not the transferring ship is a "Public Vessel of the United States"	
298618	2	During oil transfer operations, who would be responsible to guarantee that the posted transfer procedures are being followed?	The designated person in charge	The tankerman	The senior able seaman	The oiler	
298619	2	Title 33 CFR Part 156 of the Pollution Prevention Regulations concerns _____.	oil and hazmat transfer operations	cargo vessel design	large oil transfer shore side facilities	pumping equipment design	
298622	2	To serve as the person in charge of oil cargo transfer operations onboard a self-propelled tank vessel, an individual must _____.	be a certified tankerman (PIC)	be licensed only	be 30 years old	have a letter from the company stating his qualification	
298710	4	Which of the following operations aboard a tanker must be recorded in the Oil Record Book on a tank-to-tank basis according to Coast Guard Regulations?	Any internal transfer of oil cargo during a voyage.	The discharge overboard in port or at sea of any bilge water accumulated in machinery spaces.	The loading or unloading of any or all oil cargo.	All of the above.	
298723	2	Among other restrictions, an oil tanker may not discharge an oily mixture into the sea from a cargo tank, slop tank, or cargo pump room bilge unless the vessel is _____.	more than 12 nautical miles from the nearest land	discharging at an instantaneous rate of oil content not exceeding 30 liters per nautical mile	at anchor or stopped	is within "Special Areas" defined in Regulation 1 (10) of Annex I to MARPOL 73/78	
298900	4	According to 33 CFR Part 151, all tankships of 150 GT and above and all other ships of 400 GT and above, are required to prepare and maintain a USCG approved _____.	synthetic plastic discharge plan	oil discharge plan	shipboard oil pollution emergency plan	vapor recovery procedures plan	
298905	3	A shipboard oil pollution emergency plan is required of _____.	all vessels, regardless of size and commercial application	any barge or other ship which is constructed or operated in such a manner that no oil in any form can be carried aboard	an oil tanker of 150 gross tons or above, or other ship of 400 gross tons or above	an oil tanker of 400 gross tons and above, or other ships of 150 gross tons and above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298910	1	In special cases, the Commandant of the Coast Guard may permit cargo piping to pass through machinery spaces, provided that the only cargo carried through such piping is(are) _____.	grades A or B	grades D or E	grade E	LFG	
298911	1	Air compressors are NOT permitted in which space(s) on a tank barge carrying grade A cargo?	A cargo handling room	A space in which cargo hose is stored	An enclosed space containing cargo piping	All of the above	
298912	1	On a barge carrying grade A cargo, who determines where smoking may be permitted during a loading operation?	The OCMI who issued the Certificate of Inspection	The certificated tankerman on duty	The vessel owner	Smoking is not permitted during a loading operation.	
298913	1	According to regulations, cargo pump rooms, on the tank vessels handling grades A, B, or C liquid cargo, shall be equipped with power ventilation of the exhaust type having capacity sufficient to effect a complete change of air in not more than _____.	1 minute	2 minutes	3 minutes	5 minutes	
298914	1	On a vessel carrying grades A, B, C or D cargoes, enclosed spaces where sources of vapor ignition are normally present shall NOT be segregated from cargo tanks by _____. (vessel constructed after 1970)	cofferdams	galleys	pump rooms	tanks used to carry liquids having a flash point of 150°F or above	
298916	1	Steam driven pumps are considered, by regulations, sources of vapor ignition if the steam temperature is at least _____.	100°C	212°F	500°F	1200°F	
298917	1	Cargo hose carried on tank vessels shall be able to withstand a pressure of at least _____.	75 psi	100 psi	120 psi	150 psi	
298919	1	Which extinguishing agent is effective in combating an isoprene fire?	Dry chemicals	CO2	Foam	All the above	
298920	1	According to regulations, which grade(s) of cargo may be carried in tanks that are vented only with gooseneck vents and flame screens?	B only	B or C	C or D	D or E	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298920	2	Cargo tanks on barges fitted with goose neck vents and flame screens are limited to carrying which grade of cargo?	A and below	B and below	C and below	D and E only	
298921	1	Regulations require that cargo tanks carrying grades D or E liquids on tank barges be vented with _____.	gooseneck vents and flame screens	pressure-vacuum relief valves	branch vent lines and a vent header	forced draft blowers	
298922	1	Regulations require that access to a cargo pumproom in a tank vessel carrying grade D liquid cargo, shall be _____.	away from galleys, living quarters, or navigation spaces	only from areas equipped with power ventilation systems	from the open deck	isolated from sources of vapor ignition	
298924	1	Regulations require that cargo pumprooms handling grades D and/or E liquid cargo only shall be fitted with at LEAST how many ducts extended to the weather deck?	1	2	3	4	
298925	1	Regulations require that cargo pumps in tank vessels carrying grade D liquid cargo shall be isolated from sources of vapor ignition by _____.	cofferdams	gastight bulkheads	passageways or living quarters	general cargo spaces	
298926	1	Which of the flash points would indicate a grade D combustible liquid?	65°F	87°F	155°F	160°F	
298926	2	Grade D liquids are those having flash points of _____.	80°F or less	greater than 80°F and less than 150°F	150°F or greater but less than 212°F	212°F or greater	
298927	1	An example of a grade D product is _____.	heavy fuel oil	aviation gas grade 115/145	kerosene	commercial gasoline	
298928	1	If a cargo of kerosene were considered "too lean" to explode, then it must be _____.	above the "explosive range"	within the "explosive range"	below the "explosive range"	None of the above	
298929	1	A reinspection of the vessel shall be made between which of the following months while the Certificate of Inspection is valid?	8 - 12 months	10 - 12 months	10 - 14 months	12 - 14 months	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298930	1	How many portable fire extinguishers are required in the cargo tank area of an unmanned tank barge during cargo transfer, if the barge has no cargo pumps of her own?	One	Two	Three	None	
298930	2	How many fire extinguishers, and what type, are required on an unmanned oil barge during transfer operations, if the barge has no cargo pumps aboard?	One B-II	Two B-II	One B-V	Two A-II	
298931	1	What type of vent is required on a barge transporting No. 6 fuel oil?	Gooseneck vents fitted with flame screens	Pressure-vacuum	Branch vent line	Vent header	
298932	1	If your asphalt barge has operated more than 12 months in saltwater in the 24 month period since it was last dry-docked, when is it required to be hauled out again?	12 months since last dry-docking	18 months since last dry-docking	24 months since last dry-docking	36 months since last dry-docking	
298933	1	Which cargo grade(s) are permitted by regulations to be carried on a barge in tanks fitted only with gooseneck vents and flame screens?	B only	B or C	C or D	D or E	
298934	1	Which is NOT a safety precaution to be observed during the loading of LFG?	Report any leakage of cargo.	Make sure the rake ends of the barge are completely dry and mopped.	Ascertain that the hoses to be used are in good order.	Be on the lookout for work being accomplished ashore in the vicinity of the barges.	
298935	1	The primary concern(s) for safely transporting and handling LFG is(are) _____.	a system of cargo tanks and piping free from leaks	cargo tanks and piping strong enough to withstand the pressure	cargo tanks and piping located or protected to minimize physical damage	All of the above	
298936	1	When providing first aid to a victim of gas poisoning, the MOST important symptom to check for is _____.	suspension of breathing	unconsciousness	slow and weak pulse	cold and moist skin	
298937	1	Name one major advantage of transporting gas under refrigeration.	It increases its volume.	It reduces its volume.	It has less product per volume.	None of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298938	1	Why is gas-freeing rarely required for LPG cargo tanks?	LPG is compatible with all cargos.	LPG's high oxygen content makes it nonvolatile.	Cargo tanks are inspected less frequently than on oil tankers.	The cargo tanks are used for one type of cargo only.	
298939	1	LFG tank and pipeline maintenance should include _____.	exclusion of all sand and solid matter	cleaning with clean fresh or sea water	examination for fractures and pitting	All of the above	
298940	1	The amount of LFG that may be loaded into a given tank is determined by _____.	checking the loading sheet	loading to within 1 percent of outage	loading to within 10 percent of the safety relief valve setting	filling to the maximum level indicated on the liquid level gauging device	
298942	1	Which spaces are required to be segregated from cargo tanks carrying grades A, B, C, or D cargoes?	Pump rooms	Enclosed deck spaces	Cofferdams	Navigation spaces	
298943	1	What is NOT required of the cargo tank venting on a tank barge carrying grade A liquids?	Each cargo tank must have a vent.	A vent header must be fitted with a pressure-vacuum valve.	The diameter of the vent must be greater than 4 inches in diameter.	The vent must extend to a reasonable height above the weather deck.	
298944	1	Access to a cargo pumproom on a tank vessel carrying grades A, B, C or D liquid cargoes shall be _____.	at least 13.1 feet away from the galleys, living quarters or navigation spaces	from the open deck	only from areas equipped with power ventilation systems	isolated from any part of the vessel which normally contains sources of vapor ignition	
298945	1	Heavy fuel oils when spilled are _____.	more harmful to sea life than lighter oils	easier to clean up than lighter refined oils	less harmful to sea life than lighter oils	not a real threat to marine life	
298946	1	According to the regulations, what fire safety control feature is required in quick-closing shut off valves?	Electrical cut off switch	A fusible link	Manual cut off switch	A water spray actuator	
298947	1	Remote controls for quick-closing shut off valves are required in how many location(s)?	1	2	3	4	
298948	1	According to the regulations, normally, manholes in LFG tanks are located _____.	in the ends of each tank	in the expansion trunk of each tank	above the weather deck	there are no requirements in the regulation	
298950	1	According to the regulations, what type of gauging is required for a cargo of butadiene?	Open	Restricted	Closed	None	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298951	1	Branch venting from safety relief valves on barges shall be constructed to discharge the gas at a vertical height above the weather deck to a minimum of _____.	6 feet	8 feet	10 feet	12 feet	
298952	1	The carriage of a liquefied gas not appearing in table 4 of 46 CFR Part 154 must be approved by the _____.	vessel owner	Commandant (G-MTH)	American Bureau of Shipping	Officer in Charge, Marine Inspection	
298953	1	The weight of liquefied petroleum gas vapors as compared to air is _____.	variable	the same	lighter	heavier	
298954	1	Liquefied flammable gas is defined as any flammable gas having a Reid vapor pressure exceeding how many pounds?	14	30	40	50	
298956	2	The primary hazard of liquefied petroleum gas and liquefied natural gas is _____.	temperature	flammability	toxicity	pressure	
298956	1	The primary hazard of liquefied petroleum gas and liquefied natural gas is _____.	pressure	toxicity	temperature	flammability	
298957	1	Vinyl chloride reacts dangerously with _____.	alkalis	concentrated nitric acid	saltwater	organic acids	
298958	1	One of the principal dangers inherent in liquefied petroleum gas is _____.	as it warms up it becomes heavier than air	the way it reacts with sea water	the strong odor it produces	its low temperature causes frostbite or freezing	
298959	1	Generally, the first action in extinguishing an LFG fire caused by escaping gas is to _____.	sweep flames away with water spray	shut off the leak	use a chemical foam fire extinguisher	call the local fire department	
298960	1	Flames from small leaks of LFG may be extinguished by _____.	utilizing carbon dioxide or dry chemical fire extinguishers	utilizing soda and acid fire extinguishers	blowing the flames out	letting it burn itself out	
298961	1	Regulations require that cargo tanks in which grades B or C liquids are carried must be vented with which of the following?	Gooseneck vents	Flame screens	Pressure vacuum relief valves	Forced draft blowers	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298962	1	Regulations require that tank vessels handling grade B liquids shall have their cargo pumps separated from all sources of vapor ignition by _____.	cofferdams	empty cargo spaces	gas tight bulkheads	areas equipped with power ventilation	
298964	1	According to regulations, how many B-II hand portable fire extinguishers are required in the cargo tank area of an unmanned, cargo pump-equipped tank barge engaged in transferring grade B flammable liquids?	One	Two	Three	None	
298965	1	What is NOT a requirement of the reinspection for a tank barge with a certificate of inspection valid for two years?	The reinspection will be made between the fourteenth and sixteenth months.	The inspector shall examine all accessible parts of the vessel's hull.	The inspector shall examine the vessel's machinery as well as equipment.	The scope of the reinspection shall be the same as for the inspection for certification, but in less detail.	
298966	1	The tendency of a grade "B" product to vaporize is indicated by its _____.	flash point	convection index	flammable range	ignition temperature	
298967	1	According to regulations, access to a cargo pumproom in a tank vessel carrying grades C or D liquid cargo shall be _____.	from areas equipped with power ventilation	only from enclosed areas free from sources of vapor ignition	from the open deck	from within the vessel	
298968	1	Regulations require that pumprooms on tank vessels carrying grade C liquid cargo with machinery spaces below the freeboard deck be ventilated with _____.	power ventilation	gooseneck vents and flame screens	at least two ducts extending to the weather deck	a vent header system	
298969	1	What would be classified as grade "C" petroleum product?	Reid vapor pressure of 14 psia, flash point of 60°F.	Reid vapor pressure of 7 psia, flash point of 85°F.	Reid vapor pressure of 5 psia, flash point of 70°F.	Reid vapor pressure above 8 1/2 psia but less than 14 psia.	
298970	1	The flammable limits for motor gasoline are _____.	5.3% to 7% mixture in air	0.9% to 5.9% mixture in air	1.4% to 7.6% mixture in air	2.5% to 12.8% mixture in air	
298971	2	Ullages on tankers are measured from _____.	an above-deck datum such as the top of the ullage pipe	the tank ceiling aboard transversely framed vessels	the tank top	a thievage mark below the edge of the deck	
298971	1	Ullages are measured from _____.	the tank ceiling	the tank top bushing	the thieving mark	an above deck datum	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298971	3	Ullage measurements are taken from the top of the liquid to _____.	the base of the expansion trunk	the base of the ullage port	a line scribed within the ullage port	an above-deck datum, usually the top of the ullage hole	
298972	1	What is meant by "thieving" a petroleum cargo?	Siphoning off a few barrels of petroleum for shipboard use	Determining the amount of water (if any) in each cargo tank	Adjusting the cargo figures to coincide with the draft	Reducing the gross cargo calculations to net amounts	
298972	2	What is meant by "thieving" a petroleum cargo?	Adjusting the cargo figures to coincide with the draft	Determining the amount of water (if any) in each cargo tank	Reducing the gross cargo calculations to net amounts	Siphoning off a few barrels of petroleum for shipboard use	
298974	1	The standard unit of liquid volume used in the petroleum industry, as well as the tanker industry, is a _____.	barrel	drum	gallon	liter	
298974	3	A standard net barrel of petroleum products is _____.	42 gallons at 60°F	48 gallons at 70°F	50 gallons at 50°F	60 gallons at 100°F	
298974	4	What is the standard net barrel for petroleum products?	42 gallons at 60°Fahrenheit	48 gallons at 70°Fahrenheit	50 gallons at 50°Celsius	60 gallons at 100°Saybolt	
298974	2	A "barrel" is a unit of liquid measure equivalent to _____.	40 U.S. gallons at 50°F	42 U.S. gallons at 60°F	43 U.S. gallons at 65°F	45 U.S. gallons at 75°F	
298975	4	The (auto) ignition temperature is that temperature at which _____.	no spark or flame is required to ignite gas or vapor	a fuel begins to give off explosive vapors	a fuel if ignited will continue to burn	a 1% mixture of the fuel with air will explode	
298975	1	The lowest temperature at which a liquid will give off sufficient vapors to form a flammable mixture with air is known as the _____.	fire point	flash point	lower explosive limit	threshold limit value	
298975	2	The minimum temperature required to ignite gas or vapor without a spark or flame being present is called _____.	flash point	fire point	auto ignition temperature	lower explosive limit	
298975	3	The explosive range of a fuel lies between the lower explosive limit and the _____.	flash point	ignition temperature	upper explosive limit	fire point	
298976	1	What is a cofferdam?	Tube fitted to an ullage hole	Area the product is loaded into	Void or empty space separating two tanks	Opening in the deck used for cleaning a tank	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298977	1	The distance between the surface of the liquid and the tank top in a cargo tank is called _____.	thievage	innage	ullage	tankage	
298978	1	What refers to the depth of a petroleum product in a tank?	Innage	Outage	Thievage	Ullage	
298978	2	Which refers to the depth of a petroleum product in a tank?	Outage	Ullage	Thievage	Innage	
298979	1	Flame screens are used to _____.	contain flammable fumes	protect firefighters from flames	prevent flames from entering tanks	keep flames and sparks from getting out of an engine's exhaust system	
298980	1	Functions aboard a tanker or tank barge such as connecting, disconnecting, and topping off must be supervised by _____.	any certificated tankerman	the Master of the vessel	the officer of the watch	the person designated as "person in charge"	
298981	1	Cargo transfer operations on a tank vessel need NOT be stopped when _____.	a tug comes alongside while the tanker is loading grade D and E cargoes	a large, fresh oil spill is discovered immediately adjacent to the side of the tanker	there is an electrical storm in the vicinity	there is a fire on the dock or on a nearby vessel	
298982	1	When planning the loading or discharging of a VLCC (100,000 DWT+) what is the most important consideration?	Draft and trim	Limits of the bending moments	Rate of discharging	Rate of loading	
298983	2	Which statement is TRUE concerning insulating flanges?	They should be inspected and tested periodically to ensure that the insulation is clean and in good condition.	Switching off a cathodic protection system may be substituted for using an insulating flange	The measured resistance value after installation should be less than 1,000 ohms.	After the insulating flange is installed, hot work may be performed on deck.	
298983	1	When hooking up a cargo hose to your vessel's manifold, you should use a(n) _____.	international shore connection	insulating flange or single length of non-conducting hose	self-contained breathing apparatus	oxygen analyzer	
298983	3	Insulating flanges minimize the dangers arising from _____.	smoking on deck	loading asphalt	accumulations of electrostatic charges	tank over-pressurization	
298984	1	Litmus paste is used in order to determine _____.	innage	thievage	ullage	the tank's datum point	
298985	1	Oil product samples should be taken from the _____.	dock riser	ship's cargo tanks	shore tank discharge	All of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298986	1	Oil may NOT be transferred unless _____.	there are two certificated tankerman on each vessel	the vessel is equipped with constant-tension winches	discharge containment equipment (i.e. drip pans) are in place	All of the above	
298987	1	Which topic is NOT required to be discussed at the pre-transfer conference?	Identity of the product to be transferred	Details of transferring and receiving systems	Emergency shutdown procedures	Estimated time of finishing cargo	
298988	1	When loading bulk liquid cargo, what is the FIRST action you should take if a cargo valve jammed open?	Trip the pump relief valve.	Order the dock man to shut down.	Call the owner, operator, or terminal supervisor.	Run out the vessel's or terminal's fire hose.	
298988	2	When loading bulk liquid cargo, what is the first action you should take if a cargo valve jammed open?	Call the owner, operator, or terminal supervisor.	Unplug the deck scuppers.	Order the dock man to shut down.	Run out the vessel's or terminal's fire hose.	
298989	1	Petroleum cargo tanks should not be topped off at deck level when loading on a cold day because _____.	a subsequent temperature rise will cause the cargo to overflow	air pockets may cause the cargo to bubble out of the ullage hole	the increased viscosity of the product requires higher loading pressure which increases the chances of a spill	the tank valve may be stiff and a spill will occur before the valve can be closed	
298989	2	With an increase in temperature the volume of flammable and combustible liquids _____.	expands	contracts	remains constant	remains constant if pressure remains constant	
298990	1	Your tank vessel is loaded down to her marks, and you find that she has too much trim by the stern. To adjust the trim you may _____.	add ballast forward	load more cargo forward	shift bunkers forward	All of the above	
298990	2	Your tank vessel is fully loaded, and you find that she is down slightly by the head. To adjust the trim, you may _____.	add ballast aft	load more cargo aft	shift cargo aft	All of the above	
298990	3	Your tank vessel is loaded down to her marks, and you find that she has too much trim by the stern. To adjust the trim, you may _____.	add ballast forward	load more cargo forward	shift bunkers forward	All of the above	
298991	1	Which factor must be considered when determining the order of loading of dissimilar products through the same piping system aboard a tanker?	Contamination of the cargo	Flash points	Reid vapor pressures	Specific gravities	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298992	1	What is NOT a precaution to be taken when topping off?	Reduce the loading rate.	Notify the engine room of the procedure.	Maintain communications with the dock man.	Give the operation your undivided attention.	
298993	1	When loading a tanker, you should _____.	load only one tank at a time	keep the seamen on watch on standby in the mess room	keep a strain on the loading hoses	close valves by closing them down, reopening one or two turns, and re-closing	
298994	1	Your vessel is taking on cargo oil when a small leak develops in the hose. You order the pumping stopped. Before you resume pumping, you should _____.	notify the terminal superintendent	place a large drip pan under the leak and plug the scuppers	repair the hose with a patch	replace the hose	
298995	1	A vessel loads edible oil in a deep tank through a manhole at the mid-length of the tank. In order to fill the tank to maximum capacity, what trim should the vessel have?	Down by the bow	Down by the stern	Down by either the bow or stern	In level trim	
298996	1	In order to reduce the accumulation of static electricity while loading petroleum products, you should _____.	start to load at maximum pressure	start to load slowly	increase the air flow into the tank	use the overall method of loading only	
298997	1	The terminal indicates to you that they are going to use a booster pump to assist the discharging operation. You start the discharge, and in a few minutes the pressure drops sharply. This could be a result of the _____.	booster pump coming on the line and discharging properly	booster pump failing to start	booster pump being lined up in the wrong direction	ship's pump speeding up	
298997	2	The terminal indicates to you that they are going to use a booster pump to assist the discharging operation. You start the discharge and in a few minutes the pressure drops sharply. This could be a result of the _____.	booster pump coming on the line and discharging properly	booster pump failing to start	ship's pump speeding up	booster pump being lined up in the wrong direction	
298998	1	When stripping a tank, excessive air in the suction line may cause _____.	an over pressurized line	back pressure	loss of suction	increase of suction	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
298999	1	While discharging a tanker, list can be controlled by _____.	shore side personnel	using a center tank near the bow, discharging as necessary	using wing tanks near the longitudinal center, discharging as necessary	using the after peak tank, loading as necessary	
299900	1	While discharging a cargo, the stripping of the tanks falls behind schedule. This would indicate the _____.	main pumps are working at a high discharge pressure	main pumps are leaving too much oil in the tanks	stripping pump is not primed	stripping line is cross-connected to the main line	
299901	1	When discharging an oil cargo, the first consideration is to _____.	get the bow up	discharge from the wings first	discharge from the centerline tanks first	discharge from amidships first	
299901	2	Which tanker discharge pattern would be the safest and most efficient?	Empty the forward tanks and start working aft, emptying each tank in sequence	Start discharging with most of the discharge coming from forward, but include some from midships and after tanks	Start pumping from forward, midships, and aft with the discharge distributed equally among the tanks	Start pumping from midships and then work forward and aft simultaneously as the midships tank is emptied	
299902	1	You are on a tankship discharging oil. When all of the oil that the main cargo pumps can handle is pumped out of a tank, the remainder is _____.	stripped out and pumped directly ashore into the mainline as the remaining cargo tanks are pumped out with the main pumps	stripped to one tank and then pumped out with the main pumps	stripped out and pumped directly ashore after all the tanks have been emptied by the main pumps	gravitated to the centers from the wings and pumped out with the main pumps	
299903	2	You are planning to use a crude oil washing system. What precaution must be taken with the source tank for the washing machines?	At least one meter must be decanted from the source tank.	The oil in the source tank must be sampled for compatibility.	The source tank must have been crude oil washed at least once in the past 150 days.	The inert gas system must lower the oxygen content in the source tank to a maximum of 12%.	
299903	3	You are planning to use the crude oil washing system on your tankship. What is required to prevent electrostatic buildup in the tanks?	The portable machines must be set at the proper drop for the first wash before the fixed machines are used.	The source tank for the tank cleaning machines must have least one meter decanted from it.	The inert gas system must reduce the oxygen content in the tanks to a maximum of 18%.	The fixed machines must be operated simultaneously with the portable machines to equalize the electrostatic potential.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299903	1	What is NOT a requirement for the safe and effective use of a crude oil washing system?	Strip all tanks and remove the bottom residue.	Use an inert gas system while washing tanks.	Use portable washing machines to reach areas obscured by structural members in the tanks.	Decant one meter from the source tank for the tank cleaning machines.	
299904	1	The complete details of a crude oil washing system aboard your vessel, including the operating sequences and procedures, design characteristics, a description of the system, and required personnel will be found in the _____.	Oil Transfer Procedures Manual	Crude Oil Washing Operations and Equipment Manual	Code of Federal Regulations	Crude Oil Washing addendum to the Certificate of Inspection	
299904	2	Before a tank is to be crude oil washed, the oxygen content in the tank must be measured at a position _____.	immediately above the level of the oil	at the top of the tank	in the vent riser	one meter from the deck	
299905	1	You have completed a crude oil wash. What action should be taken with the oil in the lines running to the washing machines?	Open a COW nozzle forward and one aft and drain the line into the after tank by gravity	Blow the line out using compressed air	Pull a suction using the supply line pump	Close off all valves in the system and leave the oil in the line primed for the next crude oil wash	
299906	1	In controlling pollution, which action should be taken after all dirty ballast has been transferred to the slop tank and prior to discharge through the oily water separator?	The clean tanks should be ballasted.	The slops should be allowed time to settle.	Chemicals should be added to emulsify the oil.	The dirty ballast tank is crude oil washed.	
299907	1	The designations A, B, C, D, and E grades of cargo refer to the _____.	degrees of quality of petroleum products	flash point range and Reid vapor pressure index of petroleum products	grades of crude oil	pour point, color, and viscosity index of petroleum products	
299908	1	Most crude oils are classified as grade _____.	A or B	B	C or D	E	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299909	1	You are in the process of loading 465,000 barrels of cargo oil. At 1030, on 5 November, you gauge the vessel and find that you have loaded 203,000 barrels. At 1200 you find that you have loaded 218,000 barrels. If you continue loading at the same rate, you will finish at approximately _____.	1510, 5 November	1104, 6 November	1242, 6 November	0735, 7 November	
299909	2	You are in the process of loading 465,000 barrels of cargo oil. At 1030, on 5 November, you gauge the vessel and find that you have loaded 203,000 barrels. At 1200, you find that you have loaded 219,000 barrels. If you continue loading at the same rate, you will finish at approximately _____.	1510, 5 November	0140, 6 November	1104, 6 November	0735, 7 November	
299909	3	You are loading 530,000 barrels of cargo oil. At 0945 on 13 April, you find that you have loaded 202,000 barrels. At 1130, you find that you have loaded 223,000 barrels. If you continue at the same rate, you will finish at _____.	1322, 13 April	1920, 13 April	1120, 14 April	1305, 14 April	
299910	1	The lowest temperature at which a liquid will give off sufficient vapors to form a flammable mixture with air is known as the _____.	fire point	flash point	lower explosive limit	threshold limit value	
299911	1	What is meant by "thieving" a petroleum cargo?	Siphoning off a few barrels of petroleum for shipboard use.	Determining the amount of water (if any) in each cargo tank.	Adjusting the cargo figures to coincide with the draft.	Reducing the gross cargo calculations to net amounts.	
299912	1	When measuring the oxygen content of the cargo tanks prior to loading cargoes requiring vapor recovery, check it _____.	one meter from the tank bottom and one meter below the tank top	one half the ullage of the tank and one meter below the tank top	one half the ullage of the tank and one meter above the tank bottom	at three meter intervals from the tank top to the bottom	
299913	1	What is the purpose of the relief valve of a cargo pump?	Provides for the removal of vapors	Allows two or more tanks to be filled at the same time	Provides for the emergency shutdown of the pump	Permits the return of cargo to the suction side of the pump	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299914	1	For the purpose of regulating tank vessels, flammable liquids are liquids which will _____.	give off flammable vapors at or below 80°F (27°C)	have a Reid vapor pressure of 18 pounds or more	give off flammable vapors only above 80°F (27°C)	sustain combustion at a temperature at or below 100°F (38°C)	
299915	1	The pipe used to connect two separate piping systems on a tank vessel is known as a _____.	crossover	transfer	connection	junction	
299916	1	A tank holds 400 tons of sea water when filled. How many tons of liquid of specific gravity 0.9300 will it hold when filled to 90% capacity?	326.6	343.2	377.6	390.2	
299917	1	You have water washed your cargo tanks using the fixed machines. What should you do before using portable machines to clean areas screened from the wash of the fixed machine by structural members?	Ventilate the tank to eliminate any electro-statically charged mist.	Attach the water supply hose to the portable machine after the cleaning head is positioned inside the tank.	Insure that the tanks are not stripped until the final wash is started.	Ground the fixed machines to eliminate any electrostatic buildup on the cleaning head.	
299918	1	You have orders to load cargoes of carbon disulfide, diisopropylamine and pyridine on your multi-product tankship. Which statement is TRUE?	Carbon disulfide may be carried in NOS. 1 and 2 center tanks and diisopropylamine in NOS. 1 and 2 wing tanks.	Pyridine and diisopropylamine may be carried in tanks having a common header vent.	Carbon disulfide must be separated from pyridine by two barriers (cofferdams, voids, empty tanks, etc.).	A tank of pyridine may be used to separate a tank of carbon disulfide from a tank of diisopropylamine.	
299919	1	Protective clothing must be worn while sampling hazardous cargo on a tankship, and as a minimum includes _____.	a hood or hard hat	a face mask or goggles	boots	chemical resistant gloves	
299920	1	33 CFR 156 deals with matters concerning _____.	oil and hazardous material transfer operations	vessel construction and design	operation of nautical school ships	lifesaving and firefighting equipment	
299921	3	Which statement is TRUE of centrifugal pumps aboard tankers?	They are gravity-fed.	They are more expensive than reciprocating pumps.	They are used for stripping pumps.	They require extensive maintenance	
299921	2	What is a characteristic of all centrifugal cargo pumps?	They are self-priming.	Decreasing the speed of rotation will decrease the discharge pressure.	Opening the discharge valve wider will increase the discharge pressure.	All of the above	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299921	1	What is NOT an advantage of centrifugal pumps over reciprocating pumps?	They pump more cargo in less time.	They are smaller for equivalent pumping ability.	They are less expensive.	They require priming for stripping.	
299922	1	Which statement is TRUE of centrifugal pumps aboard tankers?	They are gravity-fed.	They are more expensive than reciprocating pumps.	They are used for stripping pumps.	They are used for stripping pumps.	
299923	1	The valve on the discharge side of a cargo pump on a tank vessel will usually be a _____.	butterfly valve	spectacle valve	check valve	globe valve	
299923	2	The valve on the discharge side of a cargo pump on a tank vessel will usually be a _____.	gate valve	butterfly valve	globe valve	check valve	
299924	1	Which statement is TRUE concerning combustible gas indicators?	One sample of air is adequate to test a tank.	They do not work properly where there is a lack of oxygen.	They will detect a lack of oxygen.	They are calibrated to read the percentage chance of explosion.	
299925	1	Which alarm is NOT found on an inert gas system?	Low oxygen alarm	Low pressure alarm	Scrubber high water level alarm	Deck seal low water alarm	
299926	1	Which step is NOT generally taken when gas-freeing a tank?	Washing the tank interior with sea water	Application of degreasing solvents	Removal of corrosion products and sludge	Fresh air ventilation	
299927	1	You are discharging cargo and the inert gas system is in operation to inert the tanks. The pressure in a tank being discharged starts to drop below the allowable limit. What action should you take?	Cut in another IG fan to increase gas flow.	Open the pressure control valve until the pressure increases.	Open the tank isolation valve to the fully open position.	Reduce the pumping rate.	
299928	1	In order for combustion to occur inside a piping system such as a vapor collection header in a marine emission control system, there must be _____.	fuel	oxygen	ignition	All of the above	
299929	1	In an inert gas system, high pressure alarms are set in the main vapor collection line to cause an audible and visual alarm if the pressure reaches a certain level. What is the percentage of the lowest relief valve setting at which the alarm must sound?	70%	80%	90%	95%	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299930	1	A fire of escaping liquefied flammable gas is best extinguished by _____.	cooling the gas below the ignition point	cutting off the supply of oxygen	stopping the flow of gas	interrupting the chain reaction	
299931	1	According to regulations, a cargo hose used for transferring liquefied gases must have a bursting pressure of _____.	5 times the maximum working pressure on the hose during cargo transfer	one half the designed working pressure	4 times the pressure of the cargo pump used for transferring	5 times the minimum working pressure on the hose during cargo transfer	
299933	1	The final inspection responsibility for seeing that a tank barge is provided with the required equipment and fittings in good and serviceable condition prior to loading cargo rests with the _____.	terminal operator	owner of the barge	tankerman or person in charge of loading	charterer through the Master of the towing vessel	
299934	1	The sign used to caution persons approaching the gangway of a tank barge during cargo transfer reads _____.	"Warning, Keep Off, Stay Clear"	"Danger, Do Not Board"	"Warning, No Smoking, No Open Lights, No Visitors"	"Dangerous Cargo Being Transferred"	
299935	1	When two ballast pumps used for deballasting a single tank start cavitating, you should _____.	open all valves on the discharge side to permit improved flow	close the valve on the discharge side of the pump to re-acquire suction	close the valve on the suction side of the ballast pump to re-prime the pump	shut down one pump	
299936	1	The person in charge on the vessel and the person in charge at the facility must hold a meeting before starting the transfer of oil. Who must decide to start the transfer?	The person in charge on the vessel	The person in charge at the facility	Both persons in charge	The person in charge of either place that is doing the pumping	
299937	1	The transfer procedures required to be followed on tankships shall contain _____.	a list of each port of discharge	a line diagram of the vessel's transfer piping	a current crew list	the duties by name of each person in charge required for each transfer operation	
299938	1	The vapor pressure of a substance _____.	increases with the temperature	decreases as temperature increases	is not affected by temperature	may increase or decrease as the temperature rises	
299939	1	The temperature at which water vapor in an atmosphere condenses to a liquid is known as _____.	the bubble point	equilibrium	the flash point	the dew point	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299940	1	The heat value of a fuel is best described as _____.	the amount of fuel added to a fuel to cause it to burn	the amount of heat released when a fuel is burned	the temperature to which a fuel must be raised to cause ignition	the cost per BTU of a fuel	
299941	1	An LNG vessel's contaiment system must be cooled down prior to loading cargo. The cool-down parameters and rates are obtained from _____.	the port engineer	the knowledgeable shore side loading terminal personnel	either the master or chief engineer probably knows this information	the instruction manual provided by the manufacturer of the containment system	
299942	1	Who will certify the vessel to be gas free before entering the shipyard?	A shore side gas chemist.	The chief officer.	A dedicated company representative.	A representative from the vessel's class society.	
299943	1	One important aspect of LNG concerning its safety is that it is very _____.	cold	corrosive	caustic	carcegenic	
299944	1	When discharging cargo, the onboard liquid level drops. This causes a lowering of onboard cargo tank pressure. This pressure is brought back to normal by _____.	taking gas from ashore	using the ship's vaporizer to produce the needed gas	either of the above	neither of the above	
299945	1	Gas compressors on an LNG vessel provide the motive force to _____.	deliver gas ashore when loading	circulate gas when warming up the tanks	deliver boil-off gas to the engine room	all of the above	
299946	1	If you were exposed to a 100% methane atmosphere for more than 15 minutes, you would probably _____.	break out in a cryogenic rash	suffocate	become quite ill due to the toxic nature of the gas	be severely burned	
299947	1	All of the following are acceptable means to measure a liquid level in a cyrogenic cargo tank except _____.	a capacitance level measurement system	a sounding tape gage using blue chalk	a nitrogen bubbler system	a radar gage	
299948	1	LNG is carried at approximately what temperature?	-160 degrees F	-160 degrees K	-160 degrees C	-160 degrees R	
299949	1	In order to raise the temperature of water from 60 degrees F to 180 degrees F, you must add _____.	latent heat	sensible heat	crucial heat	super heat	
299950	1	During the ballast voyage, the tanks are kept cold by _____.	managing the tank pressure	spraying LNG heel through spray nozzles in the tanks	venting gas to the atmosphere	aggressive gas compressor operation	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299951	1	What gas detection device is used to determine when gassing up is complete?	Oxygen meter	Methane detector	Dew point meter	CO2 meter	
299951	2	Each pressure gage used in an oil transfer operation must be accurate to within _____.	1 percent	3 percent	5 percent	10 percent	
299960	1	A chemical additive to LPG give it a characteristic _____.	color	pressure	density	odor	
299961	1	LNG containment insulation performs all of the following functions, except _____.	limits the heat leak to the cargo	absorbs loads imposed by the cargo	protects the hull against low temperature	increases the dew point of the hold space atmosphere	
299962	1	Span gas is used for what process?	To insure an inert atmosphere during the span of time when a system is being brought to a dry air condition from a flammable atmosphere.	To find the zero point on a gas analyzer.	The name of a gaseous state when the temperature of the vapor is the same as that of the liquid.	To calibrate a gas analyzer to ensure it indicates correct gas concentrations.	
299963	1	What device will be activated while loading a LNG tank and the HI-HI liquid level set point is reached?	Remote shutdown valve control.	Emergency shutdown.	Overflow shutdown.	No shutdown required.	
299964	1	The LNG cargo pumps capacity depends upon _____.	back pressure	density of cargo	speed (LPG/LNG pumps are constant speed)	All of the above	
299965	1	While underway with full LNG cargo tanks, an alarm indicates liquid in hold space #3. The first action taken should be to _____.	check the temperature and pressure indicators in the hold space	send someone into the hold space with SCBA and cyrogenic immersion suit, to investigate the condition of the hold	immediately commence lining up the system to educt LNG from the cargo hold and prepare to jettison LNG from cargo tank #3	commence purging hold #3 with inert gas	
299966	1	Asphyxia is the condition arising from _____.	too much oxygen	sleep deprivation	improper caloric intake	an inadequate supply of oxygen	
299967	1	In case of a LNG leak from a liquid header flanged connection, what is the first precautionary action to take?	Call the Coast Guard	Tighten the flange bolts until the leak stops.	Flood the area under the leak with water.	Stop cargo transfer until the cause of the leak is corrected.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299968	1	At what maximum gas concentration must the fixed gas detection system on a LNG ship activate an audible and visual alarm?	30% by volume.	20% by volume.	30% by lower flammable limit	20% of the lower flammable limit.	
299969	1	The heat given to or given up by a substance in changing state is called _____.	condensation	latent heat	evaporation	vaporization	
299970	1	The term used for evaporated LNG is _____.	boil-off	vapor	GNG	All of the above	
299971	1	While discharging cargo, the cargo tank pressures are falling too low. What can the Cargo Officer do to correct the problem?	Ask the terminal to send more vapor to the ship.	Slow the discharge rate.	Stop the discharge rate.	All of the above.	
299972	1	Where is a permanently installed system of gas detection required?	Cargo pump rooms.	Air locks.	Cargo compressor rooms.	All of the above.	
299973	1	If a repair team is to enter a confined space for repair work, what minimum level of oxygen should be present?	18%	19%	20%	21%	
299974	1	An enclosure which will withstand ignition of a flammable gas and which will prevent the transmission of any flame able to ignite a flammable gas which may be present in the surrounding atmosphere is called _____.	a flame proof screen	explosion proof	gas-safe enclosure	primary gas barrier	
299975	1	In what condition is LNG transported?	At its boiling point.	At its critical temperature.	At a pressure in excess of 15.4 PSIA.	All of the above.	
299976	1	What is the preferable way to extinguish an LNG fire?	Apply water fog.	Shut off the source of the gas feeding the fire.	Apply "Purple K" dry chemical.	Apply mechanical foam.	
299977	1	LNG cargo "rollover" is a term used to describe _____.	custody transfer at the terminal	vapor pockets forming at the bottom of a half-filled tank	when two or more stratified layers of different density LNG in the same tank suddenly mix together, causing a rapid increase in boil-off vapors	moving LNG from one tank to another	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299978	1	Intrinsically safe equipment can be described as _____.	an electrical circuit in which a spark is incapable of causing the ignition of a given explosive mixture	electrical circuits under 12 volts	electrical circuits under 2 amperes	an electrical circuit normally limited to instrumentation in hazardous areas	
299979	1	Reliquification plants are provided to perform which of the following functions _____.	cool down cargo tanks and pipes prior to loading	reliquify cargo vapor generated during loading and return it to the cargo tanks	keep cargo at a temperature and pressure within the design limit of the cargo system during transport	All of the above	
299980	1	What is the most commonly used material for valve construction in LNG cargo piping?	5% nickel alloy steel.	Aluminum.	Stainless steel.	9% nickel alloy steel.	
299981	1	Cryogenic burns can result in "Frostbite". What is the proper immediate treatment?	Warm the area quickly by placing it in water at 108°F until it has thawed.	Massage the affected area.	Apply ice to the area and gradually warm.	Compress the affected area with cryogenic burn heat wrap.	
299982	1	The Inert gas plant on an LNG vessel is designed to produce _____.	nitrogen and dry air with a dew point of at least -20°F	inert gas and dry air with a minimum dew point of -40°F	warm GNG for purging	inert gas only	
299983	1	On a LNG ship at anchor with cargo onboard, how is the vapor pressure in the cargo tanks controlled?	Excess vapor is vented to the atmosphere.	The vapor is compressed by the high duty gas compressor and returned to the tanks.	All boil-off vapor is normally burned in the boilers, and any excess steam generated is controlled by the "steam dump system".	Excess vapor is controlled by the "Thermo-regenerative saturation plant".	
299984	1	LNG boil-off is used as fuel in the dual fuel system to produce steam in the boilers to run the turbines. Under slow maneuvering speeds, due to excessive steam being generated the _____.	boil-off is vented to the atmosphere	boil-off is not permitted to be used as a fuel	steam produced in the boiler, due to the dual fuel system, is dumped to the main condenser	steam is vented to the atmosphere to prevent excess build-up of pressure in the boiler	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299985	1	Reid Vapor Pressure is _____.	exerted by liquid cargo on the sides of a tank	exerted by liquid cargo on a cargo hose body	the lowest temperature and pressure that will cause a flammable liquid to give off vapors	a measurement of the amount of flammable vapors given off by a liquid at a certain temperature	
299986	1	The term "discharge" as it applies to the pollution regulations, means _____.	spilling	leaking	pumping	All of the above	
299987	1	Which would be considered pollution under the US water pollution laws?	Garbage.	Hazardous substances.	Oil.	All of the above.	
299988	1	A single fitting installed in a pipeline that either blanks off the pipe or allow a full flow passage of a liquid through the pipe is referred to as a _____.	blind flange	pivot coupling	quick-release coupling	spectacle flange	
299989	1	The last 1.0 meter (3.3 feet) of vapor piping before the vessel vapor connection must be painted _____.	red/yellow/red	yellow/red/yellow	international orange	hi-visibility yellow	
299990	1	The maximum allowable oxygen content within the ship's cargo tanks, inert gas piping and the vapor recovery system is _____.	4%	5%	8%	10%	
299991	1	A tank which carries liquid is dangerous to the stability of a vessel when it is _____.	low in the vessel	completely empty	completely full	slack	
299992	1	The vapor pressure of a gas is the pressure necessary to keep it in a(n) _____.	soluble state	solid state	liquefied state	inert state	
299993	1	What is the proper first aid for LPG in the eye?	Apply an ice pack to the eye.	Keep the eyelid close.	Flush the eye with plenty of water.	Rub the eye area clean.	
299994	1	To determine the pressure and temperature limitations under which LFG is required to be transported on a barge, you should look at the _____.	Certificate of Inspection	loading order	rules and regulations for tank vessels	tanker man's documents	
299995	1	Why is a warning sign displayed at the gangway or access point of a barge during cargo transfer?	To keep visitors away from the barge.	To prohibit smoking.	To prohibit open lights.	All of the above.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
299996	1	What is TRUE of pressure/vacuum valves?	They are designed to provide for the flow of small volumes of tank atmospheres caused by thermal variations in a cargo tank.	They should operate in advance of the pressure/vacuum breakers.	They should be kept in good working order by regular inspection and cleaning.	All of the above.	
299997	1	Who completes the Declaration of Inspection before loading a tank vessel?	The US Coast Guard.	The manager of the shore facility	The person (s) designated-in-charge.	The American Bureau of Sipping.	
299998	1	Each pressure gage used in an oil transfer operation must be accurate to within _____.	1%	3%	5%	10%	
299999	1	One of the principle dangers inherent in liquified petroleum gas is _____.	its low temperature causes frostbite or freezing	as it warms up it becomes heavier than air	the way it reacts with sea water	the strong odor it produces	
300000	1	The amount of LFG that may be loaded into a given tank is determined by _____.	checking the loading sheet	loading to within 1% of outage	loading to within 10% of the safety relief valve setting	filling to the maximum level indicated on the liquid level gauging device	
300001	1	A combustible liquid is defined as any liquid having a flash point above _____.	40°F (4°C)	80°F (27°C)	110°F (43°C)	150°F (66°C)	
300002	1	The flash point of vinyl chloride is _____.	-108°F (-78°C)	-20°F (-29°C)	32°F (0°C)	97°F (36°C)	
300003	1	The Federal Water Pollution Control Act requires the person in charge of a vessel to immediately notify the Coast Guard as soon as he/she knows of any oil discharge. Failure to notify the Coast Guard can lead to a monetary and imprisonment up to _____.	5 years	3 years	2 years	1 year	
300004	1	If you observe any situation which presents a safety or pollution hazard during the fuel transfer operations, which action should you take FIRST?	Close the valves at the manifold.	Notify the person in charge of the shore facility.	Shut down the operation.	Sound the general alarm.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
300005	1	You start a centrifugal cargo pump to discharge cargo. The pump works fine for awhile and then loses suction. This could be caused by _____.	the pump running backwards	incomplete priming	the discharge head being too high	All of the above	
300006	1	To insure proper seating when closing a valve on a tank, the valve should be _____.	closed against the stop and the locking pin inserted	closed, opened a half turn, and then closed again	set up as tight as possible by hand	set up tight using a valve wrench	
300007	1	A cargo pump relief valve is usually piped to which of the following components?	cargo pump pressure gauge	crossover line	suction side of pump	atmosphere through pump vent	
300008	1	The fresh air intake of the inert gas system _____.	prevents the flue gas from falling below an oxygen content of 3%	allows the inert gas piping to be used for gas freeing the tanks	opens when there is excessive vacuum on the deck water seal	enables outside air to mix with and to cool the hot flue gases	
300009	1	Which function is NOT provided by the scrubber of an inert gas system?	Cools the inert gas.	Removes particulate matter like soot.	Maintains gas pressure in the tanks.	Removes chemical impurities from the gas.	
300010	1	A combustible gas indicator will operate correctly ONLY when the _____.	hydrocarbon content of the atmosphere is less than the Upper Explosive Limit	atmosphere is deficient in oxygen	compartment to be tested is free of CO2	All of the above	
300011	1	Each hose used for transferring vapors must _____.	have a design burst pressure of at least 25 psig	be capable of withstanding at least 2.0 psi vacuum without collapsing or constricting	be electrically continuous with a maximum resistance of 10,000 ohms	All of the above	
300012	1	On a vapor control system, each vessel's vapor connection flange must have a _____.	6" reducer	stud at least 1" long projecting from the flange face	pressure gauge permanently attached to the flange	hose saddle	
300013	1	Which is the MOST important consideration for a tank vessel?	GM	The longitudinal center of gravity	The stress on the hull	The vertical center of gravity	
300015	1	Which signal must you display at night on a docked tank barge to show that it is loading or discharging flammable liquid cargo?	Red light.	Flashing amber light.	ICC yellow light.	Two orange lights.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
300016	1	Pinching of the cargo hose between the vessel and the dock should be prevented by _____.	adjusting the hose supports	laying out an excess length of hose on deck	tying off the topping lifts and runners to winch heads	All of the above	
300017	1	The gas above the liquid in an LNG tank is _____.	inert gas	gaseous natural gas	nitrogen	very dry air	
300018	1	To prevent a flammable atmosphere from occurring in a tank container, one can use _____.	an oxidizer	inert gas	a combustion stabilizer	a vortex eliminator	
300019	1	Tank warm up operations should be continued until the tank metal temperature is at least as warm as _____.	-40°C	-20°C	0°C	ambient outside air temperature	
300021	1	Cargo tank safety valves _____.	are not held closed by tank pressure	can be opened by pilot valves	are not to be "popped" in port	all of the above	
300022	1	There is a water spray or deluge system on LNG vessels that provide a water spray over all areas around the cargo system. The system can be used for _____.	protecting surrounding areas from the radiant heat of a fire	protecting mild steel hull plating from cracking due to LNG leaks	both "A" and "B"	neither "A" or "B"	
300023	1	Submerged LNG pump bearings are lubricated by _____.	LNG	silicon grease	graphite	Low Temp-a special cryogenic lubricant	
300024	1	Methane gas is _____.	odorless	active	volatile	corrosive	
300025	1	An advantage of the spherical type containment system is _____.	good visibility over the bow for ship handling	the design does not require a full liquid tight secondary barrier	both "A" and "B"	neither "A" or "B"	
300027	1	Which is NOT a safety precaution to be observed during the loading of LFG?	Report any leakage of cargo.	Ascertain that the hoses to be used are in good condition.	Make sure the raked ends of the barge are completely dry and mopped.	Be on the lookout for work being accomplished ashore in the vicinity of the barges.	
300028	1	When tank cleaning with a portable machine, how is the weight of the machine is suspended?	solid metal bars clamped to the Butterworth opening	a portable davit	a wire rope suspension line	a natural fiber tag line, saddle and hose	
300029	1	The general name given to propane, butane, and mixtures of the two is _____.	LPG	LNG	NGL	LEG	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
300030	1	Which statement is correct?	NGL contains smaller quantities of a heavier hydrocarbon known as LNG.	LNG contains smaller quantities of a heavier hydrocarbon known as Pantene	LNG contains smaller quantities of a heavier hydrocarbon known as NGL	LNG is a pure substance and has no other component	
300031	1	The boiling point of Methane is -161°C. How is the substance carried?	Fully refrigerated.	Fully pressurized.	Atmospheric pressure.	Normal ambient temperature.	
300032	1	A liquified gas is _____.	A substance that at normal temperature and pressure would be a gas.	A liquid that requires to be heated above normal ambient temperature to make it form a gas.	A gas that is mixed with another substance that causes it to liquefy.	A liquid that needs to be stored at absolute zero to prevent it becoming gaseous.	
300033	3	A chemical gas is described as a _____.	substance whose molecules contain only carbon and hydrogen	gas that has molecules but not carbon or hydrogen	substance whose molecules contain other atoms as well as carbon and hydrogen	substance whose molecules not exceed 4 carbon molecules	
300033	1	The most common liquified gas cargo is _____.	hydrocarbons	chemical gases	butane	ammonia	
300034	1	The process of adding mercaptans to gas, is known as _____.	reeking	smelling	saturating	stenching	
300035	1	The temperature at which a vapor mixture, at a given pressure, begins to condense is the _____.	dew point	bubble point	boiling point	critical point	
300036	1	Which of the following terms best defines the spontaneous mixing of a tank's liquid contents when a heavier layer forms above a less dense lower layer?	flash over	boil off	cascading	rollover	
300037	1	Asphyxia is generally limited to enclosed spaces, and the deficiency of breathable air in an enclosed space can occur with any of the following conditions. Indicate the condition that will NOT cause asphyxia.	When large quantities of cargo vapor is present	When 21% of oxygen is present.	Where large quantities of inert gas is present.	Where rusting of internal tank surfaces has taken place.	

ABS	VER	Question	Choice A	Choice B	Choice C	Choice D	Illustr
300038	1	A burning pain with redness of the skin, an irritating rash, blistering or loss of skin and or toxic poisoning are all symptoms of _____.	asphyxia	dermatitis	athlete's foot	chemical burn	
300039	1	Some cargoes can react with air to form unstable oxygen compounds which could _____.	explode	form water	cause polymerization	form CO2	
300040	1	Most liquified gas cargoes are flammable, and are carried at or close to their boiling point. If released into the atmosphere they will _____.	burn, if it's within it's flammable range and has an ignition source	freeze and possibly cause structural damage	result in sloshing in the tank which could make the ship unstable	allow air to enter the system causing polymerization	
300041	1	MARPOL 73/78 is the convention dealing with _____.	International Convention for the Prevention of Pollution from Ships	International Convention on Standards of Training Certification and Watchkeeping	International Convention of Safety of Life at Sea	International Marine Organization Gas Carrier Code	
300042	1	If liquified gas tankers which comply with the requirements with regard to their structure, equipment, fittings, arrangements, and materials are certified by the _____.	Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk	International Oil Prevention Certificate	Certificate for the Carriage of Noxious Liquid Substances	Cargo Ship Safety Construction	
300043	1	Ventilation spaces for a gas safe space within the cargo area must be _____.	positive pressure	operating on at all times	sucking from the outside atmosphere	filtered system	

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