

Motor Plants I

ID #	Question	Choice A	Choice B	Choice C	Choice D
1	A 16 cylinder main propulsion diesel engine is operating at 95% of full load. No. 7 cylinder is in alarm condition and indicating 1000°F exhaust temperature. All fuel racks are at 21-22 mm except No. 7 which is at 18mm. A new fuel injector nozzle for No. 7 cylinder had been recently installed. Which of the listed actions should be carried out NEXT?	Take compression pressure readings on No. 7 cylinder.	Pull No. 7 cylinder piston and examine the rings.	Examine the governor linkage for binding.	Check the intake manifold pressure for evidence of burned intake valves.
2	A 18 cylinder medium speed direct reversible main propulsion diesel engine is being operated with one cylinder secured. When the engine was stopped, the affected cylinder stopped in a position preventing the engine from being restarted. Which of the following actions should be taken to correct the situation?	Turn the shaft with the turning gear while applying starting air.	Increase starting air pressure by small amounts until the air pressure is high enough to crank the engine over.	Admit starting air in the opposite direction to reposition the engine crankshaft and then restart in the desired direction.	Open the indicator cocks on those cylinders on compression and apply increased starting air pressure.
3	A 4 stroke, medium speed, eight cylinder, in-line diesel engine has a firing order of 1-5-2-6-8-4-7-3. When performing routine valve maintenance, #1 cylinder is set at TDC in firing position. Which exhaust valves can be checked for proper valve lash?	#1, #5, #2, #6	#1, #5, #2, #4	#1, #3, #2, #7	#1, #3, #2, #8
4	A bendy drive starting motor disengages the drive gear from the flywheel by _____.	spring force	rotating of the starting cam	having the flywheel impart a torque to the starter pinion	applying accumulator pressure
5	A 'Blotter test' is a test performed on the lube oil of a diesel engine which can determine _____.	the specific gravity of the oil	the flash point of the oil	a change in the oils viscosity	the TBN number of the oil
6	A bright shiny appearance of the sealing surfaces on diesel engine compression rings indicates _____.	combustion gas blow-by	excessive lubrication	properly functioning rings	insufficient cylinder cooling
7	A broken pintle in a fuel injector usually causes _____.	corrosion of the spray nozzle	clogging of the orifices	distortion of the spray pattern	erosion of the valves
8	A bronze bearing liner with a lead-tin flashing has a milky-white color over most of its surface and some areas of exposed bronze. The white coloring indicates _____.	proper break-in wear	improper break-in wear	relocation of the overlay flashing	water contamination of the lube oil system
9	A centrifuge will satisfactorily remove which of the following contaminants from fuel oil?	Gasoline	Water	Lubricating oil	Sulphur compounds
10	A change in the degree of fuel atomization in a diesel engine cylinder has the greatest effect on the _____.	cylinder air turbulence	fuel spray angle	fuel injection rate	combustion in that cylinder

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11	A change in the degree of fuel atomization in a diesel engine greatly affects the _____.	air turbulence	fuel penetration	fuel spray tip angle	fuel injection rate
12	A change in the degree of fuel atomization in a diesel engine would most greatly affect _____.	air turbulence	fuel penetration	fuel spray angle	fuel injection rate
13	A change in the quality of fuel atomization by a diesel engine fuel injector would be caused by a/an _____.	increase in engine speed	increase in cylinder turbulence	leaking needle valve	reduction in cylinder turbulence
14	A characteristic of a bearing material which permits small dirt particles to become embedded in the bearing surface is _____.	desirable, as it will minimize damage to the journal surface	desirable, as it will assist in keeping the lube oil filters clean	undesirable, since the embedded particles will score the journal	undesirable, since the particles will interfere with lube oil flow
15	A closed freshwater cooling system is commonly used with marine diesel engines because the _____.	need for water treatment is eliminated	cooling water temperature differential is greater	cooling water pumps are directly reversible	jacket water temperature is more easily controlled
16	A common method for diesel engine piston cooling is to deliver oil through the connecting rod into a void space in the piston head and then allow the piston motion to distribute the oil to cool the piston crown and drain the oil back to the crankcase. This procedure is known as the _____.	splash method	spray method	shaker method	throw-off method
17	A condition contributing to diesel engine piston rings sticking in the ring grooves, is insufficient ring clearance at the ring _____.	gap	side	back	radial
18	A condition contributing to diesel engine piston rings sticking in the ring grooves, is insufficient ring clearance at the ring _____. I. Gap II. Side	I only	II only	both I and II	neither I nor II
19	A condition that can increase the foaming tendency of lube oil is _____.	excessively high oil temperatures	water or moisture contamination	fuel dilution	carbon suspension
20	A connecting rod in a four-stroke/cycle diesel engine is subject to _____.	tension load twice each crankshaft revolution	compression load during power and compression strokes	inertia load once every four crankshaft revolutions	bending loads at bottom and top dead center
21	A crack in a cylinder liner can be caused by _____.	worn piston rings	installation of undersized sealing rings	operating the engine at low loads	restricted cooling water passages
22	A cracked cylinder head in an operating engine may be indicated by _____.	a steady flow of water from the expansion tank vent	combustion gases venting at the expansion tank	lower temperature at the cylinder head water discharge	water draining from the fuel leak off lines

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23	A cracked cylinder head on a diesel engine may be indicated by _____.	excessive lube oil consumption	water draining from the fuel leak off valves	combustion gases venting at the expansion tank	excessive fuel oil consumption
24	A crankshaft whose center of gravity coincides with its center line is said to be _____.	dynamically balanced	statically balanced	counter balanced	resonantly balanced
25	A crankshaft whose center of gravity coincides with its center line is said to be _____. I. statically balanced II. dynamically balanced	I only	II only	both I and II	neither I nor II
26	A decrease in the flash point of diesel engine lube oil indicates the lube oil has become _____.	contaminated with sludge	contaminated with carbon	diluted with fuel oil	diluted with water
27	A decrease in the flash point of the diesel engine lube oil indicates the lube oil is _____.	diluted with fuel oil	diluted with water	contaminated with carbon	contaminated with sludge
28	A defective injector nozzle in a propulsion diesel engine can cause _____.	engine power losses	smoking due to unburned fuel	high exhaust temperature readings	all of the above
29	A 'detergent-type' lube oil, used in a diesel engine, should be replaced when _____.	fuel oil dilution is 5%	it begins to turn black	the exhaust shows traces of blue smoke	all of the above
30	A device which functions to bring a diesel engine to a full stop to protect it from damage is known as a/an _____.	torque limiter	overspeed trip	overspeed governor	load limit governor
31	A diesel engine cooling water system with a pH factor of 3.0 indicates a condition of _____.	slight acidity	slight alkalinity	excessive alkalinity	excessive acidity
32	A diesel engine could fail to start because of _____.	incorrect injection timing	low exhaust back pressure	floating exhaust valves	excessive cranking speed
33	A diesel engine crankcase ventilation system _____.	prevents spark generation	removes combustible gases	determines the level of combustible gases	provides inert gas generation in crankcase
34	A diesel engine cranks properly during starting but immediately stalls. Which of the following systems is most likely at fault?	Hydraulic starting	Electric starting	Ignition	Fuel
35	A diesel engine cylinder has a swept volume of 104 cubic inches and a clearance volume of 8 cubic inches at top dead center. What is the compression ratio of the engine cylinder?	14.0 : 1	14.5 : 1	15.0 : 1	15.5 : 1
36	A diesel engine cylinder has a swept volume of 125 cubic inches and a clearance volume of 10 cubic inches at top dead center. What is the compression ratio of the engine cylinder?	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1

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37	A diesel engine cylinder has a swept volume of 125 cubic inches and a compression ratio of 13.5 to 1. What is the clearance volume in the cylinder at top dead center?	10 cubic inches	12.5 cubic inches	13.5 cubic inches	14 cubic inches
38	A diesel engine cylinder has a swept volume of 130.5 cubic inches and a clearance volume of 9.0 cubic inches at top dead center. What is the compression ratio of the engine cylinder?	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1
39	A diesel engine cylinder has a swept volume of 135 cubic inches and a clearance volume of 10 cubic inches at top dead center. What is the compression ratio of the engine cylinder?	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1
40	A diesel engine cylinder head can crack as a result of _____.	a leaking oil control ring	heat transfer from exhaust valves	restricted cooling passages	overheated intake valves
41	A diesel engine electric starting motor is operated under a no-load condition. Continuing to operate the motor unloaded will _____.	disengage the throw out bearing	overspeed and cause serious damage	fail to develop normal speed	cause the pinion to fail
42	A diesel engine exposed to widely varying ambient temperatures should use a lubricating oil with _____.	a high viscosity index	a low viscosity index	extreme pressure additives	no additives
43	A diesel engine fails to start because of water in the fuel. In order to start the engine, you should _____.	turn engine with jacking gear	drain filters and strainers and bleed off water at each injection pump	use ether to start the engine with blow down valves open	blow through the cylinders and fuel lines with a drying agent
44	A diesel engine fails to start due to excessive water in the fuel. Before the engine can be started, the water should be removed from the _____.	fuel lines	lube oil filter	crank case pump	rocker arm reservoir
45	A diesel engine fails to start, even though it can be barred over, but not cranked over. The probable cause is _____.	a seized piston	an improperly fitted bearing	a closed or obstructed air starting line valve	insufficient compression
46	A diesel engine indicator diagram has an area of 22 cm ² and a length of 12.5 cm. If the scale of the indicator spring is 1 mm = 1 kg/cm ² , what is the cylinder mean effective pressure?	17.6 kg/cm²	27.5 kg/cm ²	34.5 kg/cm ²	36.0 kg/cm ²
47	A diesel engine indicator diagram measures 12.5 cm in length and has an area of 22 cm ² . What is the cylinder mean effective pressure if the spring used has a scale of 1.25 mm equals 1 kg/cm ² ?	14.08 kg/cm²	22.0 kg/cm ²	34.5 kg/cm ²	35.75 kg/cm ²
48	A diesel engine is driving an alternator required to run at 1800 RPM. The overspeed governor is normally required to be set within a range of _____.	1980 to 2070 RPM	2100 to 2200 RPM	2200 to 2300 RPM	2300 to 2400 RPM

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49	A diesel engine is equipped with the overspeed trip assembly shown in the illustration. At the inspection, the counter weight was found to be tripping out at too high of an RPM. The adjustment to lower the tripping speed RPM was carried out by _____.	decreasing the compression on spring #12	increasing the compression on spring #12	changing piece #10 to a lighter weight	reducing the counterweight pivot point friction
50	A diesel engine is provided with an overspeed throw-out weight shown in the illustration, and is tripping out at too low an RPM. In order to correct this problem, you should _____.	replace piece #10	decrease compression on spring #12	increase compression on spring #12	increase tension on lock wire by adjusting pieces #31, #32 and #35
51	A diesel engine is turned at normal cranking speed and no ignition occurs. This could be the result of _____.	low lube oil temperature	low starting air temperature	air bubbles in the fuel oil system	water in the starting air system
52	A diesel engine is turned at normal cranking speed, but fails to fire. This can occur from _____.	low lube oil temperature	low starting air temperature	air in the fuel injection system	water in the starting air system
53	A diesel engine may fail to start when being cranked, due to _____.	high cetane number	insufficient compression	low lube oil viscosity	high lube oil pressure
54	A diesel engine operating at a light load, when compared to operating at heavy load has an air/fuel ratio that is _____.	higher	lower	equal	directly proportional
55	A diesel engine piston crown can crack from _____.	excessive piston to liner clearance	excessive dirt beneath the piston crown that reduces heat transfer.	faulty nozzle spray	all of the above
56	A diesel engine piston ring face is in direct contact with the _____.	top of the ring groove	cylinder liner oil film	bottom of the ring groove	back of the ring groove
57	A diesel engine should use which type of lubricating oil?	Low viscosity	Cutting oil	High grade vegetable oil	Detergent oil
58	A diesel engine using lube oil with too high a viscosity will exhibit _____.	increased starting difficulty in cold weather	increased oil consumption	thickening at higher operating temperatures	minimal friction losses
59	A diesel engine which is rated for normal operation at a crankshaft speed of 800 RPM, is commonly classed as a _____.	slow-speed diesel	medium-speed diesel	high-speed diesel	constant-speed diesel
60	A diesel engine will lose power if fuel injection occurs too early because the _____.	fuel will not be properly atomized in the cylinder	ignition will be delayed due to low ignition temperature	maximum fuel expansion will occur on the compression stroke	fuel will ignite before top dead center
61	A diesel engine will lose power if fuel injection occurs too late in the cycle, because the _____.	fuel droplets will burn as they leave the fuel injector	fuel will not be properly atomized in the cylinder	maximum expansion of the burned fuel cannot take place in the cylinder	compression pressure will be too low to cause fuel ignition

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62	A diesel engine with a combustion chamber located between the crowns of two pistons is known as a/an _____.	double-acting engine	opposed piston engine	single-acting engine	horizontal acting engine
63	A dirty diesel engine oil filter element can best be detected by _____.	visual inspection of the elements	the pressure drop across the filter	high lube oil sump temperature	decrease in oil viscosity from the filter
64	A dirty fuel oil filter can be detected by _____. I. fuel oil analysis II. observing the pressure drop across the filter	I only	II only	either I or II	neither I nor II
65	A dirty fuel oil filter element can be detected by _____.	visual inspection of the element	the pressure drop across the filter	high fuel oil tank temperature	increase flow rate from the filter
66	A dirty lube oil strainer can result in _____.	crankcase dilution	low lube oil temperature	excessive oil consumption	low bearing oil pressure
67	A disadvantage of a four-stroke/cycle over a two-stroke/cycle diesel engine is _____.	higher working temperature of piston and cylinder	the required use of scavenging ports	greater weight per horsepower ratio	intake valve temperatures higher than exhaust valve temperatures
68	A disadvantage of a two-stroke/cycle diesel engine is _____.	more power strokes per revolution	the use of scavenge air	more complicated valve gear	higher working temperatures of the piston and cylinder
69	A distorted spray pattern from a fuel injector can cause _____.	high firing pressure	corrosion of the nozzle tip	low fuel pressure	loss of power
70	A distorted spray pattern from a fuel injector can cause a diesel engine to have _____.	higher firing pressure	more power output	lower fuel pressure	less power output
71	A drop in compression pressure in one cylinder of a diesel engine can be caused by _____.	a leaking fuel injection nozzle	a clogged air filter	early fuel injection	burned valves
72	A faulty injector in one cylinder of an operating diesel engine can be located by _____.	cutting out individual injectors and noting engine performance	checking lube oil temperature	checking cam position	using a timing light
73	A faulty thermostatic bypass valve, in a diesel engine cooling system, can result in _____.	excessive time required for warming-up	excessive freshwater corrosion	scale formation on the saltwater side	saltwater mixing with the freshwater
74	A four cylinder, four stroke/cycle, single acting diesel engine has a 740 mm bore and a 1500 mm stroke. What indicated power will be developed if the average mean effective pressure is 18 kg/cm ² at a speed of 90 RPM?	3416 kW	4644 kW	7296 kW	9290 kW

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75	A four-cycle, medium speed, eight cylinder, in-line diesel engine has a firing order of 1-5-2-6-8-4-7-3. When checking exhaust valve lash with the crankshaft set with #8 piston at TDC in the firing position, which cylinder exhaust valves can be checked for proper valve lash?	#8, #4, #7, #1	#8, #4, #7, #3	#8, #6, #7, #5	#8, #6, #7, #2
76	A four-stroke cycle main propulsion diesel engine fails to start at normal cranking speed with normal fuel pressure and ambient temperature. The reason for the failure could be _____.	glazed liners or pistons	high lube oil pressure	excessive compression ratio	excessive air leakage by rings and valves
77	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #1 piston is at TDC and in the firing position, #4 piston is on _____.	the exhaust stroke	bottom dead center	the intake stroke	the compression stroke
78	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #1 piston is at TDC and in the firing position, #6 piston is on _____.	the exhaust stroke	bottom dead center	the intake stroke	the compression stroke
79	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #2 piston is at TDC and in the firing position, #3 piston is on _____.	the exhaust stroke	bottom dead center	the intake stroke	the compression stroke
80	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #2 piston is at TDC and in the firing position, #4 piston is on _____.	the exhaust stroke	bottom dead center	the compression stroke	the intake stroke
81	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #4 piston is at TDC and firing, how many degrees of camshaft rotation will occur when #5 piston reaches TDC and fires?	120 degrees	180 degrees	240 degrees	360 degrees
82	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #4 piston is at TDC and firing, how many degrees of crankshaft rotation will occur when #5 piston reaches TDC and fires?	120 degrees	180 degrees	240 degrees	360 degrees
83	A four-stroke eight cylinder in-line medium speed diesel engine has a firing order of 1-5-2-6-8-4-7-3. If #8 piston is at TDC and firing, how many degrees of camshaft rotation will occur when #1 piston reaches TDC and fires?	120 degrees	180 degrees	240 degrees	360 degrees

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84	A four-stroke six cylinder in-line diesel engine has a firing order of 1-5-3-6-2-4. When cylinder #2 is firing at top dead center, piston #1 is _____.	at top dead center	on the exhaust stroke	on the compression stroke	on the intake stroke
85	A four-stroke/cycle six cylinder in-line diesel engine has a firing order of 1-5-3-6-2-4. When cylinder #3 is firing at top dead center, piston #1 is _____.	at top dead center	on the exhaust stroke	on the compression stroke	on the intake stroke
86	A four-stroke/cycle six cylinder in-line diesel engine has a firing order of 1-5-3-6-2-4. When cylinder #6 is firing at top dead center, piston #4 is _____.	at top dead center	on the compression stroke	at bottom dead center	on the intake stroke
87	A fuel injection valve opening at a pressure lower than normal will result in _____.	late fuel injection	early fuel injection	high exhaust temperature from that cylinder	decreased effective stroke from that injector
88	A large low speed main propulsion diesel engine may become overloaded by _____. I. a heavily fouled hull II. strong head winds and heavy seas	I only	II only	both I and II	neither I nor II
89	A large two-stroke/cycle direct reversing diesel engine is to be reversed. Prior to the admission of starting air you must _____.	line up the engine for restarting with light diesel oil	reposition the fuel injection cam	change the intake and exhaust valve cam positions	reduce the main lube oil pressure
90	A large, low-speed, crosshead, main propulsion diesel engine using residual fuel oils must have a cylinder oil having a _____.	low TBN value	high alkaline reserve	low flash point	high pour point
91	A leaking diesel engine fuel injector will cause _____.	prolonged maintenance intervals	improved atomization	greater fuel economy	incomplete combustion
92	A 'low pressure in oil outlet' alarm indication, as shown in the illustration, may be caused by _____.	the proper setting of valve V4	insufficient heating of the processed liquid	the three-way valve (V1) not opening	insignificant accumulations of sludge within the bowl assembly
93	A magnetic strainer is primarily used in diesel engine reduction gear oil systems to remove small particles of _____.	copper	Babbitt	ferrous materials	acidic materials
94	A main propulsion diesel engine crankshaft bearing lacking sufficient 'crush', will _____.	pound under load	be lubricated more easily than with sufficient crush	tend to rotate with the journal	have a thicker layer of Babbitt
95	A main propulsion diesel engine is normally shut down by _____.	shutting off the air supply	overspeeding the engine	securing the fuel supply	securing the ignition system
96	A method of finishing diesel engine cylinder walls to aid in the proper ring seating and lubrication is known as _____.	ribbed honing	angled honing	cross hatch honing	doubled honing

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97	A mixture of 45% cetane and 55% alpha-methyl-naphthalene is found to have the same ignition delay as a sample of diesel oil. The sample can be described as having a/an _____.	cetane number of 55	cetane number of 45	octane number of 55	octane number of 45
98	A modern centrifuge, similar to the device shown in the illustration, is opened for periodic cleaning. The most common cause of operating failure after reassembling, is due to _____.	low drive motor RPM	excessive back pressure in the bowl and fuel oil break over	the failure of the opening and closing water supply	not replacing the bowl O-rings that have taken a permanent set
99	A multi-orifice fuel injection nozzle is usually used with which of the listed types of combustion chamber?	Open combustion chamber	Precombustion chamber	Turbulence chamber	Energy cell
100	A naturally aspirated diesel engine operating at a light load, when compared to operating at heavy load, has an fuel/air ratio value that is _____.	higher	lower	equal	exponentially higher
101	A normal sludge ejection cycle will commence in the illustrated centrifuge when 'V5' is closed and _____.	'V10' and 'V15' are opened	'V10' and 'V15' are closed	'V10' opened and 'V15' is closed	'V10' closed and 'V15' is open
102	A normally operating diesel engine is shutdown by _____.	shutting off the air supply	overspeeding the engine	securing the fuel supply	securing the ignition system
103	A pilot-operated, main air starting valve begins leaking in one cylinder while the engine is operating. This malfunction is indicated by _____.	an increase in the exhaust temperature reading for that cylinder	an increase in the starting air manifold pressure	high exhaust pressure	an overheated air supply line to that cylinder
104	A piston in a four-stroke/cycle diesel engine makes four strokes during each _____.	crankshaft revolution	mechanical cycle of operation	period of two combustion cycles	cycle of two events
105	A piston is at bottom dead center when it is _____.	opening the exhaust ports	closing the fuel ports	farthest from the cylinder head	nearest to the cylinder head
106	A piston is said to be at top dead center when it is _____.	opening the exhaust ports	placed on top of the engine along its centerline	farthest from the cylinder head	nearest to the cylinder head
107	A piston is said to be at top dead center when it is _____.	opening the exhaust ports	closing the fuel ports	farthest from the cylinder head	nearest to the cylinder head
108	A plunger is used in the fuel injection pump shown in the illustration 'timed for port closing.' The injection process will always have a _____.	constant beginning and constant ending	variable beginning and variable ending	constant beginning and variable ending	variable beginning and constant ending
109	A port-and-helix fuel injection pump having upper and lower plunger helixes is designed to _____.	vary fuel delivery and return pressure	vary the beginning and ending of injection	operate with residual fuels only	provide maximum fuel delivery rate
110	A possible cause for an individual piston to knock when at TDC on a slow-speed, two-stroke/cycle main propulsion diesel engine could be due to _____.	early fuel injection	excessive bearing play within the running gear	overloading of the cylinder	all of the above

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111	A practical way of checking for excessive fuel injection in one cylinder of an operating diesel engine is to _____.	feel the high pressure fuel line	check the cylinder exhausts for white smoke	frequently check the cylinder exhaust temperature	isolate each cylinder and inspect the injector
112	A properly honed diesel engine cylinder liner will _____.	prevent piston ring wear	shorten the ring break-in period	prevent cylinder liner glazing	appear slick and glazed
113	A properly honed diesel engine cylinder liner will _____.	prevent piston ring wear	shorten the ring break-in period	prevent cylinder liner glazing	appear mirror smooth
114	A safety crankcase cover differs from other diesel engine access doors in that it is fitted with a _____.	spring-loaded pressure plate	hand wheel	nut-operated clamp	large gasket
115	A scored diesel engine cylinder liner will cause _____.	high firing pressure	abnormally high cooling water temperature	rapid wearing of piston rings	combustion gases in the cooling water
116	A secondary function of diesel engine piston rings is to _____.	reduce friction losses in the engine	absorb the piston side thrust	prevent cylinder liner wear	prevent excess lubricant from reaching the combustion space
117	A seven cylinder, 2-stroke/cycle, single acting diesel engine has a 750 mm bore and a 2000 mm stroke. What indicated power will be developed if the average mean effective pressure is 14.8 kg/cm ² at a speed of 96 RPM?	1,959 kW	3,906 kW	14,363 kW	28,726 kW
118	A seven cylinder, two-stroke/cycle, single acting diesel engine with a cylinder indicated horsepower calculated as 1350 kW and brake horsepower measured at 7466 kW has a mechanical efficiency of _____.	18%	55%	79%	83%
119	A six cylinder 2-stroke/cycle, single acting diesel engine has a 580 mm bore and a 1700 mm stroke. What indicated power per cylinder will be developed if the average mean effective pressure is 15.3 kg/cm ² at a speed of 120 RPM?	1,366 kW	2,696 kW	4,044 kW	8,088 kW
120	A six cylinder, single acting, four-stroke/cycle diesel engine has a bore of 10 1/2 inches, and a stroke of one foot, producing 75 HP per cylinder at 720 RPM. What is the mean effective pressure in the engine cylinders for the stated conditions?	39.7 psig	79.4 psig	476.4 psig	952.7 psig
121	A six cylinder, two stroke/cycle diesel engine is 83% efficient and has a cylinder constant of 0.998 while operating with a mean effective pressure of 15 kg/cm ² at a speed of 100 RPM. What is the metric brake horse power developed?	5,559 mbhp	6,698 mbhp	7,455 mbhp	8,982 mbhp

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122	A six-cylinder, four-stroke/cycle diesel engine is fitted with a rotary distributor type air starting system. The speed of the rotating distributor disc is _____.	one-half engine speed	the same as engine speed	twice engine speed	four times engine speed
123	A six-cylinder, two-stroke/cycle diesel engine is fitted with a rotary distributing air starting system. The speed of the rotating distributor disc is _____.	one-half engine speed	the same as engine speed	twice engine speed	four times engine speed
124	A spring-loaded relief valve is located on some lube oil filters in full flow systems to _____.	prevent over pressurization of the filter cartridge	prevent over pressurization of the filter casing	bypass the filter should it become clogged	limit the lube oil outlet pressure
125	A substantial increase in crankcase pressure could be an indication of _____.	excessive lube oil pressure	the proper seating of new rings	a worn cylinder liner	a malfunctioning cylinder relief valve
126	A substantial increase in crankcase pressure could be an indication of a/an _____.	worn cylinder liner	faulty cylinder relief valve	excessive lube oil pressure	excessive scavenge air pressure
127	A sudden decrease in the diesel engine lube oil viscosity could be an indication of _____.	loss of additives from the lube oil	carbon deposits in the lube oil	excessive centrifuging	excessive fuel dilution
128	A sudden drop in compression pressure in one cylinder of a diesel engine can be caused by _____.	a leaking fuel injector nozzle	a clogged air filter	excessively early fuel injection	malfunctioning valves
129	A three-way thermostatic control valve regulates the diesel engine cooling water temperature by passing a portion of the water _____.	around the engine	around the cooler	to the expansion tank	overboard
130	A turbocharged, eight cylinder, two-stroke/cycle diesel engine has a swept volume of 5160.31 cubic inches, a 9 1/16 inch bore, 10 inch stroke, and a compression ratio of 14.5 : 1. If during an overhaul, each cylinder head is to be trued by milling off .024 inches thereby losing 1.55 cubic inches from its clearance volume, what will be the resultant swept volume and new compression ratio?	5160.31 cubic inches; 14.92 : 1	5160.31 cubic inches; 14.95 : 1	5147.91 cubic inches; 14.92 : 1	5147.91 cubic inches; 14.95 : 1
131	A two stroke diesel engine exhaust temperature will be lower than a four stroke diesel engine of the same displacement because the _____. I. mep is lower and the scavenging air is cooling the exhaust gases II. valve overlap in a four stroke diesel engine is greater	I only is correct	II only is correct	both I and II are correct	Neither I or II are correct

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132	A two stroke diesel engine exhaust temperature will be lower than a four stroke diesel engine of the same displacement because the _____. I. scavenging air is cooling the exhaust gases II. exhaust cycle time is longer	I only	II only	both I and II	neither I nor II
133	A two-stroke/cycle diesel engine requires less starting air than a four-stroke/cycle diesel engine, of equal displacement, because the two-stroke/cycle diesel engine _____.	has little or no internal friction	has a lower effective compression ratio	operates with scavenge air under a positive pressure	operates without energy absorbing intake and exhaust strokes
134	A unit type fuel injector is used on a diesel engine to _____.	meter the fuel	produce the proper fuel oil pressure	atomize the fuel	all of the above
135	A viscous damper, as used on a marine diesel, is a sealed precision built device which dampens the torsional vibrations in the _____.	camshaft	flywheel	crankshaft	thrust shaft
136	A visual inspection of the chrome plated piston compression rings at the liner ports reveals vertical brown streaks on the face of the rings. This condition indicates _____.	a broken ring	normal conditions	ring blow-by	a leaky fuel injector
137	A well-lubricated bearing surface always appears _____.	well knurled	slightly streaked	lightly glazed	highly polished
138	Abnormal crankpin bearing and piston skirt surface wear indicate _____.	a restricted air intake	a clogged connecting rod oil passage	incorrect connecting rod alignment	high cylinder firing temperatures
139	According to 46 CFR Part 56, isolation valves used in keel cooler installations may be constructed of _____.	bronze	copper	high temperature plastic	aluminum
140	According to Coast Guard regulations, keel cooler installations are _____.	required on all vessels of less than 150 gross tons	to be made between the bilge keel and the keel	to be provided with shutoff or isolation valves except when installed forward of the collision bulkhead	to be provided with expansion tanks, which must be located below the load line to provide positive cooling water flow
141	According to the chart shown in the illustration, which of the following statements is true concerning antifreeze solutions for diesel engine cooling systems?	A 100% ethylene glycol solution gives the greatest protection against freezing.	The boiling temperature of the solution remains constant at the level of greatest protection against freezing to -70°F (-57°C).	With antifreeze protection of -60°F (-51°C), the boiling temperature could be 230°F to 250°F (110°C to 121°C).	A 30% solution of ethylene glycol will protect the cooling system at temperatures of -18°F (-26°C).

ID #	Question	Choice A	Choice B	Choice C	Choice D
142	According to the diagram shown in the illustration, the lube oil system can best be described as a _____.	dry sump system	wet sump system	shunt system	bypass system
143	According to the illustrated polar timing diagram for a four-stroke cycle diesel engine, the exhaust valve is open for a duration of how many degrees of crank travel?	75 degrees	100 degrees	180 degrees	320 degrees
144	According to the illustrated polar timing diagram for a four-stroke cycle high speed diesel engine, the period of valve overlap occurs for a duration of how many degrees of crank travel?	75 degrees	125 degrees	160 degrees	320 degrees
145	According to the illustration, fuel cutoff timing in the cylinder is controlled with the component that is identified as the letter _____.	C	H	K	I
146	According to the illustration, fuel delivery to the cylinder is terminated and controlled with the component that is identified as the letter _____.	C	H	K	I
147	According to the illustration, fuel injection timing into the cylinder is controlled with the component that is identified as the letter _____.	C	H	K	I
148	According to the illustration, if water is ejected from an open indicator cock when the engine is rotated by the turning motor, a leak or crack may have developed at the _____.	injector seating surface	valve seat insert	upper portion of the cylinder liner	all of the above
149	According to the illustration, initial timing of fuel injection into the cylinder is controlled with the component that is identified as the letter _____.	C	H	K	I
150	According to the illustration, which of the following is true?	The piston has a replaceable crown.	The piston has five compression rings.	The piston has one oil scraper ring.	All of the above.
151	According to the illustration, which of the following is true?	The piston crown is non-replaceable.	The piston crown is designed with a heat dam.	The piston has one oil scraper ring.	All of the above.
152	According to the illustration, which of the following is true?	The shaker method is used for piston cooling.	The piston has four compression rings.	The piston has two oil scraper rings.	All of the above.
153	According to the illustration, which of the following statements is true concerning the operation of a large slow speed diesel engine?	Operating in the shaded area labeled "A" would result in the engine being overloaded.	Operating in the area labeled "B" would result in the engine being under-loaded.	Operating near or on the line labeled "P" would result in the greatest engine operating efficiency.	All of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
154	After a long period of operation, a wear ridge, caused by piston ring action, will develop near the top of the cylinder liner. This ridge must be removed during maintenance in order to prevent _____.	excessive ring wear during the seating period	excessive lubrication of the top ring	improper coating of lubrication on the cylinder wall	breaking of the rings, ring lands, or both during piston removal
155	After an engine has been started using a Bendix drive unit, the drive pinion disengages from the flywheel due to _____.	the action of a spring	rotation of the starting cam	the flywheel applying torque to the starter motor drive pinion	accumulator pressure
156	After changing out the fuel filters the diesel engine fails to restart. The most probable cause for this condition is a/an _____.	low compression	air-bound fuel system	improper spark	change in viscosity
157	After following the prescribed procedures to measure the thrust bearing clearance shown in the illustration, the distance "F" is determined to be 200 mm, and 'f1' is 2.3 mm. Which of the following statements describes the condition indicated by these dimensions?	The total active thrust area is 202.3 mm, well within the standards set forth by the GSMA (German Society for Machining Accuracy).	The loading ratio, or shaft diameter divided by collar surface area is within 2.7 : 1.	These dimensions indicate the presence of flourishing marks on the thrust shoes; the marks becoming visible as the distance at 'f1' increases.	It is possible for the shaft to move axially 2.3 mm during astern operation and relates to an excess movement of 1.3 mm, 0.3 mm beyond the maximum worn play.
158	After removing an old set of rings, which of the following conditions is indicated if a bright spot is found on each end of a broken piston ring?	Improper lubrication	Excessive diametrical tension	Insufficient ring pressure	Insufficient gap clearance
159	After removing the bowl hood of the device shown in the illustration, excessive quantities of sludge are visible. Which of the following statements represents the approach to rectify the situation?	Disassemble the entire unit, clean all components, replace all defective discs and use the proper lubricant where required.	Steam clean the components in place, check for proper alignment, using the match marks provided, reassemble and restart the unit.	Remove only the disc stack, separate all the discs, clean with steel wool and solvent, replace the disc stack ensuring it is located by use of the dowel pin shown.	Disassemble the entire unit, clean all components, replace any defective gaskets and use the proper lubricants where required.
160	After starting a diesel engine, which of the listed operating conditions should be checked FIRST?	Air box pressure	Lube oil pressure	Exhaust temperatures	Raw water pressure
161	Air in the fuel can cause _____.	high lube oil temperature	blue smoke	the engine to stop	piston seizure
162	Air in the fuel lines of a diesel engine can cause _____.	ignition failure	oxygen corrosion of the fuel lines	the pistons to seize	blue smoke
163	Air in the fuel lines to the fuel injection nozzles of a diesel engine will cause the engine to _____.	burn excessive amounts of lube oil	overheat without smoking	operate with reduced power or stop	run away without load

ID #	Question	Choice A	Choice B	Choice C	Choice D
164	Air in the fuel lines to the fuel injection nozzles of a diesel engine will result in _____.	lower compression pressures	overheating without smoking	failure to start	a run away without load
165	Air is normally bled from a diesel engine fuel system by _____.	blowing down the air tanks	loosening the compression nuts at the injectors	changing fuel filters	pumping down the day tanks
166	Air motion is induced in a four-stroke/cycle diesel engine cylinder to improve air fuel mixing, and is known as _____.	supercharging	scavenging	turbulence	swept volume charging
167	Air motors used for starting some auxiliary diesel engines are generally designed as _____.	vane type motors	plunger type motors	gear type motors	accumulator type motors
168	Air motors used for starting some auxiliary diesel engines are generally the type known as a/an _____.	vane motors	plunger motors	gear motors	accumulator motors
169	All alarms occurring on the control unit of the device shown in the illustration will _____.	not be indicated in numerical order	shut off the oil feed to the separator	cause the separator to automatically enter the sludge discharge cycle	be initiated by the water transducer or vibration switch
170	An acceptable means of tightening connecting rod and main bearing cap bolts is to measure the _____. I. torque applied to each nut and bolt assembly II. stretch of each bolt after tightening	I only	II only	both I and II	neither I nor II
171	An acceptable means of tightening connecting rod and main bearing cap bolts is to measure the _____. I. torque applied to each nut and bolt assembly II. stretch of each nut before and after tightening	I only	II only	both I and II	neither I nor II
172	An acceptable method for measuring the applied rotational force when tightening connecting rod and main bearing bolts, is to use a _____.	torque wrench	monkey wrench	pipe wrench	slugging wrench
173	An accumulator used in a hydraulic starting system is generally located between the _____.	pump and the compressor	storage tank and the pump	starting motor and the reserve tank	pump and the starting motor
174	An advantage of aluminum pistons, when compared to cast iron pistons is _____.	greater high temperature strength	better heat conductivity	greater weight per cubic inch	increased resistance to wear
175	An air starting motor for a diesel engine is protected from overspeeding by _____.	an electric solenoid interlock	a three-way automatic valve	an overrunning clutch	all of the above
176	An automated diesel engine should normally shut down due to _____.	low lube oil temperature	high ambient air temperature	low lube oil pressure	high exhaust system back pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
177	An auxiliary diesel engine may fail to start due to _____.	low exhaust back pressure	high lube oil temperature	insufficient cranking speed	excessive fuel atomization
178	An auxiliary diesel generator continues to run after you try to shut down. Your next course of action should be to _____.	block the flow of air supply to the engine	engage the jacking gear	secure the lube oil pump	decrease control air pressure
179	An auxiliary diesel generator continues to run after you try to shut down. Your next course of action should be to _____.	block the flow of air supply to the engine	engage the jacking gear	secure the lube oil pump	decrease control air pressure
180	An efficient seal between the cylinder block and cylinder heads on many auxiliary diesel engines is obtained with _____.	graphite packing	sealing compound	lubricating oil	copper gaskets
181	An efficient seal between the cylinder block and cylinder heads on many diesel engines is obtained with _____.	graphite packing	sealing compound	lubricating oil	gaskets
182	An eight cylinder, air started, two-stroke/cycle, direct reversing, marine diesel engine can be rotated from any crankshaft position by the air start system only if it has _____.	each upper cylinder head equipped with reversible air start valves	a minimum of five cylinders equipped with air start valves	at least four cylinders equipped with air start valves	the cylinders on opposite ends equipped with air start valves
183	An eight cylinder, four stroke/cycle, single acting diesel engine has a 650 mm bore and a 1400 mm stroke. What will be the developed indicated metric horsepower if the average mean effective pressure is 30 kg/cm ² at a speed of 100 RPM?	1689 kW	9,111 kW	12,388 kW	24,776 kW
184	An eight cylinder, four stroke/cycle, single acting diesel engine has a 650 mm bore and a 1400 mm stroke. What will be the indicated power developed if the average mean effective pressure is 30 kg/cm ² at a speed of 100 RPM?	1689 kW	9,111 kW	12,388 kW	24,776 kW
185	An electric heater built into some smaller diesel engines is used to _____.	raise lube oil viscosity for easier starting in cold weather	increase air inlet temperature	increase compression ratio	increase jacket water temperature for easier starting in cold weather
186	An emergency diesel generator cooling system is equipped with an automotive type thermostat. If the thermostat bellows loses its charge, the thermostat will _____.	open, and the coolant temperature will increase	open, and the coolant temperature will decrease	close, and the engine coolant temperature will increase	close, and the coolant temperature will decrease
187	An emergency diesel generator should automatically shut down in the event of _____.	dangerous overspeeding	a loss of lube oil pressure	the activation of the fixed CO ₂ system for the emergency generator space	all of the above
188	An examination of the piston compression rings of an efficiently operating diesel engine, should appear with a _____.	shiny face and bottom, black back and top	shiny face, black top, back and bottom	shiny face, bottom, back and top	black face, bottom, back and top

ID #	Question	Choice A	Choice B	Choice C	Choice D
189	An immediate repair is required if a leak occurs in the high pressure fuel piping between the injection pump and fuel nozzle because of the _____.	high cost of fuel	serious fire hazard	pollution hazard	poor combustion which will occur in that cylinder
190	An improperly assembled centrifuge, of the type shown in the illustration, may result in which of the following operating conditions to occur?	Excessive wear of fuel injection equipment.	Increased main bearing wear.	Severe injury to engine room personnel.	All of the above.
191	An incorrect spray pattern produced by a diesel engine fuel injection nozzle can be directly caused by _____.	incorrect fuel rack setting	overcooling of the nozzle	low firing pressure	excessive lube oil temperature
192	An increase in crankcase pressure generally indicates _____.	worn connecting rod bearings	worn engine cylinder liners	high cylinder operating temperature	stuck spring-loaded manhole covers
193	An increase in diesel engine crankcase pressure generally indicates excessive _____.	compression pressure	lube oil header pressure	scavenge air pressure	piston ring blow-by
194	An increase in the fuel injection pump discharge pressure can be caused by a/an _____.	leaking delivery valve	increase in engine load	plugged injector spray hole	increased plunger stroke
195	An increased pressure differential between the inlet and outlet of a strainer usually indicates the strainer is _____.	holed	fouled	clean	dry
196	An indication of an overloaded main propulsion diesel engine is _____.	white smoke in the exhaust	high exhaust gas pyrometer readings	sparks in the exhaust	blue smoke in the exhaust
197	An indicator card or pressure-volume diagram, shows graphically the _____.	compression ratio of the engine	volume of the engine	relationships between pressure and temperature during one stroke of the engine	relationships between pressure and volume during one cycle of the engine
198	An individual fuel injection pump is designed for variable beginning and constant ending of injection. For diesel engines operating a generator at constant speeds, the start of injection will _____.	advance as the load increases	retard as the load increases	remain unchanged regardless of load	always occur at top dead center
199	An oil-operated, direct-reversing mechanism on a large, low-speed, main propulsion diesel engine, can serve to _____.	bring the respective cam under the fuel pump roller	rotate or displace the camshaft according to engine design	bring the respective cam under the air distributor pilot valves	all of the above
200	An overspeed safety shutoff for a diesel engine is shown in the illustration. Which of the following movements will occur if the engine overspeeds?	Piece #8 will move up	Piece #8 will move down	Piece #10 will rotate counterclockwise	Piece #9 will move to the left
201	An overspeed trip serves to _____.	stop the engine by cutting off the cooling water supply	stop the engine by closing the air intake and/or fuel supply	slow the engine to idle speed	slow the engine to just below maximum speed

ID #	Question	Choice A	Choice B	Choice C	Choice D
202	An overspeed trip stops a diesel engine when the engine _____.	runs out of fuel	has low lubricating oil pressure	exceeds a set maximum speed	has high cooling water temperature
203	Antifreeze solutions containing ethylene glycol, should not be mixed with corrosion protection oils, as the resultant mixture _____.	is dangerously flammable	promotes scale buildup	may cause frothing	has a higher chloride content
204	As a general rule, what would be the recommended operating water jacket outlet temperature range from the engine for medium speed marine diesels set up with closed treated fresh water cooling systems and fitted with vented expansion tanks?	105° to 120°F	135° to 150°F	165° to 180°F	195° to 215°F
205	As engine RPM is increased from idle speed to full load speed, which of the conditions listed will decrease?	Compression ratio	Air/Fuel ratio	Compression pressure	Lube oil pressure
206	As illustrated, what is the maximum allowable clearance permitted between the bearing and the shaft along its vertical axis?	1.00 mm	0.30 mm	0.46 mm	0.80 mm
207	As shown in the illustration of the fuel injection pump, the component labeled "C" would be identified as the _____.	Sleeve	Control Rack	Barrel	Plunger
208	As shown in the illustration of the fuel injection pump, the component labeled "J" would be identified as the _____.	Delivery check valve assembly	Control rack and pinion	Plunger and barrel spring	Control rack and sleeve
209	As shown in the illustration of the fuel injection pump, the component labeled "N" would be identified as the _____.	Sleeve	Control Rack	Barrel	Plunger
210	As shown in the illustration of the fuel injection pump, the function of the area designated as "G" is to _____.	control the fuel injection rate	lubricate the plunger	provide a fuel supply to the pump	relieve excessive injector discharge pressure
211	As shown in the illustration of the fuel injection pump, the function of the area designated as "L" is to _____.	control the fuel injection rate	allow excess fuel oil to return to the fuel oil system	provide for plunger lubrication	relieve excessive injector discharge pressure
212	As shown in the illustration of the fuel injection pump, the section designated as "M" is referred to as the _____.	plunger sleeve	plunger helix	plunger relief shoulder	plunger control tab
213	As shown in the illustration, engine piston cooling oil is supplied to the pistons by a/an _____.	oil spray	oil wick	oil control rings	drilled passage through the camshaft
214	As shown in the illustration, the alarm indicated by 'emergency stopping or vibrations' may be caused by _____.	the rotating action of the centrifugal switch	new foundation bolt assemblies and dampeners	a failure to reset the emergency stop button	the emulsification of water and fuel within the parting chamber
215	As shown in the illustration, the viscosimeter would be used to directly control the output of which of the following components?	Outflow from HFO day tank.	Final heaters.	Injector pumps.	HFO purifiers.

ID #	Question	Choice A	Choice B	Choice C	Choice D
216	As shown in the illustration, which of the following conditions may be the cause for the 'low pressure in oil outlet' alarm to be illuminated?	Vibration switch activated.	Faulty water solenoid valve.	Throughput too high.	All of the above are correct.
217	As shown in the illustration, which of the following conditions would be responsible for a 'low pressure in oil outlet' alarm to be indicated?	Throughput too low	Separating temperature too low	Controller set point changed	Emergency stop button not reset
218	As shown in the illustration, which of the following conditions would be responsible for a 'low pressure in oil outlet' alarm indication?	Steam supply pressure low.	Separating temperature too high.	Throughput too high.	Regulating valve V4 is closed.
219	As shown in the illustration, which of the following conditions would cause the 'low pressure in oil outlet' alarm to be illuminated?	Throughput too low.	Separating temperature too high.	Line to pressure switch PS2 obstructed.	All of the above are correct.
220	As soon as a diesel engine has started, which of the listed engine operating parameters should be checked FIRST?	Exhaust temperatures	Raw water pressure	Lube oil pressure	Air box pressure
221	At bottom dead center, the centerline of the connecting rod usually coincides with the _____.	angularity of the piston motion	inertia moment from the piston	centerline of the cylinder	centerline of the king pin
222	At dead center, the centerline of the connecting rod usually coincides with the _____.	angularity of the piston motion	inertia moment from the piston	centerline of the cylinder	centerline of the king pin
223	At the end of a normal sludge ejection cycle, the bowl of the centrifuge, shown in the illustration, will be closed only when the valve(s) _____.	'V5' is closed, with 'V10,' 'V15,' and 'V16' are open	'V5,' 'V10,' 'V15,' and 'V16' are closed	'V10' and 'V16' are open, with 'V15' closed	'V5,' 'V10,' 'V15,' and 'V16' are open
224	At top dead center, the centerline of the connecting rod usually coincides with the _____.	angularity of the piston motion	inertia moment from the piston	centerline of the cylinder	centerline of the king pin
225	Auxiliary diesel engine electric starting motors use _____.	alternating current transformers	400 cycle per second motor-generator power	low amperage, high voltage AC power	battery power direct current
226	Barrel face, taper face, grooved, and chrome plated are all types of diesel engine _____.	pistons	piston rings	piston skirts	cylinder liners
227	Bearing clearances in small high-speed diesel engines should be measured using _____.	gage blocks	plasti-gage	feeler gages	round solder wire
228	Bearing clearances in small high-speed diesel engines should be measured with _____.	gage blocks	plasti-gage	feeler gage	round solder wire
229	Bearing 'crush' as applied to diesel engine main bearings, will result in _____.	positive seating of the bearings in their housings	above normal operating temperatures	damage to the journals	damage to the bearings

ID #	Question	Choice A	Choice B	Choice C	Choice D
230	Bearing wear on a split sleeve type bearing is normally measured with a _____.	ball anvil micrometer	pair of outside calipers and a dial indicator	pair of inside calipers	depth micrometer
231	Because of the close tolerances used in diesel engine fuel oil pumps, a worn plunger requires _____.	grinding the spare plunger to the barrel	replacing the plunger and the barrel	highly polishing both the plunger and barrel	replacing plunger only
232	Before any auxiliary diesel engine hydraulic starting system is opened for servicing or repair, you must _____.	place all control levers in the 'HOLD' position	ensure that the hydraulic fluid reservoir is full	block all hydraulic hoses using high pressure covers	bleed off all hydraulic pressure from the system
233	Before being shut down, a diesel engine should idle a few minutes in order to _____.	prevent governor surging at shutdown	make sure the fuel nozzles are flushed clean	prevent pressure buildup in the fuel lines	prevent damage from localized overheating
234	Before installing rings on a diesel engine piston, you should check the ring _____.	diametrical tension	gap clearance	radial thickness	outside diameter
235	Before shutting off the fuel supply to stop a medium or high-speed diesel engine, why is it necessary to allow the engine to idle for a few minutes?	To prevent internal damage from local overheating.	To ensure the fuel nozzles are flushed clean.	To clear the smoke stack.	To let the waste heat boiler reduce it's rate of steam generation.
236	Before shutting off the fuel supply to stop and secure a diesel engine, why is it necessary to allow the engine to idle for a few minutes?	To prevent internal damage from local overheating.	To ensure the fuel nozzles are flushed clean.	To clear the smoke stack.	To let the waste heat boiler reduce it's rate of steam generation.
237	Before starting a diesel engine that has an engine driven lube oil pump, the engineer should _____.	open the bypass line	cut in the lube oil cooler	pressurize the lube oil system with the prelube pump	top off the expansion tank
238	Before starting a diesel engine, you should always _____.	check the pyrometer readings	check the crankcase oil level	change the fuel oil strainers	clean the air filter
239	Before starting the device shown in the illustration, the operator should always check the _____.	bowl spindle nut	braking mechanism	pump drive coupling	auto restart switches
240	Besides the use of piston cooling fins to assist in cooling, they also provide extra strength for the piston _____.	skirt	crown	wrist pin	oil rings
241	Between the periods of injection and ignition of the fuel, a diesel engine crankshaft rotates through the _____.	detonation period	firing period	ignition delay period	ignition advance period
242	Black areas on the sealing surfaces of piston rings indicate _____.	lube oil pumping	rotating rings	gas pressure behind the ring	passage of hot gases
243	Brake specific fuel consumption is given in units of _____.	DEMA	lbs/bhp-hr	BTU/lb	PLAN
244	Burning fuel with a high sulfur content in a diesel engine will _____.	increase thermal efficiency	cause clogging of the fuel system	increase the ability of the engine to start in cold weather	produce corrosion in the cylinder and exhaust system at low loads

ID #	Question	Choice A	Choice B	Choice C	Choice D
245	Cams used to activate mechanically operated air starting valves on four-stroke/cycle diesel engines should have which of the valve lift profiles listed?	Abrupt lift with a short open period, and abrupt valve seating.	Gradual lift with a short fully open period, and accelerated valve closing.	Abrupt lift giving full valve opening for a long period, with gradual valve seating.	Gradual lift giving full valve opening for a long period, with gradual valve seating.
246	Camshafts are usually driven by timing gears or _____.	push rods	chain drives	rocker arms	flywheels
247	Carbon deposit build up on the injection nozzle orifice is least likely to occur when using which type of fuel injector nozzle?	Hole	Multi-hole	Pintle	Multi-pintle
248	Cast iron pistons used in large propulsion diesel engines are constructed with _____.	no taper for the entire length	the skirt being tapered and smaller than the crown	the skirt being tapered and larger than the crown	the crown being tapered and smaller than the skirt
249	Cavitation erosion in the cooling water system of a diesel engine usually occurs at the pump impeller, and on the waterside of the _____.	fuel nozzle holders	exhaust valve guides	engine cylinder liners	engine exhaust manifold
250	Clogged diesel engine fuel oil filters can cause _____,	loss of power	misfiring	low fuel oil pressure	All of the above
251	Cold clearances between the skirt of an aluminum piston and the cylinder liner is about _____.	twice as large as with a cast iron piston	the same size as with a cast iron piston	half as large as with a cast iron piston	the same size as the crown of an aluminum piston
252	Cold weather starting of a diesel engine is more difficult than warm weather starting due to _____.	use of low viscosity oil in cold weather	increased moisture content of inlet air in cold weather	increased drag of pistons and bearings due to increased oil viscosity	higher compression pressures reached due to smaller clearances existing in the engine during cold weather
253	Combustion gas venting through the expansion tank can be caused by a _____.	leaking oil cooler	cracked cylinder head	leaking exhaust valve	worn piston ring
254	Combustion gases formed in the cylinder of a diesel engine are prevented from blowing past the piston by _____.	cylinder valves	compression rings	piston skirts	oil rings
255	Combustion knock can occur in the cylinders of a diesel engine under any condition permitting _____.	a shortened ignition delay period	a lean fuel/air mixture	excess fuel in the combustion chamber	rapid vaporization of injected fuel droplets
256	Combustion knock occurring in a diesel engine can be caused by _____.	low coolant temperature	insufficient fuel	high ambient temperature	carbon buildup on the nozzle holder
257	Combustion knock occurring in a diesel engine can be caused by _____.	excessive fuel penetration	prolonged injection lag	reduced ignition lag	prolonged ignition lag
258	Combustion knock will most likely occur as a result of using a fuel with _____.	low ignition quality	a high volatility	low ignition delay	a high cetane number
259	Compared to four-stroke/cycle engines, two-stroke/cycle diesel engines have the disadvantage of _____.	less even torque	higher cylinder head temperatures	fewer power strokes per revolution	greater weight/size requirements

ID #	Question	Choice A	Choice B	Choice C	Choice D
260	Compared to other fuel injection systems, unit injectors operate with virtually no _____.	injection lag	ignition delay	moving parts	requirement for timing adjustments
261	Component "F" shown in the illustration is called the _____.	camshaft adjusting screw	permadjust assembly	injector control shaft	cylinder head locking device
262	Component "U" of the diesel engine shown in the illustration is called the _____.	crankshaft counterweight	frequency tuner	main bearing support assembly	frame stiffener
263	Concerning the diesel engine shown in the illustration, which of the following represents the number of crank angle degrees of rotation existing between each firing? (See illustration MO-0038.)	60°	120°	180°	240°
264	Connecting rods in a diesel engine are used to connect the _____.	engine to the bed	rocker arm to the camshaft	crankshaft to the gear train	piston to the crankshaft
265	Coolant can be lost from a diesel engine jacket cooling water system by leakage from _____.	cylinder head cracks	pipng joints	pump seals leaking	all of the above
266	Cooling water pumps driven by direct reversing diesel engines are usually of the straight impeller vane type pump with a concentric housing to _____.	provide equal water flow capacity when the engine is running either ahead or astern	provide the greatest pump efficiency when running ahead	prevent pump clogging from marine growth	prevent cavitation at the pump outlet
267	Cooling water pumps driven by direct reversing diesel engines are usually of the straight impeller vane type pump with a concentric housing to _____.	facilitate bi-directional operation	provide the greatest pump efficiency	prevent pump clogging from marine growth	prevent cavitation at the pump outlet
268	Cooling water pumps driven by direct-reversing diesel engines are usually _____.	curved impeller vane with tangential outlet	curved impeller vane with concentric outlet	straight impeller vane with concentric housing	straight impeller vane with tangential housing
269	Corrosion inhibitors and/or soluble oils are added to diesel engine cooling systems to _____.	maintain low pH in the cooling water	reduce the cooling water temperature	increase cooling water hardness	form a protective film on metal surfaces
270	Cracking of a diesel piston crown can result from _____.	early injection timing	the underside of the piston crown being excessively dirty, lowering the rate of heat transfer	faulty oil nozzle spray	all of the above
271	Crank web deflection readings will give a positive indication of _____.	worn main bearing journals	crankpin misalignment	slack thrust bearings	bearing shells shim dimensions
272	Crankcase explosions in propulsion diesel engines result from _____.	the splashing of lubrication oil by the crankshaft	the dilution of crankcase oil with particles of combustion	broken fuel lines spraying oil on the crankcase	the ignition of unburned fuel and air in the crankcase
273	Critical speed in diesel engines occurs when engine torque pulsations become _____.	opposed to the crankshaft rocking couple	resonant with the crankshaft natural frequency	critical fore and aft crankshaft vibrations	horizontal whipping motions of the crankshaft

ID #	Question	Choice A	Choice B	Choice C	Choice D
274	Critical speeds occurring within the operating speed range of a main propulsion diesel engine may be changed, or have their damaging effects reduced by a/an _____.	engine support vibration isolator	detuner or viscous fluid damper	lightened crankshaft flywheel	spherically seated crankshaft bearing
275	Cylinder lubrication oil for low speed main propulsion diesel engines is admitted to each cylinder during _____.	the power stroke	the compression stroke	low load operation only	periods of standby
276	Device "E" shown in the illustration is known as the _____.	fuel manifold	lube oil manifold	overspeed trip shaft	extrusion tube assembly
277	Device '27' shown in the illustration is used to _____.	regulate maximum vacuum during normal operation	purge the unit of non-condensable gases	relieve excess pressure	add de-scaling chemicals as needed
278	Diesel engine air start system check valves are opened by _____.	an air start cam	cylinder compression pressure	starting air pressure	valve springs
279	Diesel engine air start valve timing is controlled by _____.	engine operating speed	an air manifold	a hydraulic distributor	individual cams and valve gear
280	Diesel engine 'blow-by' into the crankcase is caused by excessive ring _____.	back clearance	side clearance	gap clearance	taper clearance
281	Diesel engine blow-by is the leakage of combustion gases past the _____.	oil rings only	compression and scraper rings	cylinder liner sealings	cylinder liner ring grooves
282	Diesel engine crankshaft deflection readings are generally taken at four crank positions. Good engineering practice requires the deflection gage or indicator to be _____.	placed as near the crankpin axis as possible	removed each time the crankshaft is repositioned	left in place for all four readings	reset to zero for all four readings
283	Diesel engine cylinder head test cocks are used to _____.	check cylinder lubrication	connect the pressure indicator	pressure test cylinder heads	connect the exhaust gas pyrometers
284	Diesel engine cylinder head test cocks are used to _____.	check cylinder lubrication prior to starting engine	connect exhaust gas analyzers to determine engine efficiency	pressure test cylinder heads to check for leaks	remove moisture accumulations from cylinders prior to starting
285	Diesel engine electric starting motors generally require heavier duty motors and operate at higher voltages than comparable starting motors for gasoline engines due to _____.	higher speed required	flywheel effect	lower starting temperatures	higher compression pressures
286	Diesel engine fuel oil contamination often results in _____.	governor malfunctions	fuel injection system malfunctions	high cylinder lube oil temperatures	low intake temperatures
287	Diesel engine injection lag is caused by _____.	compressibility of the fuel	high fuel oil supply flow	low cylinder firing pressure	excessive air turbulence
288	Diesel engine injection lag is caused by _____.	compressibility of the fuel	high fuel oil supply flow	low cetane value of the fuel	excessive air turbulence
289	Diesel engine injection lag is caused by _____.	compressibility of the fuel	high fuel oil supply flow	low injector popping pressure	excessive air turbulence

ID #	Question	Choice A	Choice B	Choice C	Choice D
290	Diesel engine injection lag is caused by _____.	compressibility of the fuel	high fuel oil temperature	low injector popping pressure	excessive air turbulence
291	Diesel engine jacket water is used in the fresh water distillation process as the _____.	coolant for the distillate	coolant for the brine cooler	means of heating the feed water	primary means of producing a vacuum within the distiller
292	Diesel engine lube oil can become contaminated as a result of _____.	the water produced during combustion	the sulfur in the fuel	unburned fuel oil	all of the above
293	Diesel engine lube oil diluted with diesel fuel oil is indicated by _____.	decreased viscosity	decreased pour point	increased flash point	increased viscosity
294	Diesel engine main and connecting rod precision bearings are made in halves. Each half exceeds one-half the bearing circumference by a small amount. The small amount is termed _____.	clearance	crush	pitch	thrust
295	Diesel engine piston ring blow-by is usually caused by excessive ring clearance at the ring _____.	back	side	gap	bottom
296	Diesel engine piston ring ends can be machined in different shapes. The step-cut ring end offers the advantage of _____.	having the least amount of ring expansion	best control of ring tension	a decreased break-in period	a decreased possibility of ring seizure
297	Diesel engine piston ring gaps can be straight or angle cut. In comparison, the angle cut ring _____.	allows piston ring expansion	controls piston ring tension	increases ring wearing quality	decreases combustion gas leakage
298	Diesel engine piston seizure can be caused by _____.	poor cooling of cylinder walls	improper cooling of the piston	insufficient piston lubrication	all of the above
299	Diesel engine starting difficulties due to cold intake air temperatures, can be overcome by using a/an _____.	heavier grade of fuel oil	higher viscosity lube oil	compression expansion device	jacket water heater
300	Diesel engine valve springs function to _____.	hold the valves open	keep the valves off their seats until the exhaust stroke is completed	close the valves	open inlet valves when the air injection cycle begins
301	Diesel engines are classified as reciprocating internal combustion engines because they _____.	use energy from fuel burned outside their cylinders	burn fuel in a combustion chamber that moves back and forth	burn fuel in a closed chamber which imparts linear motion to pistons	use a continuous combustion process to impart rotary motion to the pistons
302	Diesel fuel oil having a low cetane rating can result in _____.	improved cold weather starting	smoother engine operation	combustion knock	reduce ignition lag
303	Differential needle valves used in fuel injectors are directly closed by _____.	cam action	spring force	fuel oil pressure	firing pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
304	Differential type needle valves in diesel engine fuel oil nozzles, are closed directly by _____. I. spring pressure II. fuel oil pressure	I only	II only	either I or II	neither I nor II
305	Directional intake ports in diesel engines are used to _____.	reduce air charge turbulence	induce air swirl	deflect hot combustion gas away from the valves	oppose the effects of piston induced squish
306	Dirt in a fuel oil system of a diesel engine can cause _____.	damage to strainers	overspeeding of the engine	excessive cooling of the engine	injector damage
307	Dirt lodged on the nozzle valve seat of a fuel injection nozzle will cause _____.	erosion and cratering of the nozzle orifices	fuel leakage into the nozzle drain line	fuel leakage before and after injection	insufficient fuel delivery through that nozzle
308	Distortion of the spray pattern of a nozzle or injector may be indicated by a/an _____.	high firing pressure	overload of that particular cylinder	smoky exhaust	cooling water temperature rise
309	Due to excessive water in the fuel, a diesel engine fails to start. Before the engine can be started, the water must be removed from the _____.	fuel pumps	cylinders	fuel strainers	all of the above
310	During combustion, the sealing surfaces of a diesel engine piston ring are considered to be the ring area in contact with the cylinder wall, in addition to the ring area in contact with the ring groove _____.	bottom	back	top	side
311	During engine warm-up, the expansion of cylinder head valve stems due to the buildup of engine heat, is compensated for by the _____.	valve spring tension	hydraulic governor	valve lash clearance	jacket water cooling system
312	During maneuvering operations for a direct reversing large, low-speed, main propulsion diesel engine, which of the following actions is used to stop the shaft from turning prior to changing the engine rotation for a vessel with moderate headway?	Flywheel inertia	Admission of reversing start air	The way of the vessel	Securing cylinder lubricators
313	During normal operation, the liquid retained in space "J" of the device shown in the illustration is _____.	directly forcing the sliding piston upward to keep the bowl closed	maintaining the bowl oil-water seal interface	lubricating the shaft bearings	maintaining oil pump pressure
314	During operation which device listed removes air and non-condensable gases from the unit shown in the illustration?	"22"	"27"	"25"	"21"

ID #	Question	Choice A	Choice B	Choice C	Choice D
315	During the compression stroke in a four cycle engine, assume that the piston can only travel seven-eighths of the total distance between BDC to the underside of the cylinder head. Which of the following ratios will be the compression ratio for this engine?	6 to 1	7 to 1	7.5 to 1	8 to 1
316	During the compression stroke in a four-stroke/cycle, internal combustion engine, assume that the piston can only travel seven-eighths of the total distance between BDC to the underside of the cylinder head. Which of the following ratios will be the compression ratio for this engine?	6 to 1	7 to 1	7.5 to 1	8 to 1
317	During the diesel engine power stroke, the side thrust developed on the piston is a result of the angle _____.	formed by the connecting rod and cylinder center line	of the bevel on the piston oil control rings	formed by the crank arm and crank pin	formed by the crank pin and flywheel
318	During the fuel injection period, fuel pressure must exceed cylinder gas pressure to _____.	ensure penetration and distribution of the fuel in the combustion chamber	ensure the needle valve is flushed clean during each injection	allow combustion gas blowback into the open needle valve	prevent reflected pressure waves when the needle valve closes
319	During the normal operation of the centrifuge shown in the illustration, the operating liquid solenoid and bypass valves for the cleaning cycle should be in which position?	The solenoid valve is closed and the bypass valve is open.	The solenoid valve is closed and the bypass valve is closed.	The solenoid valve is open and the bypass valve is closed.	The solenoid valve is open and the bypass valve is open.
320	During the normal operation of the fuel oil centrifuge shown in the illustration, the flow from the port labeled "B" should be _____.	clean oil discharging to the day tank	a consistent, heavy flow of separated water to the bilges	an intermittent flow of water to the sludge tank	thick sludge separated from the clean oil
321	During the operation of the fuel oil centrifuge shown in the illustration, it is found that the 'clean' oil discharge contains water. The most probable cause is the _____.	gravity disk is too large	throughput is too high	separating temperature is currently 95°C (203°F)	clean oil outlet valve has not been fully opened
322	During the operation of the fuel oil centrifuge shown in the illustration, liquid is passing continuously through the sludge outlet, or the bowl is unintentionally 'shooting'. The probable cause is the _____.	gravity disk inside diameter is too large	gravity disk seal ring is defective	operating slide seal ring is defective	sliding bowl bottom seal ring is defective
323	During the power stroke of a four-stroke/cycle diesel engine, most of the side thrust of a trunk-type piston is absorbed by the _____.	piston skirt	pinion	crosshead	compression rings
324	During the power stroke, the side thrust of a trunk type piston is a result of the angle _____.	formed by the connecting rod and the cylinder center line	formed by the piston in relation to the piston pin	between the crankarm and crankpin	between the master and link connecting rods

ID #	Question	Choice A	Choice B	Choice C	Choice D
325	During the starting of a diesel engine, compression gases are prevented from backing into the air starting system, shown in the illustration, by the _____.	air starting control valve	individual distribution valves	cylinder air starting check valves	high pressure in the starting air manifold
326	During which of the listed piston strokes of a four-stroke/cycle diesel engine, is the piston moving downward?	Intake stroke	Compression stroke	Exhaust stroke	Pumping stroke
327	Each diesel engine cylinder shown in the illustration is equipped with a/an _____.	unit injector	individual jerk pump and injector	fuel valve supplied from the common rail	fuel valve, spray valve, and flame plate
328	Early fuel injection in a diesel engine cylinder will generally result in _____.	an increase in firing pressure	a decrease in firing pressure	an increase in exhaust gas temperature	an increase in cylinder mean effective pressure
329	Early fuel injection timing is indicated by the cylinder pressure being _____.	above normal with a below normal exhaust temperature	above normal with a normal exhaust temperature	below normal with a normal exhaust temperature	below normal with an above normal exhaust temperature
330	Early injection timing is indicated by _____.	high exhaust temperature and low firing pressure	high exhaust temperature and high firing pressure	low exhaust temperature and low firing pressure	low exhaust temperature and high firing pressure
331	Electric starting motors for diesel engines require high current for operation and _____.	require a generator as a source of power	will carry a 100% overload for a brief period	require a current/voltage regulator for proper operation	will overheat if operated continuously over 10 seconds
332	Electric starting motors for diesel engines require high current for their operation. As a result of this, they _____.	have a generator as a source of power	need a current-voltage regulator for proper operation	are designed as shunt type DC motors	will carry a 100% overload for a brief period
333	Electric starting motors for small auxiliary diesel engines require high current for operation and _____.	require a generator as a source of power	step-down voltage transformers	require a current/voltage regulator for proper operation	will carry a 100% overload for a brief period
334	Electrically operated safety devices on auxiliary diesel engines function to stop the engine by _____.	increasing the volume of intake air	shutting off the fuel supply	increasing the engine back pressure	overspeeding the engine
335	Engine coolant accumulating in the diesel engine lubricating oil can result from a _____.	low oil pressure	high coolant pressure	leaking fuel injector	cracked cylinder head or liner
336	Engine displacement is equal to piston _____.	area times the piston stroke	area times the piston stroke times the number of cylinders	volume times the piston stroke	volume times the piston stroke times the number of cylinders
337	Engine displacement is equal to the cylinder _____.	area times the stroke	area times the stroke, times the number of cylinders	volume times the stroke	volume times the stroke, times the number of cylinders

ID #	Question	Choice A	Choice B	Choice C	Choice D
338	Engine protection by means of an alarm or shutdown control can be obtained with devices that are sensitive to _____.	temperature	pressure	engine speed	all of the above
339	Ethylene glycol, when used as a coolant in a closed cooling system for a diesel engine, is more advantageous than untreated raw water because it _____.	provides a constant pH below 7	provides better vapor-phase cooling	has a higher freezing point and a lower boiling point	has a lower freezing point and higher boiling point
340	Excess brine accumulated in the distiller, shown in the illustration, is removed during normal operation by _____.	the hydrokineter labeled "21"	opening the drain valve located to the left of orifice "19"	the continuous action of ejector "22"	orifice "19" regulating the amount of feed water entering the distiller, thereby preventing excess brine accumulation
341	Excessive lube oil consumption can result from worn or broken _____.	piston rings	valve guides	valve seals	all of the above
342	Excessive lube oil consumption in a diesel engine can be caused by _____.	late combustion	plugged oil wiper rings	low lube oil temperature	low lube oil pressure
343	Excessive lubricating oil consumption in a running diesel engine can be caused by _____.	clogged lube oil piping	excessive valve-guide clearance	high lube oil viscosity	low lube oil temperature
344	Excessive piston ring wear in a diesel engine will cause _____.	high lube oil viscosity	abnormal lube oil consumption	low lube oil temperatures	high firing pressures
345	Excessive piston ring wear in a diesel engine will cause _____.	high lube oil viscosity	increased lube oil consumption	low lube oil temperatures	high firing pressures
346	Excessive side clearance between a piston ring and its groove will cause the ring to _____.	expand excessively under operating temperatures	scuff the cylinder liner excessively	hammer the piston land above the ring	hammer the piston land below the ring
347	Excluding line losses, how many distinct pressure drops will occur as sea water flows through all the heat exchangers in the cooling system shown in the illustration?	3	4	5	6
348	Exhaust valve grooving and corrosion is caused by certain components of residual fuel oil. These components are sodium, sulfur, and _____.	vanadium	carbon	copper	ash
349	Failure to ensure proper venting of the cooling system of a diesel engine can result in _____.	excessive air charge density	priming in the expansion tank	failure of raw water pump shaft seals	local overheating and/or internal corrosion
350	Failure to establish sufficient vacuum when starting up the unit shown in the illustration may be the result of _____.	improper operation of the brine pump	improper operation of the distillate pump	neglecting to close the vent shell	neglecting to latch the dump valve
351	Failure to open the diesel engine test cocks after a long period of shutdown, prior to starting may result in _____.	an air bound fuel system	damage to cylinder heads and pistons	excessive fuel injection	excessive air valve lift

ID #	Question	Choice A	Choice B	Choice C	Choice D
352	Failure to remove the carbon ridge at the top of the cylinder when removing a piston may result in _____.	damaged upper piston rings and/or ring lands	scored piston walls	damaged cylinder liners	deformed piston skirts
353	Failure to remove the carbon ridge from the top of the cylinder when replacing the piston rings, will result in _____.	damaged upper piston rings and/or ring lands	scored piston walls	damaged cylinder liners	deformed piston skirts
354	Faulty operation of diesel engine fuel injection nozzles can be a direct cause of _____.	excessive fuel nozzle holder cooling	sediment in the fuel supply	distortion of the fuel spray pattern	improper atomization of the fuel
355	Faulty operation of diesel engine fuel injection nozzles can be directly caused by _____.	water in the fuel oil supply	excessive fuel nozzle holder cooling	a distorted fuel spray pattern	leakage past the plunger into the oil drain
356	Figure "D" shown in the illustration is a/an _____.	scavenging port	air start valve	multi-stage fuel injector	precombustion chamber
357	Fluid type starting motors used for starting auxiliary diesel engines may either be of the piston type or the _____.	helical screw type	vane type	impeller type	accumulator type
358	Following an overhaul of a crosshead type diesel engine, the engine is jacked over with the turning gear as part of the pre-start procedure. Which of the listed pre-start procedures should be carried out?	Ensure proper cylinder lube oil flow.	Open all air space drain cocks.	Open all indicator valves.	All of the above.
359	For a continuous operation diesel engine, a duplex filter unit would be the best arrangement because _____.	changing filter elements would not interrupt engine operation	filtering occurs twice in each pass of oil through the system	clogging will not occur	dropping pressure is half of that through a single filter unit
360	For a diesel engine, approximately how long can an electric starter motor be operated continuously before damage may begin to occur due to overheating?	Not more than 30 seconds	Not more than 60 seconds	Not more than 90 seconds	Overheating the motor cannot occur.
361	For a given fuel, a change in the compression ratio will affect the ignition lag by which of the listed means?	An increase in compression ratio will increase the ignition lag.	An increase in compression ratio will decrease the ignition lag.	A decrease in compression ratio will decrease the ignition lag.	A decrease in ignition lag will increase the compression ratio.
362	For a given size engine, the two-stroke/cycle diesel engine will deliver more power than a four-stroke/cycle diesel engine because _____.	it has a longer power stroke	more air gets into the cylinder each stroke	it develops twice as many power strokes at the same speed	higher combustion pressure is developed
363	For any piston ring to operate smoothly without scuffing, the ring must be _____.	of a material harder than the cylinder liner	properly lubricated	prevented from compressing	prevented from rotating during engine operation
364	For diesel engine piston cooling, lubricating oil can be supplied to the pistons by a/an _____.	oil spray	oil wick	oil control rings	drilled passage through the camshaft

ID #	Question	Choice A	Choice B	Choice C	Choice D
365	For equal amounts of fuel injected, what change in condition will have the greatest effect on the mean effective pressure in the cylinder of a diesel engine?	TBN of the lubricating oil	Temperature of the lube oil	Completeness in the mixing of the fuel	Temperature of the cooling (sea) water
366	For most auxiliary diesel generator engines, the overspeed trip device will stop the engine by _____.	moving the governor control to minimum fuel stop	shutting off the lubricating oil supply	tripping the governor emergency stop lever	shutting off the fuel and/or air supply
367	For optimum results, centrifugal purification of heavy fuel oil should be accomplished with the fuel at the lowest practicable _____.	throughput	additive percent	cetane number	TBN number
368	For the operation of the illustrated device, what fluid flow would be expected at the connection labeled "I"?	The salt water feed.	The distillate discharge.	The sea water used for condensing the water vapor.	Main engine jacket water.
369	Fork and blade type diesel engine connecting rods are shown in the illustration. Which letter combinations represent these components?	"R" and "10"	"M" and "13"	"P" and "10"	"T" and "10"
370	Friction, engine wear, and oil consumption in a diesel engine can be directly attributed to the _____.	TBN of the oil	pour point of the oil	flash point of the oil	viscosity of the oil
371	From the chart shown in the illustration, if a right hand rotation engine had the #9 piston on top dead center, the #8 piston would be on the _____.	exhaust stroke	compression stroke	intake stroke	power stroke
372	From the data given in the illustration, which pair of pistons listed are mounted on the same crank throw?	1L/8R	3R/1L	5R/7L	3L/3R
373	From the engine data given in the illustration, what is the swept volume of any one engine cylinder?	182 cubic inches	2800 cubic inches	4766 cubic inches	5712 cubic inches
374	From the engine data given, after cylinder #1L fires, how many degrees of crankshaft rotation must take place before #4L cylinder fires?	22.5°	45°	67.5°	90°
375	From the engine data shown in the illustration, what would be the average piston speed if the engine were turning 400 RPM?	1300 ft/min	1400 ft/min	1450 ft/min	1500 ft/min
376	From the graph shown in the illustration, determine the size of the regulating ring required for the proper operation of the fuel oil centrifuge if the fuel oil specific gravity is 0.9 kg/dm ³ at 68°F, and the separating temperature is 158°F.	86 mm	104 mm	110 mm	117 mm
377	From the graph shown in the illustration, if the separating temperature required is to be 167°F, and the specific gravity of the oil is .98 kg/dm ³ at 59°F, what size regulating ring is required?	86 mm	89 mm	92 mm	95 mm

ID #	Question	Choice A	Choice B	Choice C	Choice D
378	Fuel combustion in a diesel engine cylinder should begin just before the piston reaches top dead center and should _____.	end when fuel injection has been completed	end at bottom dead center	continue through the after-burning period	be completed exactly at top dead center
379	Fuel delivery to the cylinder is terminated when the _____.	helix on component "H" uncovers the spill port	cam follower is located on the base circle	spill valve opens	delivery check valve opens
380	Fuel delivery to the cylinder is terminated when the _____.	helix on component "H" uncovers the spill port	cam follower is located on the base circle	spill valve controlled by "I" opens	delivery check valve opens
381	Fuel droplets injected into a diesel engine cylinder must have adequate penetration to _____.	prolong the ignition delay period	ensure the beginning of fuel injection	thoroughly utilize the air charge	allow controlled fuel combustion
382	Fuel injection pumps using the port and helix metering principle requires the use of a _____.	crosshatched design	lapped plunger and barrel	variable stroke	variable cam lift
383	Fuel injection systems are designed to primarily meter fuel, atomize fuel, and _____.	create turbulence in the combustion chamber	aid in completing cylinder scavenging	inject fuel at the proper time	minimize fuel penetration into the cylinder
384	Fuel injector nozzles are usually of the multi-orifice type with the number and placement of the holes arranged according to the _____.	type of piston rings	pressure of the fuel system	size of the pump plunger spring	design of the combustion chamber
385	Fuel injectors used in heavy fuel oil systems are usually provided with cooling to reduce _____.	cold corrosion of the nozzles	fuel viscosity for better atomization	carbon accumulation on the nozzles	fuel detonation in the cylinders
386	Fuel is admitted to a diesel engine cylinder through the _____.	intake valves	carburetor	exhaust ports	injector nozzles
387	Fuel is ignited in a diesel engine cylinder by _____.	a spark plug	injectors	the heat of compression	increasing jacket water temperatures
388	Fuel oil contamination of an auxiliary diesel engine lube oil can result in _____.	an increased flash point	higher lube oil pressures	an increased viscosity	lower lube oil pressures
389	Fuel oil day tanks for diesel engines must be checked and cleaned at regular intervals in order to remove _____.	sludge	water	micro-organism growth	all of the above
390	Fuel oil discharged into the diesel engine cylinder is atomized at the _____.	turbocharger	injector nozzle tip	carburetor	fuel oil pump
391	Fuel oil having a low cetane rating could result in _____.	improved cold weather starting	excessive fuel oil consumption	reduced ignition lag	smoother engine operation
392	Fuel oil injected into the cylinder of a diesel engine just after the piston passes top dead center, will _____.	increase engine power	increase engine load	decrease engine power	improve fuel economy
393	Fuel oil is regularly transferred to the day tank in order to _____.	allow impurities to settle out of the fuel	allow for decanting of water	make fuel available for immediate use	all of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
394	Fuel oil penetration into the cylinder of a diesel engine is _____.	dependent on fuel injection cut-off	reduced by finer atomization	increased by finer atomization	nonexistent in the precombustion chamber system
395	Fuel oil penetration into the cylinder of a diesel engine is _____.	dependent on air turbulence	reduced by finer atomization	increased by finer atomization	nonexistent in the precombustion chamber system
396	Fuel oil strainers should be made of _____. I. copper II. Brass	I only	II only	either I or II	neither I nor II
397	Fuel supplied by each unit injector on a two-stroke/cycle single acting diesel engine is directed into each cylinder at a very high pressure through the _____.	high pressure fuel line	spill deflector	check valve	spray tip of the injector
398	Fuels as produced in a refinery are generally sterile, however, contamination can occur as fuels are _____.	stored at the refinery	stored on the vessel	transported to the distribution sites	All of the above are correct.
399	Generally, where should you expect to find the greatest amount of wear on a cylinder liner?	Adjacent to the piston skirt when the crank is on TDC.	Along the lower part of the liner wall opposite the oil control ring.	Opposite the top ring shortly after piston travel has ended the compression stroke.	Opposite the oil control ring when the crank is on bottom dead center.
400	Heat damage to fuel injection nozzles can be prevented by avoiding _____.	excessive fuel oil temperature	long periods of engine overload	metallic contact between nozzles and cylinder heads	hard carbon deposit and varnish on the nozzles
401	Heat damage to fuel injection nozzles on small high-speed diesel engines, can be prevented by _____.	employing fuel oil as a cooling medium	preventing hard carbon deposit on nozzle tips	avoiding fuel oil temperature exceeding builder's specification	ensuring good metallic contact between nozzles and cylinder heads
402	Heat exchangers are most commonly found in a small auxiliary diesel engine _____.	fuel oil system	governing system	air starting system	lube oil system
403	Heat for igniting the fuel oil in the cylinder of a diesel engine is generated by the _____.	electronic ignition system	compression of air by the piston	friction in the fuel injector	fuel oil heating system
404	Heavy fuel oil used in the system shown in the illustration, will have the lowest viscosity _____.	at the transfer pump discharge	in the settling tank	in the three-way valve	at the main engine fuel oil header
405	Heavy residual fuel oils are heated prior to centrifuging to _____.	reduce fuel weight	increase specific gravity	separate fuel from lube oil	reduce fuel viscosity
406	High cylinder firing pressure, accompanied by low exhaust temperature, can result from _____.	improper fuel rack positioning	lengthy exhaust valve duration	extended operation at light load	excessively early injection timing

ID #	Question	Choice A	Choice B	Choice C	Choice D
407	High diesel engine cooling water temperatures can be caused by _____.	air in the cooling system	an open thermostat	maintaining only 1/2 an expansion tank level	excessive cooling water pump pressures
408	High diesel engine cooling water temperatures can be caused by _____.	a worn water pump	not enough coolant	air in the cooling system	all of the above
409	High lube oil temperature developing in a diesel engine generally results from _____.	high oil pressure	excessive bearing end play	plugged oil control rings	engine overload
410	High velocity turbulence is imparted to the air charge to the diesel engine, shown in the illustration, by _____.	masked intake valves	directional intake ports	a Mexican hat piston crown	a precombustion chamber
411	Higher than normal jacket water temperatures occurring in all cylinders of a diesel engine can result from a/an _____.	oil suction line restriction	correct amount of coolant	cavitation erosion in the water jackets	clogged sea suction strainer
412	High-speed, multi-cylinder, diesel engines commonly use counterweights placed opposite to the crankpins to _____.	prevent bearing loads	provide dynamic balance by equalizing centrifugal force	counteract inertia forces	provide a balance of rocking couples around the crankshaft
413	How can water enter the crankcase of an operating diesel engine?	Through the crankcase exhauster.	As water vapor contained in blow-by.	Demulsifying lube oil passing through the main bearings.	Condensation from vapor formed in the expansion tank.
414	How is lubrication provided to the device shown in the illustration?	A separate system containing oil under extremely high pressure is used due to its ability to provide a high film strength.	Only silicate ester based synthetic oils have the capability and necessary characteristics to be used in this type of application.	The lubrication system closely resembles the system used with standard line shaft bearings.	The lube oil enters through the supply pipes shown as #11 and eventually drains to the main engine sump.
415	How is oil supplied to the device shown in the illustration?	An attached positive displacement pump supplies oil to the separator.	The oil inlet paring disc creates a low pressure in the suction piping.	In this arrangement an independent pump is utilized.	This purifier as well as most others will be installed in the lower engine room to make use of gravitational forces.
416	How is the illustrated strainer element cleaned during engine operation?	The drain plug is removed and the housing is drained.	The housing is removed and the element is cleaned with a solvent.	The T-handle is rotated.	The strainer element is removed, cleaned in kerosene or solvent, and dried with an air brush.
417	How is the pressure and temperature affected in a diesel engine cylinder during compression?	Pressure and temperature decrease	Pressure and temperature increase	Pressure decreases and temperature increases	Pressure increases and temperature decreases
418	How many crank angle degrees of rotation exist between each firing of the cylinders indicated by the illustrated chart?	60°	120°	180°	240°

ID #	Question	Choice A	Choice B	Choice C	Choice D
419	How many power strokes per crankshaft revolution are there in an eight cylinder, two-stroke/cycle diesel engine?	One	Two	Four	Eight
420	How many separate camshaft timing events must be controlled for the components of an air start cylinder head for a direct reversible, four stroke diesel engine?	4	6	7	8
421	How many separate initial timing events must be controlled in the cylinder head of a direct admission air start, direct reversible, four stroke diesel engine?	2	4	6	8
422	How may water be removed from the bowl of the separator as shown in the illustration?	The water may be removed through the water drain valve or through the sludge ports during the sludge discharge cycle.	The separator is used to remove solids from the processed liquid, therefore the accumulation of water does not present a problem.	When the unit is secured and the bowl stops rotating, the water is drained off the bottom of the bowl through orifice ports.	Water may only be removed from the bowl when the unit is secured and the bowl hood is removed.
423	How often should the lubricating oil of a diesel engine be changed?	After every trip	Every 4000 hours	According to manufacturer's instructions	Every time they are shutdown
424	Hydraulic starters are installed on many lifeboat diesel engines instead of comparable air start systems, because _____.	hydraulic starters are the least expensive of all starting systems	the system does not require high pressure piping	hydraulic systems turn diesel engines at higher rates of speed than air starters	the system can be manually recharged
425	If a crankcase explosion has occurred in a diesel engine, and the crankcase remains intact, which of the following precautions should be observed?	The cylinder indicator cocks should be opened.	The sump lube oil scavenge pump should be secured immediately.	The explosion relief valves should be manually opened.	The crankcase should remain unopened until the engine has cooled.
426	If a crankcase explosion occurs in a diesel engine, which of the listed actions should be taken?	Open the crankcase immediately to cool the engine sump.	Apply fire fighting water through the crankcase breather.	Secure the engine and allow the engine to completely cool before opening the crankcase.	Allow the engine to idle for 5 minutes before shutting down.
427	If a crankcase explosion occurs in a diesel engine, you should stop the engine and _____.	immediately open all crankcase relief ports	increase crankcase exhaustor speed to draw cool air into the engine	allow the engine to cool down naturally before opening the inspection covers	increase crankcase scavenge air to remove unburned gases
428	If a diesel engine can be turned over at normal cranking speed but fails to start, the cause could be late fuel injection or _____.	excessive fuel pressure	high lube oil viscosity	fuel oil trip has not been reset	excessive starting air pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
429	If a diesel engine driving a generator turns over freely but fails to fire properly, the cause could be _____.	excessive compression pressure	air in the fuel lines	high fuel pressure	excessive load
430	If a diesel engine fails to start, one of the likely causes is _____.	low compression temperature	low ambient air pressure	high lube oil pump pressure	high fuel oil booster pump pressure
431	If a diesel engine has been stopped because of piston seizure due to severe overheating, the crankcase _____.	inspection covers should not be opened until the engine has cooled	ventilation system should be continued in operation for one hour for cooling	scavenge pump should be immediately secured to prevent loss of lube oil	explosion covers should be opened slightly to provide extra ventilation
432	If a diesel engine hydraulic starting motor fails to disengage from the engine, your FIRST check should be the _____.	throw-out bearing	hydraulic pump	overrunning clutch	accumulator
433	If a diesel engine is difficult to start when operating in low ambient temperature conditions, you should suspect that the _____.	compression pressures are below normal	lube oil is diluted with fuel oil	cranking speed is too low	exhaust system is partially restricted
434	If a diesel engine rotates slowly when cranked, but does not fire, the _____.	fuel control rack had admitted excessive fuel	engine speed does not match the fuel rack setting	engine has failed to reach its firing speed	starter pinion and ring gear contact is not correct
435	If a diesel engine runs out of fuel, you can expect trouble from _____.	overheated injector pumps	water condensed in the cylinders	fuel dilution of the lube oil	air in the fuel system
436	If a diesel engine runs roughly, which of the systems listed is most likely to be at fault?	Fuel	Lubricating	Cooling	Ignition
437	If a diesel engine turned over at normal cranking speed but failed to start, the cause could be late fuel injection or _____.	excessive fuel pressure	high lube oil viscosity	air in the fuel injectors	excessive starting air pressure
438	If a diesel engine turned over freely but failed to start, the cause could be _____.	water in the fuel	cold lube oil	excessive starting air pressure	excessive fuel pressure
439	If a diesel engine were running at 20% overload with a smoky exhaust, you should _____.	stop the engine immediately to prevent damage	increase lube oil pressure	slow the engine allowing it to gradually cool	decrease the cooling water temperature to the water jacket
440	If a diesel engine, with an electric starter, cranks very slowly after repeated attempts to start, the cause could be _____.	low lube oil viscosity	low compression pressure	a faulty Bendix-drive	an overheated starting motor
441	If a few injector spray holes become plugged, the result could be _____.	excessive surging at governed speed	combustion knock under load	poor fuel combustion	all of the above
442	If a four-stroke/cycle diesel engine is running at 1550 RPM, the speed of the camshaft will be _____.	525 RPM	775 RPM	1550 RPM	1800 RPM
443	If a four-stroke/cycle diesel engine is started by admitting high pressure air into the cylinders, the pistons receiving the charge of starting air must be _____.	on the power stroke	on the exhaust stroke	at the end of the power stroke	at the start of the intake stroke

ID #	Question	Choice A	Choice B	Choice C	Choice D
444	If a hydraulic starting motor turns, but the diesel engine does not, the most likely cause is _____.	excessive viscosity in the hydraulic fluid	a malfunctioning overrunning clutch	loss of accumulator precharge	air in the hydraulic system
445	If a particular liquid has a specific gravity of .96kg/dm ³ at 77°F, what will be the specific gravity of the liquid, as determined from the graph shown in the illustration, if the temperature is increased to 167°F?	.910 kg/dm ³	.915 kg/dm ³	.920 kg/dm ³	.925 kg/dm³
446	If a sample of engine lube oil indicates excessive fuel dilution, the lube oil should be _____.	changed	centrifuged	filtered	settled
447	If a single cylinder relief valve on a diesel engine lifts frequently while the engine is running, the cause may be an _____.	excessively late injection timing for each cylinder	incorrectly adjusted intake valve timing	incorrectly adjusted fuel injector	incorrectly adjusted intake valve clearance
448	If a single cylinder relief valve on a main propulsion diesel engine begins to lift, but it is not possible to secure the engine, which of the following actions should be taken?	Increase the cooling water flow to the engine.	Secure or reduce fuel to that cylinder.	Screw down on the pressure adjusting spring to decrease popping pressure.	Readjust the injection timing.
449	If a small auxiliary diesel engine will not crank but can be barred over, the trouble may be due to _____.	corrosion of starting battery terminal connections	air bound fuel injectors	a leaky fuel pump relief valve	a defective engine governor
450	If all other conditions such as bore, stroke, speed, and mean effective pressures are equal, a two-stroke/cycle diesel engine will develop approximately _____.	the same indicated horsepower as a four-stroke/cycle engine	twice the indicated horsepower as a four-stroke/cycle engine	one half the indicated horsepower as a four-stroke/cycle engine	one power stroke for every two crankshaft revolutions
451	If an analysis of a sample of used engine lube oil shows a high concentration of ethylene glycol, this probably indicates that _____.	the air filtration is inadequate	engine coolant is leaking into the lube oil	fuel oil is leaking into the lube oil	the piston rings are excessively worn
452	If an analysis of a sample of used engine lube oil shows a high concentration of sodium nitrite, this probably indicates that _____.	the air filtration is inadequate	engine coolant is leaking into the lube oil	fuel oil is leaking into the lube oil	the piston rings are excessively worn
453	If an auxiliary diesel engine coolant temperature is higher than normal, but the thermostat is determined not to be defective, you would suspect a/an _____.	cavitation erosion in the water jackets	excess corrosion inhibitor in the coolant	dirty jacket water cooler	defective turbocharger
454	If an auxiliary diesel engine equipped with an electric starting system cranks very slowly after repeated attempts to start, the cause could be a/an _____.	low lube oil viscosity	low compression pressure	ring gear with broken teeth	overheated motor windings
455	If an auxiliary diesel engine frequently stalls, the trouble may be caused by _____.	low exhaust back pressure	air in the fuel system	gasket blow-by or leakage	incorrect assembly of idler springs

ID #	Question	Choice A	Choice B	Choice C	Choice D
456	If an auxiliary diesel engine will not crank but can be barred over, the trouble may be _____.	starting batteries	water in the cylinder	the driven component is seized	sea suction valve is closed
457	If an auxiliary diesel engine will not crank but can be barred over, the trouble may be in the _____.	starting batteries	fuel injectors	fuel pump	engine governor
458	If an auxiliary diesel engine will not crank but can be barred over, the trouble may be due to _____.	corrosion on the battery connections	stuck fuel injectors	air bound fuel pump	low oil level in the engine governor
459	If an auxiliary diesel engine will not crank but can be barred over, the trouble may be in the _____.	corroded battery connections	fuel injectors	fuel pump	engine governor
460	If a small auxiliary diesel engine will not crank but is able to be barred over, the trouble may be _____.	corrosion on the starting battery connections	water accumulation in a cylinder	the driven component is seized	sea suction valve is closed
461	If clearance between a piston and the cylinder wall is excessive, piston slap will occur. The slap itself is caused by _____.	alternation of side thrust	a breakdown of the lube oil film on the cylinder wall	worn piston boss piston pin bearings	fluctuating gas pressure in the combustion space
462	If cranking a diesel engine is too slow while attempting to start, it will result in _____.	insufficient heat of compression	fouling of the air intakes	improper injection timing	high exhaust temperatures
463	If diesel fuel was discharging from the waste water outlet of a disk type centrifugal purifier operating as a separator you should _____.	reprime the purifier	remove the discharge ring	slow the purifier to its proper speed	put in an additional discharge ring
464	If fuel injection in a diesel engine begins earlier than the design start of injection, ignition may be delayed because the _____.	fuel oil injection pressure may not be high enough	cylinder compression pressure may not be high enough	cylinder compression temperature may be too high	scavenge and purge process is incomplete
465	If fuel injection occurs too early, a diesel engine will lose power because the _____.	fuel will not be properly atomized in the cylinder	ignition will be delayed due to low compression pressure	maximum fuel expansion will occur on the compression stroke	fuel will ignite after top dead center
466	If fuel injection to a four-stroke/cycle diesel engine begins earlier than designed, ignition may be delayed because the _____.	cylinder compression pressure may not be high enough	cylinder compression temperature may be too high	fuel oil injection pressure may not be high enough	scavenge and purge process is incomplete
467	If fuel oil were being discharged from the waste water outlet of a fuel oil disk type centrifuge, operated as a separator, you should _____.	remove the discharge ring	reprime the purifier with sealing water	slow the centrifuge to its proper speed	install an additional discharge ring
468	If it becomes necessary to clean the spray holes in a diesel engine fuel injector, you should use a suitable size piano wire and _____.	gasoline	carbon solvent	degreasing compound	strong detergent

ID #	Question	Choice A	Choice B	Choice C	Choice D
469	If it becomes necessary to cutout an individual cylinder of a large, low-speed, main propulsion diesel engine, the fuel to that cylinder should be secured and its _____.	fuel pump should be removed and all connections blanked off	cylinder oil feed rate should be increased slightly above that used at normal sea speed	cylinder oil feed rate should be reduced	cylinder oil feed rate should be increased to the maximum flow capable of the metering pump
470	If item "F" begins leaking during operation, which of the following operating conditions will NOT occur?	The oil/water interface will move outward from the vertical axis of the machine.	The water seal will be lost.	The oil/water interface will remain in the same neutral position.	The unit will not properly operate and should automatically shut down.
471	If lost motion is present in an individual fuel injection pump, which of the following problems will occur?	Fuel injection will be increased.	Fuel injection will remain unchanged.	Fuel injection will occur earlier.	Fuel injection will occur later.
472	If point #1 in the diagram shown is the beginning of gas compression, which of the cycles listed is being illustrated?	Otto	Diesel	Gas Turbine	Rankine
473	If sludge accumulates on the underside of a diesel engine piston, it will _____.	cause blow-by	chemically attack the piston skirt	form an emulsion of lube oil and water	raise the piston temperature
474	If the air supply to the 'liquid sensor' of the device shown in the illustration is secured accidentally, which of the following alarms will be indicated?	AO6: liquid indication.	AO7: transducer fault.	Low pressure in oil inlet.	Low pressure in oil outlet.
475	If the analysis of used lube oil indicates a high content of iron particles, this could indicate _____.	corrosive deterioration of a bearing	inadequate air filtration	excessive ring and liner wear	excessive cooling of lubricating oil
476	If the back clearance of a piston ring is excessive, _____.	compression pressure in the cylinder will be higher	carbon will accumulate behind the ring	combustion gases will penetrate beneath the ring land	piston side thrust will be increased
477	If the bowl of a disk type centrifugal purifier when operated as a separator is not primed, the _____.	oil has a tendency to emulsify in the bowl	purifier will act as a clarifier at the discharge ring	oil will be lost through the water discharge ports	oil solids will be deposited only at the intermediate top disk
478	If the compression ratio is increased on any diesel engine, _____.	the expansion ratio will decrease	combustion will be slowed down	thermal efficiency will decrease	thermal efficiency will increase
479	If the compression rings on a diesel engine piston become stuck in the ring groove, the cause may be due to _____.	excessive ring action	excessive ring temperature	improper ring rotation	excessive ring face wear
480	If the control unit as shown in the illustration indicates alarm A01 'abnormal water content', the operator should suspect _____.	that the operating water tank is about to overflow	that the bowl is fouled and cleaning is necessary	an extremely high percentage of water in the fuel	faulty seals between the sliding bowl bottom and the paring disc assembly

ID #	Question	Choice A	Choice B	Choice C	Choice D
481	If the coolant temperature is excessively low as it passes through the internally cooled fuel injectors, the injectors may be damaged by _____.	water condensation in the fuel	corrosion of the nozzle tip	carbon deposits on the leak off inlet	over lubrication of the needle valve
482	If the coolant temperature is too low as it passes through internally cooled fuel injectors, the injectors can be damaged by _____.	water condensation in the fuel	corrosion of the nozzle tip	decrease in fuel oil viscosity	inadequate lubrication of the needle valve
483	If the coolant temperature is too low as it passes through internally cooled fuel injectors, the injectors can be damaged by _____.	water condensation in the fuel	corrosion of the nozzle tip	low cylinder head temperatures	inadequate lubrication of the needle valve
484	If the coolant temperature of a closed cooling water system for a diesel engine gradually increases, the trouble usually is _____.	a broken shaft on the freshwater pump	excessive fouling of the heat exchanger	an incorrect thermostatic element operating range	lube oil in the cooling water
485	If the cooling water temperature and the lube oil temperature in a diesel engine are too high, the cause can be _____.	a dirty lube oil strainer	internal water leaks	an oil suction line restriction	excessive wear of the cooling water pump
486	If the demister used in the device shown in the illustration is improperly installed, which of the following will occur?	The vacuum of the device will increase.	The temperature of the device will decrease.	Interstage leakage will cause a decrease in output.	There will be an increase of chlorides measured at the distillate pump salinity cell.
487	If the detergent type lubricating oil being used in a diesel engine is black, the oil _____.	must be centrifuged	must be filtered	must be changed	is holding finely dispersed carbon in suspension
488	If the diesel engine fuel injection timing is changed to delay the start of injection until the pistons are at top dead center, the engine will _____.	backfire through the air intake	develop less power under load	have high firing pressures	lift its cylinder relief valves
489	If the diesel engine starter-drive mechanism fails to disengage after the engine starts, which of the following situations will occur?	The engine will stall.	The starter motor will have reverse current.	The engine flywheel will be burred.	The starter motor will overspeed.
490	If the discharge valve "F" of the fuel injection pump, shown in the illustration, allows fuel to leak out from the high pressure fuel line, which of the following conditions would occur?	Injection timing will be advanced	Air bubbles will form in the fuel return line	Effective length of stroke will be increased	Effective length of stroke will be decreased
491	If the discharge valve of the fuel injection pump, shown in the illustration, leaks during operation, which of the following conditions should be expected?	Injection timing will be increased.	Fuel will leak into the return line.	Effective length of stroke will be increased.	Effective length of stroke will be decreased.
492	If the firing pressures in a diesel engine are high, although the exhaust temperatures are normal, the cause may be _____.	late injection timing	worn orifices in the injection nozzles	carbon buildup on the piston	using a fuel with too high of a cetane number

ID #	Question	Choice A	Choice B	Choice C	Choice D
493	If the interval of time associated with the ignition delay period occurring in the cylinder of a diesel engine is lengthened, what will be the result?	Less fuel will enter the cylinder.	The cylinder compression pressure will be lower.	The fuel combustion will be more complete.	The rise in combustion (firing) pressure will be more rapid.
494	If the jacket water temperature in an auxiliary diesel engine cooling system is lower than normal, the probable cause is _____.	air binding of the engine cooling system	a cracked water cooled exhaust manifold	blockage in the heat exchanger	faulty operation of the thermostat
495	If the jacket water temperature of an operating diesel engine suddenly rises above normal, the cause can be attributed to _____.	an overfilled expansion tank	excess chromate treatment of the jacket water	a clogged raw water sea suction	cavitation erosion of the heat exchanger tubes
496	If the jacket water temperature rises rapidly above normal in a diesel engine, you should FIRST _____.	place standby cooler in operation	reduce engine load	check thermostatic valve	clean sea water strainer
497	If the jacket water temperature rises rapidly above normal in a diesel engine, you should FIRST _____.	call the chief engineer	reduce engine load	check thermostatic valve	clean sea water strainer
498	If the low level alarm of the diesel fuel day tank fails to function, you can expect trouble from _____.	overheated injection pumps	water condensed in the cylinders	fuel dilution of the lube oil	air in the fuel system
499	If the manufacturer advises of a normal lube oil consumption for a 4000 horsepower (2982.8 kW) diesel engine to be .0001 gal/hp-hr, (.5076 mL/kW-hr), how much oil should the engine consume in one 24 hour period if operated at full load?	6.4 gallons (24.23 L)	9.6 gallons (36.34 L)	11.4 gallons (43.15 L)	14.4 gallons (54.51 L)
500	If the manufacturer's instructions do not state otherwise, which of the following progressions represent the best order for tightening the head bolts shown in the illustration?	1 5 3 7 2 6 4 8	1 2 3 4 5 6 7 8	2 4 6 8 1 3 5 7	7 2 3 6 5 8 4 1
501	If the needle valve in a fuel injection nozzle sticks open, _____.	fuel will leak into the nozzle drain line	no fuel will be delivered through the nozzle	the nozzle will overheat	injection lag will be increased
502	If the oil control rings were installed upside down on a diesel engine piston, which of the following conditions would result?	Excessive oil pumping would occur.	The rings would tend to overheat.	The ring grooves would be blocked.	Tendency for ring breakage is increased.
503	If the oil scraper ring drain hole in a diesel engine piston becomes plugged, _____.	blow-by will decrease	oil consumption will decrease	oil consumption will increase	the ring will immediately seize and buckle
504	If the operating element of a thermostatic valve installed in a diesel engine cooling system malfunctions, it may result in _____.	a low level in the engine expansion tank	excessively high coolant pressure	improper temperatures	malfunctioning of the jacket water heater
505	If the piston groove drain holes for the oil control rings become clogged, which of the following is likely to occur?	The oil control rings will seat improperly and wear rapidly.	The piston will overheat due to insufficient lubrication.	Excessive oil will remain on the cylinder wall.	Light brown smoke will emanate from the engine exhaust.

ID #	Question	Choice A	Choice B	Choice C	Choice D
506	If the piston stroke in a four stroke cycle diesel engine is 10 1/2 inches and the speed of rotation of the crankshaft is 720 RPM, what is the average piston speed?	1200 feet/minute	1260 feet/minute	1320 feet/minute	1380 feet/minute
507	If the plunger or barrel of a fuel injection jerk pump becomes damaged, _____.	the entire pump must be replaced	the injection pump and injection nozzle must be replaced	either the barrel or plunger must be replaced	the barrel and plunger must be lapped and blued.
508	If the plunger or barrel of a fuel injection jerk pump becomes damaged, _____.	only the replacement of the entire pump would be acceptable	the injection pump and injection nozzle must be replaced	either the barrel or plunger must be replaced	the barrel and plunger must be replaced as a unit
509	If the raw water supply pressure for a diesel engine cooling system is below normal, you should check for a _____.	broken thermostat	clogged sea strainer	blown head gasket	cracked head
510	If the regulating valve V4 shown in the illustration vibrated open, which of the following alarm conditions would be indicated at the program unit panel?	Low pressure in oil outlet.	Low oil temperature after preheater.	High oil temperature after preheater.	No discharge.
511	If the relief valve on a diesel engine cylinder lifts, the cause could be due to _____.	liquid in the cylinder	low compression in the cylinder	high exhaust temperature	poor fuel penetration
512	If the separating temperature is to remain constant, what is the relationship between the specific gravity of the oil and the required size of the regulating ring?	For a constant operating temperature, the greater the specific gravity of the oil the larger the regulating ring.	The specific gravity of the oil and the size of the regulating ring are related only during the initial design stages of the centrifuge.	With oils of greater specific viscosities it is proper to select smaller regulating rings regardless of the operating temperatures desired.	The larger sized regulating rings are designed to be used with oils of lower specific gravities.
513	If the speed of the propeller is 135 RPM, the speed of the engine camshaft shown in the illustration will be _____.	135 RPM	270 RPM	variable depending on the camshaft gear train gear ratios	variable depending on the ratio between engine rpm and propeller shaft rpm
514	If the water level dropped rapidly in the expansion tank of a closed diesel engine cooling water system, you should suspect a _____.	loss of suction in the circulating pump	leak in the system heat exchanger	broken raw water pump shaft	burned or cracked piston in one cylinder
515	If the wearing rings of device "7" shown in the illustration become worn, how will the evaporation rate in "23" be affected?	The rate of evaporation will decrease.	The rate of evaporation is dependent on the level of vacuum maintained within the unit, and not the flow of water to the unit.	Device "7" does not use wearing rings, as these are normally positive displacement pumps.	The rate of evaporation will not be affected as the standby pump, labeled "8" will be used instead.

ID #	Question	Choice A	Choice B	Choice C	Choice D
516	If uneven sludge deposits accumulate in the sludge space of the bowl assembly of the device shown in the illustration, _____.	an alarm for 'emergency stopping or vibrations' may be indicated	the machine will continue to operate indefinitely	the shoot cycle should be automatically be initiated at more frequent intervals	there are excessive quantities of micro-organisms in the fuel supply
517	If valve "D" is opened during the normal operation of the distiller shown in the illustration, which of the events listed will occur?	The amount of vapor formed in the evaporator will increase.	The jacket water cooler will be overloaded, eventually causing a critical engine alarm.	The output of pump "7" will increase with a corresponding increase in pressure.	The amount of vapor being formed in the evaporator will decrease.
518	If valve "H" shown in the illustration is opened wide while the distiller is in operation, _____.	the absolute pressure of the unit will increase with an associated decrease in shell temperature.	the absolute pressure of the unit will increase due to the increased affect of the air ejector.	the absolute pressure of the unit will increase with an associated increase in shell temperature.	the absolute pressure of the unit will not be affected, but the rate of condensation will be decreased.
519	If water is found in the crankcase of a diesel engine, the cause may be due to _____.	a cracked cylinder head	a leaky cylinder head gasket	a cracked cylinder liner	all of the above
520	If while attempting to start a diesel engine, the cranking speed is too low, _____.	the fuel timing will be too late	the heat of compression will be insufficient to ignite the fuel	the lube oil viscosity will be too low	the spark will be too early for the fuel
521	If you determine that entrained air in the fuel oil system is causing a diesel engine to stall, you should first check for _____.	fuel leakage in the injector pump's discharge lines	worn gaskets in the transfer pump discharge lines	partially clogged fuel oil discharge strainers	loose fittings in the booster fuel pump suction piping
522	If you notice smoke coming from the crankcase exhaust fan outlet of an operating diesel engine, you would suspect _____.	a cracked cylinder liner	clogged intake ports	broken piston rings	a faulty head gasket
523	If you suspect a diesel engine is misfiring due to air leakage into the fuel system, you should begin looking for the leak at the _____.	fuel line connections to the cylinder injection valves	gasket surfaces of the fuel oil filters	discharge fittings of the fuel injector pumps	suction side of the fuel oil booster pump
524	Immediately after any diesel engine is started, the engineer should first check the _____.	crankcase pressure	lube oil pressure	saltwater pressure	exhaust temperature
525	Immediately after starting a diesel engine, normal raw water and jacket water pressures are indicated. However, the jacket water temperature continues to rise. If there is no change in the sea temperature, you should suspect _____.	overloading in all cylinders	a jammed three-way thermostatic valve	chromate pH too low	a high level in the surge tank
526	Immediately after starting a diesel engine, you should first check and monitor the _____.	cooling water temperature	lube oil temperature	fuel pressure	lube oil pressure
527	Immediately after starting a small high-speed diesel engine, you should check the _____.	cooling water temperature	lube oil temperature	fuel pressure	lube oil pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
528	Immediately at the end of the sludge ejection cycle, the bowl of the fuel oil centrifuge, shown in the illustration, will be closed only when the valve(s) _____.	'V5' is closed, with 'V10,' 'V15,' and 'V16' are open	'V5,' 'V10,' 'V15,' and 'V16' are closed	'V10' and 'V16' are open, with 'V15' and 'V5' closed	'V5,' 'V10,' 'V15,' and 'V16' are open
529	Improper cooling of a diesel engine cylinder liner due to the accumulation of scale deposits, may cause _____.	low compression pressure	increased piston wear	increased cylinder lube oil consumption	poor contact between compression rings and liner
530	Improper seating of an air starting check valve in an operating diesel engine is indicated by _____.	noise coming from the air starting valve	an overheated air supply pipe to the cylinder head	continuous operation of the starting air compressor	zero air pressure in the air starting system
531	Improperly fitted piston rings in a diesel engine can result in _____.	excessive lube oil consumption	lower than normal lube oil temperature	higher than normal exhaust back pressure	excessive crankshaft end play
532	In a Bendix starter drive, the pinion engagement with the flywheel ring gear is initiated by _____.	Bendix spring pressure	starter drive shaft rotation	a differential spring	solenoid throw out action
533	In a bypass type filtering system for a medium or high speed diesel engine, the lube oil bypassing the filter _____.	returns directly to the suction side of the pump	returns directly to the sump	flows to the engine bearings	flows through a second-stage strainer, reheater, and returns to the sump
534	In a bypass type filtering system for a medium or high speed diesel engine, the lube oil passing through the filter _____.	returns directly to the suction side of the pump	returns directly to the sump	flows to the engine bearings	flows through a second-stage strainer, reheater, and returns to the pump suction
535	In a bypass type lubrication system for a diesel engine, the clean oil line from the filter directs the oil to the _____.	lube oil sump	lube oil pump discharge line	lube oil pump suction line	outlet of the lube oil header
536	In a bypass type lubrication system for a diesel engine, the dirty oil line to the centrifuge should be taken from the _____.	lube oil pump suction line	lube oil pump discharge line	bottom of the lube oil sump	outlet from the lube oil header
537	In a closed cooling system for a turbocharged, four-stroke/cycle diesel engine, fluctuating water pressure can be caused by _____.	improper venting of the cooling system	carrying the expansion tank water level too high	a totally clogged impeller in the cooling water pump	an incorrectly set cooling system temperature control
538	In a closed cooling water system, which of the following problems can cause the water pressure to fluctuate?	An open vent in the cooling system.	A fouled sea chest.	A restricted water passage in the engine.	Air entrained in the cooling water.
539	In a diesel engine closed freshwater cooling system employing a radiator, proper water temperature can be obtained by _____.	adjusting the radiator louvers	passing cooling water through a space heater	passing cooling water through the lube oil cooler	piping exhaust gases across the radiator front

ID #	Question	Choice A	Choice B	Choice C	Choice D
540	In a diesel engine closed freshwater cooling system, the amount of engine coolant flowing through the heat exchanger is controlled by the _____.	suction pressure regulator	thermostatic bypass valve	sea water temperature	water level in the expansion tank
541	In a diesel engine closed freshwater cooling system, the cooling water pressure drop through the engine is 10 psig, and the pressure drop through the heat exchanger is 4 psig at maximum flow rates. The cooling water pump must produce a discharge head of at least _____.	4 psig	6 psig	15 psig	28.7 psig
542	In a diesel engine cooling system, the high temperature alarm contact maker will be activated on excessively high water discharge temperature from the _____.	raw water pump discharge	expansion tank outlet	cooling water heat exchanger outlet	engine jacket water outlet
543	In a diesel engine cooling water system, a pH of 6.0 indicates a/an _____.	slightly acidic condition	slightly alkaline condition	overtreatment of water	neutral condition of water
544	In a diesel engine fuel oil jerk pump, the amount of fuel that will be forced through the spray nozzle on each upward stroke of the plunger depends upon _____.	the pump supply pressure	the slope of the fuel cam	how much the plunger had been rotated by the rack	the number of sleeve segments engaged with the rack
545	In a diesel engine jacket water cooler, with seawater cooling the fresh water, the _____.	sea water temperature must never be warmer than 40°F	jacket water pressure should always be greater than the sea water pressure	jacket water temperature must always be less than 60°F	jacket water pressure must always be less than the sea water pressure
546	In a diesel engine lube oil system, which of the following components should be lubricated first?	Wristpin bearings	Main bearings	Piston crowns	Crosshead guides
547	In a diesel engine lube oil system, which of the following parts should be lubricated first?	Wristpin bearings	Main bearings	Piston crowns	crankpin bearings
548	In a diesel engine mechanical-type fuel pump, the delivery check valve is opened by _____.	push rod action	cam action	hydraulic action	spring action
549	In a diesel engine starting motor equipped with a Bendix drive, the pinion moves and meshes with the flywheel ring gear due to _____.	shifting levers of solid mechanical linkage	the shaft sleeve spiral helix and relative rotation between pinion and starter shaft	centrifugal force developed from rotation	electromotive force developed at the flywheel
550	In a diesel engine, maximum lube oil system pressure under cold start conditions, is normally controlled by _____.	the capacity of the lube oil pump	the speed of the lube oil pump	the outlet pressure of the lube oil pump	a relief valve

ID #	Question	Choice A	Choice B	Choice C	Choice D
551	In a diesel engine, a cylinder liner should be replaced if it is _____. I. scuffed II. scored	I only is correct	II only is correct	both I and II are correct	neither I or II are correct
552	In a diesel engine, after ignition of the fuel occurs, but before the piston reaches TDC, there is little change in the cylinder _____.	volume	pressure	temperature	energy
553	In a diesel engine, an integral liner is one in which the cooling water _____. I. flows through the cylinder liner jackets II. touches the outer side of the liner	I only	II only	both I and II	neither I nor II
554	In a diesel engine, blow-by _____.	increases exhaust back pressure	causes excessive crankcase pressure	can only be detected by a compression check	decreases fuel consumption
555	In a diesel engine, blow-by is a result of combustion gases leaking into the crankcase past the _____.	wrist pin bushings	compression rings	cylinder liner seals	cylinder liner sealing ring
556	In a diesel engine, blow-by is generally the result of worn _____.	valve guides	oil control rings	valve seats	compression rings
557	In a diesel engine, excessive cylinder liner wear will cause _____. I. increased blow by II. wear between the piston ring and groove	I only is correct	II only is correct	both I and II are correct	neither I or II are correct
558	In a diesel engine, internal combustion causes the piston to be moved by _____.	the simple admission of fuel and air into the combustion space only	the pressure of gases developed	specialty designed parts connected to a shaft	the concept of reciprocity
559	In a diesel engine, pistons are attached to the crankshaft by _____.	push rods	piston rods	connecting rods	piston guides
560	In a diesel engine, pistons are attached to the crankshaft by _____.	push rods	lash adjusters	connecting rods	piston guides
561	In a diesel engine, the function of lubrication oil is to provide _____.	a film between the shafts and bearings	cooling of the pistons and bearings	for removal of dirt or metal particles resulting from wear	all of the above
562	In a diesel engine, the initial crosshatching of the cylinder liner surface aids in _____. I. rapid ring seating II. the retention of lube oil	I only is correct	II only is correct	both I and II are correct	neither I or II are correct
563	In a diesel engine, the main bearings are used between the _____.	connecting rod and the crankshaft	wrist pin and the connecting rod	camshaft and the engine block	crankshaft and the engine block

ID #	Question	Choice A	Choice B	Choice C	Choice D
564	In a diesel engine, the piston compression rings make contact with the _____. I. back of the ring groove II. bottom of the ring groove	I only	II only	both I and II	neither I nor II
565	In a diesel engine, the spring force required for proper valve operation is determined by _____.	maximum firing pressure	minimum firing pressure	cam contour	length of the spring
566	In a diesel engine, the time period between fuel injection and ignition is usually defined as _____.	injection duration	ignition timing	precombustion lag	ignition delay
567	In a diesel engine, the time taken to heat the fuel particles, turn them into vapor, and bring about combustion is called _____.	injection lag	ignition delay	compression ignition	turbulence lag
568	In a diesel engine, what is the advantage of precombustion chambers over the open type of combustion chamber? I. Precombustion chambers permit coarser fuel atomization. II. Precombustion chambers allow lower fuel injection pressure.	I only	II only	both I and II	neither I nor II
569	In a diesel engine, when installing new piston rings it is important to check _____. I. ring gap clearance II. side clearance	I only	II only	both I and II	neither I nor II
570	In a diesel engine, when refitting piston rings you should _____. I. check the ring gap at the smallest diameter of the cylinder II. remove carbon from the ring groove	I only	II only	both I and II	neither I nor II
571	In a diesel engine, which type of wrist pin uses bearings in the piston bosses, but is fixed to the small end of the connecting rod?	Semi-floating	Full floating	Solid	Fixed
572	In a diesel engine, with the valves set to specification, the shape of the cam determines the valve _____.	point of opening	speed of opening	lift from its seat	all of the above
573	In a direct cylinder admission air starting system, once the engine begins to fire, the air starting check valve illustrated, is closed by _____.	the starting air pressure	the spring force and cylinder pressure	a valve actuating cam	a pneumatic bellows assembly

ID #	Question	Choice A	Choice B	Choice C	Choice D
574	In a four-stroke/cycle diesel engine, after the completion of the power stroke, the piston will move _____.	up and draw in a fresh air charge	down to burn off fuel	down to compress the fuel air charge	up and force out the exhaust gases
575	In a four-stroke/cycle diesel engine, piston blow-by can result in increased _____.	crankcase pressure	compression pressure	scavenge air pressure	exhaust manifold pressure
576	In a four-stroke/cycle diesel engine, the camshaft rotates at _____.	twice the crankshaft speed	half the crankshaft speed	the same speed as the crankshaft	a speed independent of the crankshaft
577	In a four-stroke/cycle medium-speed diesel engine, fuel injection commences at 10 crankshaft degrees before top dead center. After fuel injection commences, approximately how many degrees will the camshaft rotate before the exhaust valve begins to open?	10°- 25°	30°- 55°	60°- 80°	100°- 130°
578	In a full floating wristpin, the pin is prevented from sliding against the cylinder walls by _____.	snap rings	seal welding	a press fitting	a tongue-and-groove
579	In a full flow type lube oil system, the bypass relief valve will lift due to _____.	a clogged filter element	excessive lube oil pump discharge pressure	excessive lube oil flow	excessively hot lube oil
580	In a hydraulic starting system, oil to the starting motor flows from the _____.	accumulator	reservoir	hand pump	electric pump
581	In a jerk pump, the amount of fuel that will be forced through the spray nozzle on each upward stroke of the plunger depends on _____.	the pump supply pressure	the slope of the fuel cam	the position of the helix groove relative to the spill port	the number of sleeve segments engaged with the rack
582	In a large low-speed diesel engine, excessive piston clearance from the cylinder head can be restored by _____.	decreasing the thickness of the cylinder head gasket	inserting shims between the crankpin bearing box and the connecting rod foot	replacing the complete bearing set	rotating the crankpin bearing until the proper end clearance is obtained
583	In a large main propulsion diesel engine, if an excessive amount of carbon has been found to be forming around the fuel injector nozzle holes, which of the following would correct this condition?	Increase fuel injection pressure.	Increase fuel preheat temperature.	Decrease load limit on the governor.	Increase injector cooling water temperature.
584	In a large slow-speed propulsion diesel engine, the force applied to the crosshead is _____.	against the crosshead during power stroke and away from the crosshead during the compression stroke	against the crosshead during the compression stroke and away from the crosshead during the power stroke	against the crosshead during the power and compression strokes	away from the crosshead during the power and compression strokes

ID #	Question	Choice A	Choice B	Choice C	Choice D
585	In a large slow-speed propulsion diesel engine, the force applied to the piston is _____.	against the crosshead during power stroke and away from the crosshead during the compression stroke	against the crosshead during the compression stroke and away from the crosshead during the power stroke	against the crosshead during the power and compression strokes	away from the crosshead during the power and compression strokes
586	In a large slow-speed propulsion diesel engine, the side thrust on the crosshead is the direct result of _____.	the piston rod acting against the crosshead during the power stroke	the angularity of the connecting rod against the crosshead during the power stroke	the velocity of the crankpin during the power stroke	cylinder pressure acting against the piston crown
587	In a large, low-speed diesel engine the clearance between the piston crown and cylinder head is found to be excessive. In order to correct for this, you should _____.	build up the piston crown by metal spraying	build up the cylinder head by metal spraying	insert shims between the crankpin bearing box and the connecting rod foot	install a thinner head gasket
588	In a large, slow-speed, main propulsion diesel engine, which of the parts listed is under tension when the engine is running?	Bed plate	Column	Entablature	Tie rod
589	In a medium speed diesel engine, a trunk type piston may be cooled by _____. I. oil circulation through passages in the piston crown II. heat transfer through piston rings and liner wall	I only	II only	either I or II	neither I or II
590	In a medium-speed marine propulsion engine equipped with direct admission air starting valves, the cylinders without air starting valves fire first because the _____.	operation is under higher compression	fuel is admitted only to these cylinders during cranking	compression is released during starting by opening the exhaust valve	cylinders are not chilled by the expansion of the starting air
591	In a modern internal combustion diesel engine, the component carrying the torque load of the engine is referred to as the _____.	bedplate or base	sump or oil pan	cylinder block	frame
592	In a modern internal combustion diesel engine, the load carrying part of the engine is referred to as the _____.	bedplate or base	sump or oil pan	cylinder block	frame
593	In a normally operating diesel engine, the main source of lubricating oil contamination in the crankcase is a result of the _____.	metal particles loosened by wear	air when no air cleaners are used	condensation of water vapors	combustion byproducts removed from the cylinder walls
594	In a normally operating diesel engine, the main source of lubricating oil contamination in the crankcase is a result of the _____.	metal particles loosened by wear	trapped air when no air cleaners are used	condensation of fuel oil vapors	combustion byproducts removed from the cylinder walls

ID #	Question	Choice A	Choice B	Choice C	Choice D
595	In a single acting, four-stroke/cycle diesel engine, the power impulse in an individual cylinder occurs _____.	once every crankshaft revolution	once every two crankshaft revolutions	once every piston stroke	twice every piston stroke
596	In a single acting, two-stroke/cycle, diesel engine, the power impulse in an individual cylinder occurs _____.	once every crankshaft revolution	once every two crankshaft revolutions	once every piston stroke	twice every piston stroke
597	In a single acting, two-stroke/cycle, diesel generator engine, the power impulse in an individual cylinder occurs _____.	once every crankshaft revolution	once every two crankshaft revolutions	once every piston stroke	twice every piston stroke
598	In a single-acting diesel engine, the cylinder liner area that is most difficult to lubricate is the _____.	major thrust side	minor thrust side	top circumference	bottom circumference
599	In a trunk type diesel engine piston, the thickness of the head or crown is determined by the _____. I. strength requirement II. heat dissipation requirement	I only	II only	both I and II	neither I nor II
600	In a two-stroke/cycle diesel engine, the camshaft rotates at _____.	twice the crankshaft speed	half the crankshaft speed	the same speed as the crankshaft	a speed independent of the crankshaft
601	In a two-stroke/cycle, opposed piston, diesel engine, one crankshaft operates several crank angles in advance of the other crankshaft to _____.	allow the exhaust ports to open and close before the inlet ports close	allow the scavenge ports to open and close simultaneously with the exhaust ports	prevent scavenge air pressure buildup in the cylinders	prevent the exhaust piston from reaching TDC and BDC before the intake piston
602	In a two-stroke/cycle, opposed piston, diesel engine, the lower crankshaft operates several crankshaft degrees in advance of the upper crankshaft to _____.	allow the exhaust ports to open before the inlet ports	allow the scavenge ports to open and close simultaneously with the exhaust ports	prevent scavenge air pressure buildup in the cylinders	prevent the exhaust piston from reaching TDC before the intake piston
603	In a unit injector, an upper helix and lower helix are machined in the lower part of the plunger for _____.	facilitating plunger rotation	positioning the control sleeve	accurate metering of the fuel oil	eliminating injection lag
604	In a unit injector, an upper helix and lower helix are machined in the lower part of the plunger for _____.	facilitating plunger rotation	positioning the control sleeve	variable beginning and variable ending of fuel injection	eliminating injection lag
605	In addition to the main starting air compressor, another air compressor, driven by a separate power source, is installed to _____.	provide air for engine scavenging	provide air for engine supercharging	supply a backup source of starting air	supply the independent source of reversing air
606	In an actual installation, the flange identified by the letter "U", shown in the illustration, can be directly connected from the brine ejector discharge to the _____.	saltwater inlet at "I"	upper flash chamber labeled "F"	feed water return labeled "K"	second effect tube bundle

ID #	Question	Choice A	Choice B	Choice C	Choice D
607	In an actual installation, the flange identified by the letter "U", shown in the illustration, can be directly connected from the brine ejector discharge to the _____.	overboard discharge line	upper flash chamber labeled "F"	feed water return labeled "K"	second effect tube bundle
608	In an actual installation, which of the flanges are connected to the condenser section of the water maker?	I and M	I and Q	Q and R	R and M
609	In an actual installation, which of the flanges are connected to the engine jacket water system for the water maker shown in the illustration?	I and M	I and Q	Q and R	R and M
610	In an auxiliary diesel engine bypass type lubricating oil system, the main lube oil pump forces _____.	all of the oil used by the engine through a filter	some of the oil used by the engine through a filter	some of the oil used by the engine through a centrifuge	all of the oil used by the engine through a centrifuge
611	In an auxiliary diesel engine, one reason for knurling the piston skirt is to _____.	improve skirt lubrication	allow for heat expansion	transmit forces evenly	improve the piston seal
612	In an internal combustion engine, which of the devices listed will force the compression rings to seal the compression gases in the space above the piston?	Use of bimetallic piston rings	Ring gap pretensioning	Thermal increase in ring-end clearance	Gas pressure acting against the back of the ring
613	In an operating diesel engine, preignition can be caused by _____.	excessively late fuel injection	oil in the air charge	water in the fuel	injection continuing after the fuel charge is ignited
614	In an operating diesel engine, the sealing of the cylinder is the result of the compression rings being forced against the cylinder walls by _____.	oil pressure acting behind the ring	compression pressure acting beneath the ring	ring expansion from the heat of combustion	combustion gas pressure acting behind the ring
615	In an operating diesel engine, which of the following conditions is an indication of a leaking air starting valve?	Noise coming from that air starting valve.	Continuous operation of the starting air compressor.	Zero air pressure in the air starting system.	Overheated starting air pipe to the cylinder head.
616	In an operating diesel engine, which of the following is true concerning a tube and shell type jacket water heat exchanger?	fresh water circulates through the tubes and sea water around the outside of the tubes.	jacket fresh water pressure should always be greater than the sea water pressure.	zinc anodes installed in the heads should always be painted.	all of the above
617	In an opposed piston engine, the term 'crank lead' refers to _____.	one crankshaft turning faster than the other	the two crankshafts turning in different directions	the piston in one cylinder reaching inner dead center several crankshaft degrees before the other piston	the piston in one cylinder reaching dead center when the other reaches outer dead center
618	In certain cases, a cylinder liner can be refinished rather than replaced. When properly honed, the _____.	cylinder should be cleaned with kerosene	cylinder liner should have a glazed appearance	liner surface should have a crosshatch pattern	counter bore is slick and smooth

ID #	Question	Choice A	Choice B	Choice C	Choice D
619	In comparing engines of equal horsepower, higher exhaust gas temperatures occur in a/an _____.	opposed-piston engine	double-acting engine	two-stroke/cycle engine	four-stroke/cycle engine
620	In describing basic diesel engine operation, the term 'event' refers to _____.	the production of high pressure gases	the removal of expended combustion gases	the admission of air to the cylinder	All of the above
621	In describing engine operation, what does the term 'cycle' mean?	The sequence of events that produce a power pulse.	One rotation of the engine crankshaft.	One stroke of a piston.	All of the above.
622	In diesel engineering practice, the term used to express the ignition quality of a particular fuel is _____.	cetane number	octane number	ignition index number	volatility point
623	In diesel engines designed with a crosshead, the motion of the piston rod can be described as _____.	reciprocating at the piston pin, rotary at the crank pin	reciprocating at the crank pin, rotary at the piston pin	straight reciprocation	straight rotation
624	In diesel engines, hydraulic valve lifters are used to _____.	reduce valve gear pounding	increase valve operating lash	obtain greater valve lift	create longer valve duration
625	In diesel engines, the four basic events (intake, compression, power and exhaust) are performed once in _____.	two crankshaft revolutions in a two-stroke/cycle engine	two power strokes in a two-stroke/cycle engine	one power stroke in a two-stroke/cycle engine	two piston strokes in a two-stroke/cycle engine
626	In diesel engines, the four basic events (intake, compression, power, and exhaust) are performed once in _____.	one complete crankshaft revolution in a two-stroke/cycle engine	two crankshaft revolutions in a two-stroke/cycle engine	two power strokes in a two-stroke/cycle engine	two piston strokes in a four-stroke/cycle engine
627	In extremely cold weather, an engine turns over too slowly and fails to start. This problem is most likely the result of _____.	high fuel oil viscosity	excessive starting air pressure	high lube oil viscosity	low lube oil viscosity
628	In large, low-speed, main propulsion diesel engines, piston ring groove wear usually occurs at the _____.	top of the ring groove	back of the ring groove	bottom of the ring groove	piston ring end clearance
629	In order for microbiological growths to thrive in a fuel tank it is necessary for _____.	vanadium to be present	low temperatures to exist	moisture or water to be present	electrolysis to be occurring
630	In order for the self-cleaning fuel oil centrifuge, shown in the illustration, to properly operate during the desludge cycles, the _____.	bowl locking ring alignment mark should be approximately 1/4 inch to the left of the bowl alignment mark	sliding bowl bottom and operating slide seal rings should be coated with main engine lube oil	sliding bowl bottom and operating slide seal rings should be coated with a high temperature lubricating paste	all of the above
631	In order to determine the fuel pump rack setting for individual fuel pumps on the diesel engine shown in the illustration, you must _____.	secure the engine and remove the fuel pump crosshead cover	remove the fuel pump crosshead cover and observe the rack setting with the engine running	secure the engine, remove the fuel pump crosshead cover, and compare rack setting to master pump setting	run engine at idle, remove cover, and secure engine while observing rack movement

ID #	Question	Choice A	Choice B	Choice C	Choice D
632	In order to keep excess oil from the intake ports in two-stroke/cycle diesel engines, _____.	wide compression rings are used	oil rings are located above the piston pin	dense chromium plating is used on all piston rings	oil rings are located near the bottom of the piston skirt
633	In order to maximize the performance of a centrifuge, you can adjust the _____. I. Number of disks in the stack II. Frequency of shooting the bowl	I only	II only	Both I and II	Neither I nor II
634	In order to reverse the rotation of a two-stroke/cycle loop scavenged, direct reversing, propulsion diesel engine, the cam positions must be changed for the _____.	starting air and fuel pumps	piston cooling pumps	exhaust valves	all of the above
635	In order to start a large, low-speed, main propulsion diesel engine on high viscosity fuel after an extended shutdown, the _____.	fuel must be preheated	intake air should be preheated	lube oil outlet temperature should be increased 20° above normal	none of the above
636	In some Bendix drive electric starting systems, the sudden shock of the pinion gear being engaged with the flywheel is absorbed by the _____.	action of the overrunning clutch	pinion when it engages the ring gear	action of the friction clutch	action of the starter solenoid
637	In some modern large slow speed diesel engines, which of the following is used as the support for the main bearings?	Bedplate	End plates	Tie rods	Sump
638	In the auxiliary diesel engine, shown in the illustration, the _____.	camshaft rotates at the same speed as the crankshaft	governor is linked to the fuel injection pump by vertical linkage	explosion relief doors are clearly visible on both sides of the crankcase	engine oil filter is outboard of the electric starter
639	In the chart shown in the illustration, a right hand rotation engine has the #9 piston on top dead center; therefore, the #1 piston is _____.	on the exhaust stroke	on the compression stroke	on the power stroke	at bottom dead center
640	In the common rail system, excessive pressure in the header may be caused by _____.	improper adjustment of the bypass valve	a dribble in the fuel injection nozzle	insufficient leak off through injection nozzle packing	a malfunctioning injection nozzle
641	In the cylinder head illustrated, the valves are seated by _____.	gas pressure	valve springs	air pressure	a rocker arm not shown
642	In the cylinder of a diesel engine, fuel is ignited by the _____.	spark from a plug in the precombustion chamber	electrical discharge from the distributor	heat of compression within the cylinder	heat from the fuel injection nozzle
643	In the device shown in the illustration, the component lettered "A" is the _____.	heavy phase discharge port	light phase discharge port	dirty oil input port	seal water input port
644	In the diesel engine illustrated, what part is under compression when firing is taking place in a particular cylinder?	Tie rod	Piston rod	Piston rod nut	Lubrication telescopes

ID #	Question	Choice A	Choice B	Choice C	Choice D
645	In the diesel engine shown in the illustration, the space below the cylinder liner lower seals is subjected to _____.	scavenge air pressure	lube oil pressure	cooling water pressure	crankcase pressure
646	In the diesel engine shown in the illustration, what part is under compression when the cylinder is firing?	Tie rod	Piston rod	Turbocharger	Lubrication telescopes
647	In the diesel engine shown in the illustration, which of the following statements is true?	The camshaft turns at the same speed as the crankshaft.	The engine utilizes dry type cylinder liners.	The engine cylinder position shown is at the end of its exhaust cycle.	All of the above.
648	In the diesel engine shown in the illustration, which of the following statements is true?	The camshaft turns at half the speed of the crankshaft.	The engine utilizes wet cylinder liners.	The intake valves are operated with a valve bridge.	All of the above.
649	In the engine shown in the illustration, the part labeled "W" is cooled by _____.	seawater	air	lube oil	convection
650	In the illustrated diesel engine, which label points to the piston?	K	3	4	6
651	In the illustrated engine, the fuel camshaft gear drive housing is indicated as letter _____.	B	F	G	Z
652	In the illustrated engine, the fuel camshaft gear drive housing is letter _____.	C	D	E	F
653	In the illustrated engine, the main camshaft controls the timing of which of the following components?	Intake valves	fuel pumps	exhaust valves	all of the above
654	In the illustrated polar timing diagram for a four-stroke cycle diesel engine, relative to crank degrees of travel with respect TDC or BDC as appropriate, when does the intake valve open?	75 degrees before TDC	85 degrees before TDC	45 degrees after BDC	55 degrees before BDC
655	In the illustrated polar timing diagram for a four-stroke diesel engine, relative to the number of crank degrees before or after TDC or BDC as appropriate, when does the intake valve close?	75 degrees before TDC	85 degrees after TDC	45 degrees after BDC	55 degrees before BDC
656	In the illustration shown, if a crankcase explosion occurs in a diesel engine, which of the following will occur?	Piece #2 will move to the right	Piece #5 will rotate counterclockwise as viewed from the right	Piece #7 will move to the left	Spring #11 will be compressed
657	In the illustration shown, moving the component labeled "E", further to the left, will result in _____.	an increase in the cylinder mean effective pressure	a shorter fuel injection cycle	a greater quantity of fuel injected	an increase in fuel pump delivery pressure
658	In the illustration shown, under what conditions would valves "2" and "3" be closed and valve "6" be opened?	When the HFO centrifuges are being run as separators and clarifiers respectively.	When the HFO purifier is being run as DO purifier.	When the DO purifier is being run as the HFO purifier.	When the HFO purifiers are being run in parallel.

ID #	Question	Choice A	Choice B	Choice C	Choice D
659	In the illustration, pieces #31 and #29, have 16 and 55 teeth respectively. In order to start the engine, the Bendix drive must turn 3000 RPM. Therefore, the air motor assembly must rotate at _____.	872.72 RPM	5516.3 RPM	10312.5 RPM	26400 RPM
660	In the large slow-speed main propulsion diesel engine shown in the illustration, the part labeled "G" is the _____.	lube oil pump	fuel oil pump	jacket water pump	crankcase exhaust fan
661	In the large slow-speed main propulsion diesel engine shown in the illustration, the part labeled "G" is the _____.	jacket water pump	lube oil pump	fuel oil pump	crankcase exhaust fan
662	In the large, slow-speed diesel engine frame shown in the illustration, firing forces are absorbed by the _____.	crosshead guide rails	tie rods	entablature	column
663	In the Otto cycle, the fuel/air mixture is ignited at what point and by what means?	At TDC by heat generated by compression.	Just before TDC by heat generated by compression.	Just before TDC by spark ignition.	At TDC by spark ignition.
664	In the overrunning clutch shown in the illustration, if "A" was rotating faster than "B", the clutch is considered to be _____.	engaged	disengaged	worn out	stripped
665	In the past, the interior sides of most centrifugal purifier bowls were straight. However, the interior side of the bowl shown in the illustration, as compared to a straight interior vertical side bowl, is designed to _____.	allow a greater volume of sealing water to be carried	assist in the self-cleaning process	assist in reducing the thickness of the emulsion interface	eliminate the need for a discharge ring
666	In the pressure-volume diagram shown in the illustration, fuel injection occurs at point _____.	c	d	e	f
667	In the pressure-volume diagram shown in the illustration, the atmospheric pressure line is indicated by line _____.	A	B	C	de
668	In the pressure-volume diagram shown in the illustration, curve 'A-d' indicates _____.	fuel injection after dribble	combustion at approximately constant pressure	opening of exhaust valves	start of fuel injection
669	In the pressure-volume diagram, shown in the illustration, what is indicated to have occurred by the line connecting points "d" and "e"?	The combustion gases have expanded.	The crankshaft has rotated 90°.	Pressure and volume have increased.	The fuel/air charge is compressed.
670	In the pressure-volume diagram, shown in the illustration, what occurs between points "e" and "f"?	The exhaust valve closes.	Exhaust blow down occurs.	Pressure in the cylinder increases.	Volume in the cylinder decreases.
671	In the pressure-volume diagram, shown in the illustration, what occurs between points "e" and "f"?	The exhaust valve closes.	The intake ports close.	Pressure in the cylinder decreases.	Volume in the cylinder decreases.

ID #	Question	Choice A	Choice B	Choice C	Choice D
672	In the pressure-volume diagram, shown in the illustration, the volume line is divided into 16 units indicating _____.	a cylinder volume of 166 cubic inches	16° of crankshaft motion between lines A and B	a 16 to 1 compression ratio	a 15 to 1 compression ratio
673	In the pressure-volume diagram, shown in the illustration, the volume line is divided into 16 units indicating _____.	a cylinder volume of 166 cubic inches	16° of crankshaft motion between lines A and B	a 16 to 1 compression ratio	compression pressure is 1600 PSI
674	In the slow speed diesel engine shown in the illustration, the part labeled "E" is the _____.	high pressure lube oil line	low pressure lube oil line	high pressure fuel line	low pressure fuel line
675	In the starting process of a diesel engine, the main object is to attain the compression conditions sufficient to _____.	turn the flywheel	reduce friction	overcome inertia	ignite the fuel
676	In the theoretical diesel cycle, shown in the illustration, which of the listed conditions normally takes place between points "3" and "4"?	Compression	Combustion-constant volume	Combustion-constant pressure	Expansion
677	In what figure of the illustration does the crosshead experience the greatest side thrust?	Figure 1	Figure 2	Figure 5	Figure 6
678	Incomplete combustion in a running diesel engine can cause piston rings to become stuck as a result of _____.	residual carbon deposits	lube oil viscosity breakdown	uneven heat expansion of the rings	uneven heat expansion of the piston
679	Incorrect timing of the fuel injection system is similar to the effects of poor _____.	metering of the fuel flow to the injector	control of the rate of fuel injection	control of atomization of the fuel	distribution of the fuel throughout the combustion chamber
680	Increasing the compression ratio of a diesel engine while maintaining the designed rate of fuel flow will result in _____.	increased horsepower	reduced efficiency	increased heat loss	lower cylinder pressures
681	Increasing the compression ratio of a diesel engine while maintaining the designed rate of fuel flow will result in _____.	increased horsepower	reduced mean effective pressure	decrease in heat loss	lower cylinder operating temperatures
682	Increasing the compression ratio of a diesel engine while maintaining the designed rate of fuel flow will result in _____.	reduced efficiency	increased thermal efficiency	increased heat loss	lower cylinder pressures
683	Increasing the load on an engine using a double-helix type injection pump varies the effective stroke of the pump to start _____.	earlier and end later	later and end earlier	and end later	and end earlier
684	Indirect cooling of fuel injector nozzle holders for diesel engines is accomplished primarily by _____.	heat conduction into the injected fuel oil	heat conduction into the water jacket wall	water circulation through passages in the holder	fuel oil circulation through passages in the holder
685	Injection lag can be caused by _____.	improper timing of the intake valves	setting of the pump plunger	compressibility of the fuel	position of the needle valve

ID #	Question	Choice A	Choice B	Choice C	Choice D
686	Injection lag in a diesel engine may be caused by _____.	a change in the cetane number of the fuel	a decrease in the air temperature	a decrease in compression pressure	the flexibility of high pressure fuel lines
687	Injection pressure in a common rail fuel system is controlled by _____.	engine speed	varying the fuel pump piston stroke	varying the injector needle valve clearance	a pressure regulating bypass valve
688	Injection pressure in a common rail fuel system is controlled by _____.	engine speed	varying the fuel pump piston stroke	varying the injector needle valve clearance	a bypass valve
689	Injectors for use with heavy fuel oil may be internally cooled by either water or light oil to _____.	prevent heat corrosion to internal components	increase fuel delivery rate and economy	prevent preignition	avoid carbonization of the nozzle tips
690	Insufficient end clearance on newly fitted piston rings in a diesel engine will cause the rings to _____.	jam in the least worn part of the cylinder liner when the rings expand	jam in the most worn part of the cylinder liner when the rings expand	show excessive wear on the top face	show excessive wear on the bottom face
691	Insufficient piston cooling for a large, low-speed, main propulsion diesel engine burning heavy fuels, can result in _____.	high temperature corrosion and burning of piston crown metal	dangerous thermal expansion of the piston skirt	excessive crosshead temperatures	change in fuel cetane number
692	Integral cylinder liners constructed as part of the cylinder block, are characterized by which of the following disadvantages?	They conduct heat poorly.	They must operate with lower mean effective pressures.	They cannot be replaced.	They require special tools for removal.
693	Integral water jacket liners use O-rings near the bottom of the liner. These O-rings serve to _____.	form a water seal between the liner and engine block	allow for slight misalignment of the liner	prevent the escape of lubricating oil from the crankcase	ensure proper temperature flow between the liner and engine block
694	Intercoolers installed on starting air compressors, reduce the possibility of _____.	dust entering the first stage	lube oil carbonization	discharge pulsations	interstage vapor lock
695	Intercoolers installed on starting air compressors, reduce the possibility of _____.	dust entering the first stage	overheating the first stage	overheating the second stage	interstage vapor lock
696	Irregular engine speed in a diesel can be caused by _____.	low cooling water temperature	low fuel viscosity	high injection pressure	binding in the fuel control linkage
697	Irregular engine speed in a diesel generator can be caused by _____.	high generator load	low fuel viscosity	high injection pressure	binding in the fuel control linkage
698	It is easier to replace a dry cylinder liner than a wet one because _____.	of the thin wall thickness	honing makes it easier to maintain the desired oil film	water seals are not required	heat transfer from the liner to the engine block is not a critical factor
699	Item "10" shown in the illustration is used to _____.	prevent damage to device "9" by reducing turbulence	cancel the effects of improper regulation developed by device "11"	regulate flow from the drain pump	direct the flow from the distillate pump

ID #	Question	Choice A	Choice B	Choice C	Choice D
700	Item "17" in the illustration is the dipstick. When should the length of the dipstick be changed?	In most situations this would never be done.	If the operating oil level of the engine is consistently below normal, it will be necessary to use a longer dip stick.	When changing the oil in an operating engine, it may become necessary to use a longer stick to obtain the exact location of the oil level at all times.	If sludge buildup on the bottom of the pan becomes excessive, it will become necessary to shorten the dipstick to accommodate for the false oil level reading.
701	Item "6" shown in the illustration would be identified as a _____.	sleeve bearing	spring bearing	thrust shoe	bearing collar
702	Item "7" shown in the illustration is identified as a _____.	magnetic pickup used to sense shaft speed	dip stick	thermometer	shaft deflection indicator
703	Item "M" shown in the illustration is the _____.	salt water inlet	feed water inlet	jacket water inlet	brine water outlet
704	Item "O" of the device shown in the illustration is the _____.	fair flow nut	inlet directional guide	spindle nut	impeller locking device
705	Item #16 of the piston shown in the illustration is a/an _____.	thrust plate or thrust washer	piston carrier pin	oil drain passage	bearing insert tang
706	Item labeled "L" as shown in section 6 of the illustration is identified as the _____.	air filter	after cooler	air blower	exhaust gas turbine
707	Item labeled "R" as shown in section 6 of the illustration is identified as the _____.	after cooler	non return scavenge valve	air filter	exhaust manifold
708	Item labeled "S" as shown in section 4 of the illustration is identified as the _____.	exhaust port	intake port	after cooler	scavenging valve
709	Jacket water heaters are used on diesel engines to _____.	help the engine start easier in cold weather	maintain the proper jacket water pH	maintain the proper expansion tank water level	keep the engine room warm
710	Keel coolers fouled with marine growth, will result in _____.	higher raw water temperatures	higher jacket water temperatures	a malfunctioning thermostat	higher fuel temperature
711	Late fuel injection occurring at, or after TDC in a diesel engine is indicated by excessive exhaust smoke and _____.	low exhaust temperature	low firing pressure	fuel knock in each cylinder	mechanical knock in each cylinder
712	Late fuel injection timing is indicated by _____.	lower than normal cylinder pressure and low exhaust temperature	lower than normal cylinder pressure and high exhaust temperature	higher than normal cylinder pressure and low exhaust temperature	higher than normal cylinder pressure and high exhaust temperature
713	Late fuel oil injection in a diesel engine can result in _____.	fuel knock	increased power	low compression pressure	high exhaust temperature
714	Line "K" shown in the illustration is the _____.	distillate pump suction	brine eductor suction	brine eductor inlet	feed water inlet
715	Line "P" in the illustration is called the _____.	exponential line	line of maximum horsepower	line of maximum speed	propeller curve

ID #	Question	Choice A	Choice B	Choice C	Choice D
716	Line "P" in the illustration is the _____.	exponential line	line of maximum horsepower	propeller curve	line of maximum efficiency
717	Load control on a diesel engine is accomplished by _____.	regulating the speed of the turbocharger	regulating the amount of fuel admitted to the engine	regulating the speed of the fuel oil transfer pump	changing engine timing
718	Loss of lubricating oil pressure to the main propulsion diesel engine will actuate a/an _____.	overspeed trip	audible/visual alarm	the ships/boats general alarm	reserve oil storage tank
719	Low compression in a diesel engine can be caused by _____.	clogged coolant passages	a leaking cylinder head gasket	low fuel oil pressure	worn or broken cylinder liner sealing rings
720	Low compression in a diesel engine could be caused by _____.	worn or broken cylinder liner sealing rings	high cooling water temperature	worn or broken piston rings	low fuel oil pressure
721	Low compression in a diesel engine could be caused by _____.	worn or broken wet cylinder liner sealing rings	high fuel injection pressure	worn or broken piston rings	low fuel oil booster pump pressure
722	Low compression pressure in a diesel engine can be caused by _____.	improperly seating intake valves	leaking cylinder liner seal rings	late fuel injection timing	carbon deposits on the piston
723	Low compression pressure in a diesel engine cylinder can be caused by _____.	carbon deposits on the piston crown	leaking cylinder liner seal ring	poor quality fuel	worn crankshaft and crankpin bearings
724	Low compression pressure in a diesel engine is caused by _____.	low water in the expansion tank	improperly seated valves	low fuel oil pressure	worn or broken cylinder liner sealing rings
725	Low compression pressure in a diesel engine may be the result of _____.	insufficient fuel supply due to fuel pump valves sticking or leaking	excessive mechanical clearance between the piston crown and cylinder head	excessively worn fuel pump plunger	excessive exhaust back pressure
726	Low cylinder compression pressure and a high exhaust temperature may indicate _____.	early fuel injection timing	leaking valves	a continuously open scavenge air port	low cooling water temperature
727	Lube oil accumulating in the cooling water system of a diesel engine will result in _____.	lube cooler failure	poor heat transfer	mechanical lubricator failure	camshaft seizure
728	Lube oil cannot be efficiently filtered if its _____.	viscosity is too low	temperature is too low	pump discharge pressure is higher than the system's pressure	pump capacity is greater than the system's needs
729	Lube oil contamination will increase due to normal wear of engine components as a result of _____.	abrasive particles	metallic oxides	corrosive acids	any or all of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
730	Lube oil filters can be used to remove most contaminants from lube oil. Which of the contaminants listed would remain in the lube oil after filtering?	Acid sludge	Fuel oil	Sediment	Water
731	Lube oil filters remove contaminants from oil more efficiently if the oil being filtered is _____.	heated to reduce viscosity	cooled to increase viscosity	pumped rapidly through the filter	pumped through the filter under high pressure
732	Lube oil filters remove contaminants more efficiently if the oil being filtered is _____.	under high pressure	under low pressure	heated to reduce viscosity	cooled to increase viscosity
733	Lube oil in the fresh water cooling system of a diesel engine may result from a _____.	camshaft seizure	lube oil pump failure	lube oil cooler failure	lube oil sump overflow
734	Lube oil pumps taking suction from the sump of most small marine engines are usually _____.	diaphragm type	centrifugal type	positive displacement type	eductor type
735	Lube oil pumps taking suction from the sumps of marine diesel engines are usually classified as _____.	diaphragm type	centrifugal type	positive displacement type	eductor type
736	Lubricating oil is supplied to the crankpin bearings in a marine diesel engine by _____.	internal crankshaft passages	immersion in oil	splash lubrication	injection lubrication
737	Lubricating oil systems for diesel engine journal bearings are usually lubricated by which of the following types of lubricating oil systems?	Splash	Gravity	Pressure	Bypass
738	Lubricating oil used in a diesel engine serves to _____.	reduce the wear of bearing surfaces	cool the bearing surfaces	assist in sealing bearing surfaces	all of the above
739	Lubricating oil viscosity in an operating diesel engine can be reduced by _____.	increasing cooling water flow	increasing lube oil flow	dilution by fuel oil	adding SAE 70 oil
740	Lubricating systems for diesel engines are usually designed to first provide a supply of lube oil to the engines _____.	crankpin journals	main bearings	piston crowns	cylinder wrist pins
741	Lubrication for the main reduction gears used with diesel engines is usually supplied by _____.	oil from the main engine sump	an independent lube oil system	the stern bearing head tank	the stern bearing sump tank
742	Maintaining the proper fuel oil temperature will result in _____.	the elimination of valve wear	improved atomization	a decrease in cylinder blow-by	a decrease in cylinder mean effective pressure
743	Many cast iron pistons are designed with heat dams, which serve to _____.	keep piston crown temperatures elevated for smoother combustion	reduce the possibility of overheating the top compression ring	help retain the heat of compression to prevent ignition delay	help retain the heat of compression to prevent combustion knock
744	Many diesel engines have pistons with concave heads to _____.	decrease air turbulence and improve fuel mixing	increase air turbulence and improve fuel mixing	prevent fuel afterburning when injection ends	prolong fuel afterburning when injection ends

ID #	Question	Choice A	Choice B	Choice C	Choice D
745	Many lube oil filters have pressure gages installed on both the inlet and outlet in order to indicate the pressure drop across the filter. In normal operation, the pressure drop will _____.	slowly increase	slowly decrease	remain the same	have no effect on filter operation
746	Marine auxiliary diesel engine starters utilizing Bendix drive gear are powered by an electric starting motor or _____.	hydraulic starting motors	explosive cartridge motors	inertial flywheel motors	compound gear motors
747	Maximum lube system operating pressure for a diesel engine is normally regulated by a/an _____.	orifice in the pump suction	special filter design	pressure drop through the filter	relief valve
748	Maximum rated horsepower of a diesel engine is attained _____.	when the engine RPM is pulled down by overload	at rated engine RPM	at 50% of rated engine RPM	at the speed of maximum torque
749	Maximum rated horsepower of a diesel engine should be attained _____.	when the engine RPM is pulled down by overload	at rated engine RPM	at 50% of rated engine RPM	at the speed of maximum torque
750	Mechanical lubricators for diesel engine cylinders are usually small reciprocating pumps which are _____.	operated manually once each hour	operated until the engine has started	placed into operation only at maximum load	adjustable to meet lubrication requirements
751	Microbiological growths in marine fuel are a common occurrence that can be _____.	extremely detrimental to equipment and operating processes	prevented by maintaining higher storage temperatures	removed from emulsified fuel oil during the centrifuging processes	All of the above are correct.
752	Misfiring in a diesel engine at light loads can be caused by _____.	high lube oil temperature	low lube oil temperature	excessive cylinder cooling	high air injection pressure
753	Mist detectors used on large low-speed and medium speed main propulsion diesel engines monitor and check for the presence of _____.	fuel oil vapor at the sludge tank vent	unburned fuel vapors in the scavenge air receiver	lube oil vapors in the crank case	lube oil vapors in the engine room
754	Modern marine diesel engines equipped with mechanical fuel injection operate on a combustion cycle which is _____.	entirely constant pressure	entirely constant volume	a combination of constant volume and constant pressure	a combination of constant temperature and constant pressure
755	Modern marine diesel engines equipped with mechanical fuel injection operate on a combustion phase within the cycle which is _____.	entirely constant pressure	entirely constant temperature	a combination of constant volume and constant pressure	a combination of constant temperature and constant pressure
756	Modern marine diesel engines using mechanical fuel injection, operate on a combustion cycle which is _____.	a combination of constant volume and constant pressure	a combination of constant temperature and constant pressure	entirely constant pressure	entirely constant volume
757	Most fuel injection nozzles are opened by _____.	fuel oil pressure	a cam operated follower	a spring-loaded pressure plate	timing gears keyed to the crankshaft

ID #	Question	Choice A	Choice B	Choice C	Choice D
758	Most large main propulsion diesel engines use a duplex lube oil strainer to _____.	decrease the time required between cleanings	remove all large and small foreign objects	ensure a positive flow of oil at all times	ensure that all lube oil has been treated twice
759	Most large main propulsion diesel engines use duplex lube oil strainers to _____.	decrease the time required between cleanings	remove water contamination	ensure a positive flow of oil at all times	ensure that all lube oil has been treated twice
760	Most practical diesel engines today operate on a cycle which is a combination of the Diesel and Otto cycles. In this process, compression ignition _____.	begins on a constant volume basis	begins on a constant pressure basis	ends on a constant volume basis	begins and ends on a constant volume basis
761	Most type(s) of microbiological growths in fuel are _____.	bacteria	fungi	yeasts	All of the above
762	Motor vessels usually have independent lube oil systems for main engine and main reduction gears because _____.	coolers are not needed for the gear system	contaminants produced by the engine could harm the reduction gears	non-additive oils are used in the main engine system	different type centrifuges are required for the main engine and reduction gear lube systems
763	Movement of the control rack of the fuel injector shown in the illustration, changes the _____.	fuel injection rate	fuel injection cycle	quantity of fuel injected	fuel pump delivery pressure
764	Movement of the pump control rack in a fuel injection system using individual plunger-type pumps _____.	changes the position of the fuel inlet ports	changes the length of the pump stroke	varies the quantity of fuel delivered	varies the compression of the delivery valve spring
765	Oil control rings are designed with slotted holes to _____.	decrease ring contact area and cut down heat transfer	decrease contact pressure between ring and cylinder wall	increase contact pressure between ring and cylinder wall	permit excess oil to drain back to the sump
766	Oil control rings function to _____.	allow proper lubrication of cylinders and compression rings	reduce the amount of lube oil burned in the combustion chamber	scrape excess lube oil from the liner on the down stroke	all of the above
767	Oil control rings used in two-stroke/cycle diesel engines are located near the bottom of the piston skirt in order to _____.	increase the liner area covered by the oil film	maintain an oil film on the lower liner where scuffing is prevalent	keep excess oil away from intake and exhaust ports	help cushion piston skirt side thrust by providing a hydrodynamic oil wedge
768	Oil oxidation as a result of excessively high lube oil temperature, is harmful to a diesel engine because _____.	oil foaming will always occur	large quantities of oil are consumed	lube oil viscosity always increases when the oil temperature is above normal	corrosive by-products are usually formed
769	Oil oxidation, as a result of excessively high lube oil temperature, is harmful to a diesel engine because _____.	oil foaming will occur	large quantities of oil are consumed	lube oil viscosity is always decreased	corrosive by-products are usually formed

ID #	Question	Choice A	Choice B	Choice C	Choice D
770	On a diesel engine equipped with individual jerk type fuel pumps, adjustments should be made to the tappets (push rods) of the pumps to _____.	equalize effective delivery strokes	regulate combustion pressures	regulate exhaust temperatures	change from light to heavy fuel
771	On a diesel engine with direct-cylinder admission air starting, a leaking air starting valve would be indicated by _____.	an overheated starting air supply pipe	excessive smoke from the engine exhaust	carbon deposit on the exhaust valves	early fuel ignition
772	On a diesel engine, using a distributor type air starting system, that is not running, which of the following methods may be used to detect leaking air starting valves?	Open the cylinder test cocks and check for blowing air.	Check the position of the air start valve cams.	Stop the air compressor and check for pressure drop throughout the system.	Feel each air supply line to see which is warm from leaking air.
773	On a large low-speed main propulsion diesel engine, lower main bearing wear is usually measured by using a/an _____.	dial indicator	outside caliper	bridge gage	tram rod
774	On a main propulsion diesel engine, the instrument shown in the illustration would normally be attached to the _____.	cylinder blow down valve	exhaust manifold	turbocharger after cooler	engine crankcase
775	On a medium-speed main propulsion diesel engine, the crankpin or crank journal bearings receive lubricating oil from _____.	a spindle lubricator	an oil jet	internal splashing	drilled passages in the crankshaft
776	On an opposed-piston engine, increasing the lower crank lead will result in which of the listed operating conditions?	Exhaust ports will uncover after the air intake ports	Exhaust ports will uncover before the air intake ports	Duration of air intake will increase	Duration of air intake will decrease
777	On board supply vessels, a centrifuge is normally used to purify _____.	cooling water	fuel oil	sea water	diesel intake air
778	On most modern diesel engines, the main and connecting rod bearings receive their lubricating oil by _____.	banjo feed	splash feed	gravity feed	pressure feed
779	On small diesel engines, a noticeable decrease in the time interval between the replacement of the lube filter cartridge indicates _____.	piston ring blow-by	dirty air filter	excessive oil pressure	excessive oil temperature
780	On the cylinder indicator diagram illustrated, the dotted line indicated as "L" is describing the _____.	cylinder pressure without injection	firing pressure at 90 degrees crank angle	beginning of compression	power expansion curve
781	On the cylinder indicator diagram illustrated, the maximum rise in pressure occurs during the period labeled as _____.	G	H	J	K
782	On the indicator card shown in the illustration, lines "A" and "B" indicate _____.	top dead center	bottom dead center	the end of injection	the end of ignition
783	Once the separator shown in the illustration has been started, which of the following procedures should be followed?	Feel the machine for its tendency to vibrate.	Check the separator by listening for mechanical sounds.	Look for oil and water leaks in addition to other irregularities.	All of the above procedures should be followed.

ID #	Question	Choice A	Choice B	Choice C	Choice D
784	One advantage obtained from the use of a precombustion chamber in a diesel engine is _____.	increased engine thermal efficiency	higher peak cylinder pressures	higher developed BMEP	smoother combustion
785	One advantage of a vacuum feed sight glass indicator used on cylinder lubricators over the discharge side liquid filled type sight glass is _____.	there are fewer moving parts	adjustments are not required	better visual metering adjustment	a lower grade of cylinder oil may be used
786	One advantage of dry cylinder liners used in a diesel engine is the _____.	absence of water seal rings	greater heat transfer rate than wet liners	greater wear resistance than wet liners	lower thermal expansion rate over wet liners
787	One advantage of dry cylinder liners used in a diesel engine is the _____.	lower thermal expansion rate over wet liners	greater heat transfer rate than wet liners	greater wear resistance than wet liners	procedure to replace dry liners is simpler than for wet liners
788	One cause of diesel engine fuel ignition delay is _____.	mechanical flexibility in the pump mechanism	low fuel booster pump pressure	high fuel rack setting	ignition quality of the fuel oil
789	One cause of diesel engine piston ring blow-by is _____.	reduced scavenging	high exhaust temperatures	insufficient ring side clearance	floating piston pins
790	One cause of diesel engine piston ring blow-by is _____.	increased scavenging air temperature	high piston crown temperatures	excessive main bearing wear	floating piston pins
791	One cause of diesel engine piston ring blow-by is _____.	reduced scavenging	high exhaust temperatures	carbon buildup in the ring groove	floating piston pins
792	One cause of diesel engine surging can be a result of _____.	injection pump fuel rack binding or sticking	low compression	solenoid stuck open	fuel booster pump pressure too high
793	One cylinder of a diesel engine is persistently knocking and does not cease when the fuel supply to that cylinder is secured. Which of the following problems may be the cause?	Low loading of the cylinder	Excessive cooling of that piston	Sluggish ring action on the piston	A mechanical defect in a working part
794	One device used to determine the amount of fuel dilution of diesel engine lube oil is a/an _____.	autogenous ignition indicator	viscosity comparator	precipitation number indicator	modified neutrality chart
795	One end of a cylinder for a medium or high-speed diesel engine is sealed by the piston and rings, the other end is sealed by the _____.	crankcase	cylinder head	valve cover	engine frame
796	One end of a diesel engine cylinder is sealed by the cylinder head and the other end by the _____.	crankcase	piston	cylinder liner	crank cheek

ID #	Question	Choice A	Choice B	Choice C	Choice D
797	One engine manufacturer recommends heavy fuel oil should not be heated above 80°C to 95°C (176°F to 203°F) before purification. This upper limit should be observed to ensure against _____.	flattening of the bowl neoprene O-rings	operation within the explosive range of the fuel	excessive purifier operating pressures	excessive oil viscosity
798	One function of diesel engine lubricating oil is to _____.	induce carbon formation on cylinder walls	improve fuel penetration in the combustion space	form a friction reducing film between mating surfaces	lubricate the fuel injectors
799	One function of the fuel pump delivery check valve is to _____.	prevent carbon deposits from forming on the injector nozzle	help the injector needle reseal without dribbling at the nozzle holes	maintain popping pressure in the high pressure steel piping to the injector	ensure a fuel leak off between the plunger and barrel which provides lubrication for relative movement
800	One method of constructing large marine diesel engines and reducing the total engine frame weight is through _____.	casting interlocking components	welding plates to form sections for assembly	forging integral components	case hardening integral components
801	One method of determining crankshaft misalignment is by _____.	laying a straight edge across the crank webs at the crankpin and measuring the distance to the crankpin in two places	measuring the crank drop on either side of each crank throw while the crankshaft is slowly rotated through one revolution	rotating the crankshaft through one revolution, pausing each 90° of rotation to measure bearing clearances, top and bottom	taking micrometer readings between the crank cheeks opposite the crankpin every 90° of crank angle rotation
802	One of the advantages in the use of a dry liner over a wet liner is _____.	it is fitted with neoprene O-ring seals	the honing process makes it easier to maintain the desired oil film	there is less likelihood of water leaking into the combustion space	it fits more loosely due to a decrease in heat transfer through the composite wall
803	One of the most common methods in preventing a diesel engine piston pin from contacting the cylinder wall is by the use of _____.	non-floating pin	tape rod bosses	snap rings	offset drilling
804	One problem resulting from a diesel engine fuel injector opening pressure being lower than specified by the engine manufacturer, is that the _____.	start of injection will always be retarded	duration of injection will always be reduced	quantity of fuel injected will always be decreased	quantity of fuel injected tends to be increased
805	One result of operating a diesel engine at light load with excessively low cooling water temperatures is a/an _____.	decrease in ignition lag	increase in fuel economy	reduction in lube oil viscosity	increase in cylinder misfiring
806	One simple laboratory analysis of used lube oil that can be carried out aboard ship is called the _____.	paraffin test	blotter test	stability test	spectrographic test
807	Open combustion chambers are designed to _____.	eliminate carbon buildup	improve piston cooling	prevent air charge turbulence	provide proper fuel/air mixing

ID #	Question	Choice A	Choice B	Choice C	Choice D
808	Operating a diesel engine for prolonged periods at temperatures lower than the normal design temperature may cause _____.	the formation of sulfuric acid in exhaust passages	a decrease in lube oil viscosity	a increase in cooling water pH	a thermostat failure
809	Opposed piston diesel engines are classified as _____.	two-stroke/cycle single acting	two-stroke/cycle double acting	four-stroke/cycle single acting	four-stroke/cycle double acting
810	Part "G" of the device shown in the illustration is used _____.	to bleed off accumulated water that would prevent the operating slide from moving down	as the sole means for moving the operating slide into the reseated position	to externally discharge the sludge	solely to hydro-dynamically balance the bowl while in operation
811	Part "I" of the device shown in the illustration is known as the _____.	top or separating disks	intermediate disks	bottom disk	paring disk
812	Part "M" of the device shown in the illustration shown, is referred to as the _____.	top or separating disk	intermediate disk	bottom disk	paring disk
813	Part #15 of the piston shown in the illustration, is the _____.	heat dam	thrust washer	piston carrier	wrist pin
814	Passages are drilled in the crankshafts of diesel engines to provide lubricating oil to the _____.	main bearings	connecting rod bearings	piston pin bushings	All of the above
815	Permitting a diesel engine fuel oil day tank to run dry can cause _____.	overheated injection pumps	water condensation in the cylinders	fuel dilution of the lube oil	air in the fuel system
816	Persistent knocking in one cylinder of an eight cylinder diesel engine would MOST likely be caused by _____.	using fuel oil with low cetane number	a badly worn piston pin	a loose flywheel key	a loose bed plate bolt
817	Persistent knocking of one cylinder of a diesel engine ceases when the fuel supply to that cylinder is secured. This problem may be a result of _____.	low loading of that cylinder	faulty combustion in that cylinder	sluggish piston ring action	excessive piston cooling
818	Piston area, multiplied by piston stroke, multiplied by number of cylinders, equals engine _____.	brake horsepower	displacement	cylinder volume	cylinder clearance
819	Piston compression rings used in a diesel engine function to _____.	transfer heat from the cylinder to the piston	scrape oil from the sides of the piston	seal the combustion space from the crankcase	prevent any piston contact with the cylinder liner
820	Piston cooling fins are located _____.	on top of the piston crown	underneath the piston crown	at the base of the piston skirt	inside the cylinder liner cooling water jacket
821	Piston cooling fins are located _____.	atop the piston crown	beneath the piston crown	at the base of the piston skirt	inside the cylinder liner cooling water jacket
822	Plugged spray holes in a diesel engine fuel injector will cause excessive smoking at idling speed, in addition to _____.	damage to pistons or cylinder heads	detonation throughout the load range	preignition throughout the load range	excessive smoking when the engine is under load
823	Poor combustion in a diesel engine can be caused by _____.	high compression pressure	low compression temperature	low exhaust pressure	high scavenge air pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
824	Poor combustion in a diesel engine operating with blended fuel oil can be caused by _____.	high compression pressure	high fuel oil viscosity	low exhaust pressure	high scavenge air pressure
825	Poor quality fuel being used in a turbocharged medium-speed, diesel engine could result in _____.	hard starting	excessive fuel consumption	loss of power	all of the above
826	Port "C" of the device shown in the illustration is used as the _____.	heavy phase discharge port	light phase discharge port	dirty oil inlet port	sealing water inlet port
827	Precision engine bearing inserts are manufactured with a small portion of the bearing ends extending beyond the bearing housing or caps. The installation process of these bearings requires sufficient _____.	overlap	crush	lap or lead	protrusion
828	Precision engine bearing inserts are manufactured with a small portion of the bearing ends extending beyond the bearing housing or caps. This design provides for positive seating and is commonly referred to as bearing _____.	clearance	crush	lap or lead	offset
829	Precombustion chambers differ from turbulence chambers in that precombustion chambers _____.	allow fuel injection directly into the space above the piston	do not contain the fuel injector nozzle tip	contain the major portion of the total clearance volume	contain a smaller portion of the total clearance volume
830	Precombustion chambers, and energy cells in high-speed, small bore diesel engines all serve to increase _____.	firing pressure	ignition quality of fuel	fuel/air ratio during compression	turbulence
831	Prior to starting most medium-speed propulsion diesel engines, which of the procedures listed should be observed?	The expansion tank should be topped off.	The thermostatic water regulating valves should be manually opened.	The fuel filters should be changed.	The engine should be turned over slowly with the indicator cocks open.
832	Prior to starting the device shown in the illustration, the operator should _____.	renew the nylon bowl seal	tighten all foundation bolts	apply heat to the sludge tank	check gear housing oil level
833	Prior to starting, the purpose of turning over a main propulsion diesel engine with the cylinder test cocks open, is to _____.	test the starting system	remove condensation and other liquids from the cylinders	check the compression	check for proper lube oil pressure
834	Problems with the diesel engine fuel injection pump are usually caused by _____.	improper adjustment	contaminated fuel	kinked fuel lines	excessive engine vibration
835	Prolonged operation of a diesel engine with a closed cooling water system, at lower than normal designed operating temperatures can _____.	increase power output	decrease lube oil viscosity	eliminate fuel knock	cause sulfuric acid formation
836	Proper atomization of fuel in diesel engine combustion chambers will _____.	affect the injection pressure	improve combustion	reduce compression pressure	decrease power output

ID #	Question	Choice A	Choice B	Choice C	Choice D
837	Proper dispersion of fuel in a diesel engine cylinder is dependent upon the _____.	injection pressure	shape of combustion space	turbulence in combustion space	all of the above
838	Proper filtering and straining of diesel fuel is important because the _____.	fuel oil pump will overspeed if dirt is not removed	fuel oil transfer pumps cannot tolerate small amounts of grit in the oil	fuel injectors may be damaged by foreign particles in the fuel oil	dirty fuel will clog the intake air filter
839	Proper housekeeping to prevent the formation of microbiological growths within a fuel system includes the prevention of water accumulations and the use of _____.	steam coils	fuel oil centrifuges	fuel oil discharge filters	chemical additives called biocides
840	Proper lubrication of the main bearings is more easily obtained in a single acting four-stroke/cycle diesel engine than in a single acting two-stroke/cycle diesel engine because _____.	bearing pressure in a four-stroke/cycle single acting diesel engine is continually reversed	bearing pressure in a two-stroke/cycle single acting diesel engine is continually reversed	the maximum bearing pressure is higher in a single acting two-stroke/cycle diesel engine	two-stroke/cycle diesel engines require more complicated lubrication piping
841	Proper lubrication of the main bearings is more easily obtained in a single acting, four-stroke/cycle diesel engine than in a two-stroke/cycle diesel engine because _____.	the direction of pressure on the journals in four-stroke engines is continuously reversing, whereas in two-stroke engines it is constant	positive feed lubricators are installed on all bearings of four-stroke engines, whereas as a splash feed system is used on two-stroke engines	four-stroke engines usually utilize a heavier grade of fuel oil than two-stroke engines	two-stroke engines usually consume less lube oil than four-stroke engines
842	Regarding jerk-type fuel pumps as used on some auxiliary diesel engines, the delivery cutoff point is controlled with a _____.	delivery valve spring	spill port for leak off	check valve in the guide	helical groove on the plunger
843	Regarding the fuel injector shown in the illustration, the purpose of piece No. 38 is to _____.	filter the fuel	maintain fuel pressure at a preset level	adjust the fuel rack spring tension	relieve excess fuel pressure to the suction side of the pump
844	Regarding the overrunning clutch shown in the illustration, you would expect _____.	"A" to travel in a direction opposite to "B"	"A" to drive "B" in the indicated direction of rotation	"B" to drive "A" at any speed of "A" or "B"	"B" to drive "A" when "B" provides the power for rotation
845	Ring groove inserts are occasionally used on aluminum alloy pistons to _____.	reduce the ring groove wear rate	seal against crankcase vapors	lessen the wear on aluminum parts of the cylinder	allow for the greater expansion rate of aluminum
846	Sacrificial zinc anodes are used on the saltwater side of diesel engine heat exchangers to _____.	reduce electrolytic action on heat exchanger metals	keep heat transfer surfaces shiny and clean	prevent rapid accumulation of marine growth	provide a protective coating on heat exchanger surfaces

ID #	Question	Choice A	Choice B	Choice C	Choice D
847	Sacrificial zinc anodes are used on the saltwater side of diesel engine heat exchangers to _____.	provide a protective coating on heat exchanger surfaces	keep heat transfer surfaces shiny and clean	prevent rapid accumulation of marine growth	reduce electrolytic action on heat exchanger metals
848	Scale and dirt accumulation in the waterside of a lube oil cooler will be indicated by a gradual increase in the lube oil _____.	TBN number	viscosity	temperature	foaming
849	Scuffed cylinder liner surfaces in a diesel engine can result from _____.	starting the engine hot	knurling the piston skirt	operating an overheated engine	using scuff resistant piston rings
850	Scuffed cylinder liner wearing surfaces in a diesel engine can result from _____.	starting the engine while hot	knurling the piston skirt	operating the engine overheated	scuff resistant piston rings
851	Scuffed cylinder liner wearing surfaces in a diesel engine can result from _____.	chromium plating piston rings	knurling the piston skirt	extended maximum power operation	applying load to a cold diesel engine
852	Shaker, circulation, and spray are the three general methods used in _____.	pre-injection fuel oil treatment	lube oil filtration	lube oil purification	piston cooling
853	Significant retardation of diesel engine fuel injection timing will result in _____.	decreased ignition lag	advanced fuel ignition	increased fuel economy	reduced engine power
854	Slots are provided in a diesel engine piston oil scraper ring to _____.	decrease piston side thrust pressure	allow for thermal expansion of the ring within the ring land	permit drainage of excess oil to the engine sump	make it more flexible for scraping cylinder surfaces
855	Sludge formation in a diesel engine lube oil system is caused by _____.	carbonization of oils from the combustion chambers	emulsions of lube oil and water	coagulation of unburned fuel below the piston rings	All of the above.
856	Small amounts of moisture are necessary to trigger the growth of microbiological organisms found in some marine fuels. Some sources of water contamination are _____.	tank surface leakage	humidity and condensation	improper tank washing procedures	All of the above
857	Small cracks in the crankshaft bearing surface of a diesel engine are an indication of _____.	corrosion fretting	insufficient lubrication	misalignment	fatigue failure
858	Some diesel engines are fitted with a thermometer in the cooling water outlet from each cylinder. If the cooling water temperature from all cylinders begins to rise above normal, you should suspect _____.	increased blow-by in all cylinders	incomplete combustion in all cylinders	overloading in all cylinders	insufficient fuel delivery to all cylinders
859	Some diesel engines are fitted with a thermometer in the cooling water outlet from each cylinder. If the cooling water temperature from an individual cylinder begins to rise, you should suspect _____.	overloading of adjacent cylinders	overloading of that cylinder	increased blow-by in that cylinder	incomplete combustion in that cylinder
860	Some fuel injection systems utilize port-and-helix metering. Which of the following statement describes a system 'timed for port closing'?	Injection has a variable beginning and a constant ending.	Injection is metered by an external delivery valve.	Injection has a constant beginning and variable ending.	Injection will not occur until the helix closes the delivery valve.

ID #	Question	Choice A	Choice B	Choice C	Choice D
861	Standby, or emergency diesel generator day tanks should always be kept full to reduce the possibility of _____.	sediment contamination	fuel filter clogging	moisture formation from condensation	inadequate transfer pump suction head
862	Starting a large low-speed propulsion diesel engine on diesel fuel during cold weather conditions, will be made easier by _____.	increasing the quantity of starting air	increasing the lube oil pressure	heating the engine fuel supply	heating the engine coolant
863	Starting a large propulsion diesel engine using diesel fuel during cold weather conditions can be made easier by _____.	increasing the quantity of starting air	increasing the lube oil pressure	heating the engine fuel supply	heating the engine jacket water
864	Starting aids such as glow plugs, are installed on _____.	large, direct drive diesel engines	diesel engines designed to burn residual fuels	medium-speed, four-stroke/cycle diesel engines	small diesel engines utilizing electric starting equipment
865	Starting aids, such as glow plugs, are usually installed on _____.	large, direct drive diesel engines	diesel engines designed to burn residual fuels	medium-speed, four-stroke/cycle diesel engines	small diesel engines with electric motor starters
866	Starting air check valves are held firmly on their seats by _____.	cam rollers on the camshaft	spring force	air pressure on top of the valve differential piston	air pressure on the bottom of the valve differential piston
867	Starting systems for large, direct reversing, main propulsion diesel engines are usually _____.	hydraulic starting motor	electric starting motor	direct air admission	vane type air motors
868	Sticking of diesel engine piston compression rings may be caused by _____.	high compression pressure	excessive ring action	excessive cylinder lubrication	improper ring rotation
869	Successful combustion inside the cylinders of a diesel engine is dependent upon _____.	fine atomization	high temperature	proper mixing of fuel and air	all of the above
870	Surface irregularities, such as erosion and pitting on injection pump plungers, will _____.	increase ignition delay	affect fuel oil metering	affect engine performance at low speed only	disappear due to fuel oil abrasion
871	Telescopic pipes which are attached to water cooled pistons of large slow-speed main propulsion diesel engines are designed to _____.	overcome excessive crankcase pressure	prevent excessive lube oil temperature	allow piston cooling water to efficiently enter the piston despite its reciprocating piston motion without contaminating the engine lube oil	prevent contamination of the cylinder cooling water with engine lube oil
872	Temperature control valves installed in the jacket cooling water system of a diesel engine, modulates the rate of water flow through the _____.	cooling water pump	nozzle cooling passages	cylinder jackets	heat exchanger
873	The #3 piston shown in the illustration, is on the _____.	intake stroke	exhaust stroke	compression stroke	power stroke

ID #	Question	Choice A	Choice B	Choice C	Choice D
874	The ability of a fuel particle to travel into the combustion chamber before burning is called _____.	penetration	permanence	turbulence	atomization
875	The accumulator shown in the illustration can be charged by the _____.	hand pump	cranking motor	reservoir pump	starter control valve
876	The accumulator shown in the illustration is pressurized by _____.	pump "F" only	pump "H" only	either pump "F" or pump "H"	neither pump "F" nor pump "H"
877	The admission valve, shown in the illustration, is fitted to an air supply manifold for opening and closing off the supply of compressed air to the starting valves, as well as air distribution to the main propulsion diesel engine. The admission valve is opened by _____.	vacuum on the control valve outlet	control air pressure on the guide piston acting downward on the valve piston	spring tension on the valve piston with a momentary interruption of reservoir air	venting the starting system air distribution
878	The adverse effects of burning high sulfur fuel can be compensated for by using a cylinder oil having sufficient _____.	dispersant additives	floc point depressive additives	alkalinity	ignition quality
879	The adverse effects of burning high sulfur fuel can be compensated for by using a lubricating oil having sufficient _____.	dispersant additives	floc point depressive additives	alkalinity reserves	ignition quality
880	The air start check valve shown in the illustration is opened by _____.	a rocker arm	air pressure	a pilot piston	a cam follower
881	The air start timing in the system shown in the illustration can be advanced by _____.	tightening spring II	loosening spring II	shortening stem III	lengthening stem III
882	The air supplied to a diesel engine is compressed to _____. I. provide heat for the ignition of the fuel II. decrease injection delay	I only is correct	II only is correct	both I and II are correct	neither I or II are correct
883	The amount of fuel delivered by a helical plunger fuel injection pump is controlled by _____.	varying the pump discharge pressure	varying the pump return pressure	rotation of the pump plunger	rotation of the pump barrel
884	The amount of fuel delivered by a helical plunger type fuel injection pump is controlled by _____.	rotation of the pump plunger	rotation of the pump barrel	varying the pump supply pressure	varying the pump return pressure
885	The amount of fuel delivered by a unit injector is controlled by the _____.	camshaft	main spring	rack position	engine speed
886	The amount of fuel delivered for each cycle must be in accordance with the engine load, and the same quantity of fuel must be delivered to each cylinder for each power stroke at that load. Which of the following statements describes this requirement?	Proper timing	Accurate metering	Suitable injection rate	Suitable atomization rate
887	The amount of fuel injected in a particular time, or degree, of crankshaft rotation is termed _____.	metering	timing	rate of injection	rate of distribution

ID #	Question	Choice A	Choice B	Choice C	Choice D
888	The amount of fuel injected into a cylinder by a unit injector is controlled by _____.	the firing pressure in the cylinder	a metering helix	varying the length of the plunger stroke	varying the clearance between the injector cam and the injector rocker arm
889	The amount of fuel injected into a diesel engine cylinder by a unit injector, is controlled by _____.	the firing pressure in the cylinder	a metering helix inside the pump	varying the physical length of the plunger stroke	varying the clearance between the injector cam and the injector rocker arm
890	The amount of wear on a split precision main bearing can be accurately determined by comparing the data from a previous reading to the present readings taken with a _____.	dial indicating outside caliper	telescoping gauge	ball anvil outside micrometer	screw thread outside micrometer
891	The amount of wear on a split precision main bearing can be most accurately determined by comparing the data from a previous reading to the present readings taken with a _____.	dial indicating inside vernier caliper	telescoping gauge	ball anvil outside micrometer	screw thread outside micrometer
892	The amount of wear on a split, fixed sleeve-type, main diesel bearing can be accurately determined with a _____.	dial indicating outside caliper	spider gauge	ball anvil outside micrometer	screw thread outside micrometer
893	The angular distance a flywheel rotates between the firing of the cylinders of a V-16, four-stroke/cycle diesel engine is _____.	22.50°	33.75°	45.00°	90.00°
894	The area indicated by the letter "L" of the device shown in the illustration is properly called the _____.	pre-injection chamber	operating water reservoir	channeling chamber	injection chamber
895	The area indicated by the letter "W", shown in the illustration is correctly termed the _____.	closing chamber	parting chamber	upper sliding piston chamber	opening chamber
896	The area where a cam follower would most likely leave the lobe surface of a two-stroke cycle engine camshaft would be at the _____.	first point of acceleration during the exhaust valve opening	first point of the intake valve closing	first point of deceleration during exhaust valve opening	last point of the intake valve closing
897	The arrangement and shape of the cams on a diesel engine camshaft directly control which of the listed groups of operating conditions?	Speed, torque, and horsepower production	Firing order, valve timing, and valve lift	Fuel consumption, efficiency, and cylinder pressure	Scavenge pressure, compression ratio, and exhaust pressure
898	The average pressure exerted on a piston during each power stroke is termed _____.	indicated horsepower	mean effective pressure	exhaust back pressure	compression pressure
899	The bearing shown in the illustration serves to _____.	provide linear motion to the vessel by the conversion of the rotating forces of the engine	prevent angular and offset misalignment due to the inertial forces of the propeller and its associated shafting	reduce resonant frequencies allowing the use of smaller harmonic balancers	transmit the axial thrust of the propeller to the foundation of the vessel via the bed plate

ID #	Question	Choice A	Choice B	Choice C	Choice D
900	The bearings used to support the crankshaft of a diesel engine are generally called _____.	line shaft bearings	connecting rod bearings	main bearings	support bearings
901	The Bendix drive on the starting motor illustrated is indicated by piece number _____.	30	45	52	53
902	The blower type crankcase ventilation system _____.	removes combustible gases from the crankcase	prevents the formation of combustible gases in the crankcase	cools lubricating oil	improves cold weather starting
903	The bore of a diesel engine cylinder describes the _____.	swept volume of the cylinder	inside diameter of the cylinder	piston displacement in the cylinder	length of the piston stroke
904	The bore of a diesel engine describes the _____.	length of the piston rod	height of the piston	volume of the cylinder	diameter of the cylinder
905	The bowl of a disk type centrifuge is dynamically balanced. To maintain the balance of the bowl after it has been disassembled and cleaned, which of the following statements represent the normal practice of re-assembling?	The disk stack can be reassembled in any sequence.	The disks in the stack must be restacked from the highest numbered disk at the bottom, to the lowest numbered disk at the top.	The disks in the disk stack must be restacked from the lowest numbered disk at the bottom to the highest numbered disk at the top.	If the reassembly of the disk stack does not allow the proper seating of the bowl top, disks from the mid-portion of the stack must be removed.
906	The 'breaking-up' of fuel as it enters a diesel engine cylinder is known as _____.	airification	vaporization	atomization	gasification
907	The burning of fuel oil in a diesel engine having a high sodium content, will cause _____.	corrosion and grooving of exhaust valves	corrosion and gumming of the fuel injection pump	salt deposits in the exhaust manifold	slag deposits in the fuel injection equipment
908	The butterfly valve overspeed device, shown in the illustration, is actuated by the engine overspeeding, resulting in _____.	an increase in oil pressure acting against the piston rod	a counterclockwise rotation of the butterfly valve to shut off the air to the engine	an increase in compression on the spring	the piston rod moving to the right due to spring force
909	The butterfly valve overspeed device, shown in the illustration, is designed to close should the engine overspeed, resulting in _____.	an increase in oil pressure acting against the piston rod	a counterclockwise rotation of the butterfly valve to shut off the air to the engine	an increase in compression on the spring	the piston rod moving to the right by spring force
910	The camshaft drive is designed to maintain proper camshaft speed relative to crankshaft speed. In maintaining this relationship, the camshaft drive causes the camshaft to rotate at _____.	one-half crankshaft speed in a two-stroke cycle diesel engine	crankshaft speed in a two-stroke cycle diesel engine	two times crankshaft speed in a two-stroke cycle diesel engine	one-fourth times crankshaft speed in a four-stroke cycle diesel engine
911	The camshaft on a four-stroke/cycle diesel engine is used to operate the _____.	fuel injectors	exhaust valves	intake valves	all of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
912	The camshaft on a four-stroke/cycle diesel engine provides a means to operate the _____.	fuel injectors	exhaust valves	intake valves	all of the above
913	The camshafts on the engine, shown in the illustration, operate at a speed equal to _____.	twice the crankshaft speed	the crankshaft speed	one-half of the crankshaft speed	proportionate to the crankshaft speed
914	The cetane number of a diesel fuel oil indicates its _____.	viscosity	acid content	heating value	ignition quality
915	The cetane number rates fuels for diesel engines according to its _____.	antiknock characteristics	ignition qualities	rates of vaporization	viscosity
916	The cetane rating of diesel fuel is an indication of the _____.	ignition quality of the fuel	calorific value of the fuel	flash point of the fuel	rate of fuel consumption
917	The color of the diesel engine detergent type lube oil in an operating diesel engine is black, this indicates _____.	'worn out' oil	fuel dilution	water dilution	normal oil condition
918	The combustion of fuel for the illustrated engine is initiated by _____.	a spray of fuel into a turbulence combustion chamber	fuel sprayed into an energy cell	fuel injection provided by a unit injector	individual Bosch fuel pumps
919	The component identified as item #15 is used to _____.	test injector popping pressure	stop fuel delivery to the injector	advance fuel pump timing	increase the fuel pump delivery pressure
920	The component identified as item #15 is used to _____.	test injector popping pressure	prime the pump to remove air	advance fuel pump timing	lift the follower off the cam
921	The component identified as item #9 is used as part of the _____.	fuel injection metering system	fuel pressure delivery system	cylinder lubricating system	safety shut down system
922	The component labeled "A" on the engine reversing device shown in the illustration, performs its function by transmitting _____.	a hydraulic pressure which shifts an alternate set of camshaft followers to ride on the engine camshaft	an electric voltage which energizes solenoids to de-clutch the engine	a pneumatic signal which activates a hydraulic control cylinder allowing the camshaft to shift axially	a fuel oil pressure signal which reverses the engine governor control cylinder
923	The component labeled "E" on the device shown in the illustration is the _____.	separating disk	operating slide	bowl bottom	gravity disk
924	The component labeled "F" on the device shown in the illustration is known as the _____.	dosing ring	operating slide	paring disk	sliding bowl bottom
925	The component labeled "F" on the device shown in the illustration, during the normal operation of the centrifuge should be _____.	in the down position as a result of establishing the water flow through "Q"	in the down position as a result of the applied spring force during the self-cleaning cycle	in the up position as a result of the applied spring force after the water flow through "P" is secured	in the up position as the only result of securing the water flow through "Q"
926	The component labeled "H" shown in the illustration is called the _____.	cold start injector	cylinder lubricator	cylinder test valve	precombustion chamber

ID #	Question	Choice A	Choice B	Choice C	Choice D
927	The component labeled "O" on the device shown in the illustration is called the _____.	sliding bowl bottom	bottom disk	sludge separator	bowl body
928	The component labeled as part #20 in the illustration is used to _____.	meter the amount of oil flow to the cylinder lubricating quill	adjust the timing of the cylinder lubricating oil to the cylinder	indicate the quantity of oil flow to the cylinder	prevent the backflow of oil and combustion gases
929	The component shown in the illustration would be identified as a _____.	slow speed engine cylinder liner lubricator	slow speed engine fuel pump	centrifugal flyweight governor	injector cooling system pump
930	The compression ratio of a diesel engine refers to the ratio between the _____.	piston area to connecting rod length	cylinder volumes at top dead center and at bottom dead center	engine cylinder size to piston size	the number of compression strokes for a given horsepower
931	The consistent burning of fuel oil with a high sulfur content in a diesel engine will result in _____.	clogged fuel injection pumps	increased cylinder liner wear	intake valve stem corrosion	varnish deposit on pistons
932	The control air distributor shown in the illustration functions to _____.	provide lube oil pressure to the engine governor	provide hydraulic pressure for reversing the engine	provide air pressure to open the appropriate air start valve in the engine	control the opening and closing of the intake and exhaust valves in the engine
933	The control rack to a unit injector regulates fuel delivery by _____.	altering spring tension on the plunger	rotating the plunger and position of the helix	regulating the lift of the check valve	altering the actual length of the plunger stroke
934	The cooling water pump driven by a direct reversing diesel engine is usually of the straight impeller vane type with a concentric housing to _____.	allow the pump to turn in either direction	provide equal pump efficiency turning in either direction	minimize pump clogging from marine growth	prevent cavitation at the pump outlet
935	The cooling water system for the diesel engine shown in the illustration flows through the inlet manifold, to the jumpers, through cylinder liner/head assembly, and out the water discharge manifold. Which of the listed lettered sets represents this circuit?	"M", "N", "9", "5", and "W"	"N", "M", "C", "5", and "W"	"N", "M", "9", "3", and "W"	"W", "3", "9", "M", and "N"
936	The crankcase of many diesel engines are kept under a slight vacuum by the _____.	scavenging action of the piston	piston type vacuum pump taking suction off a differential manometer	gland exhausting manometer	crankcase exhaust fan or eductor
937	The crankcases of many diesel engines are kept under a slight vacuum to _____.	improve fuel economy	increase the air charge velocity	reduce the risk of explosion	all of the above
938	The cubic inch (or liter) displacement of a cylinder is determined by the diameter of the piston and the _____.	length of the crankshaft	volume of the clearance space	weight of the piston	length of the stroke

ID #	Question	Choice A	Choice B	Choice C	Choice D
939	The cylinder liner forming the cylinder wall and the inside of the water jacket is called a _____.	dry liner	wet liner	jacket liner	corrugated liner
940	The cylinder liner shown in the illustration is a/an _____.	dry liner	wet liner	integral-jacket liner	sealed-jacket liner
941	The cylinders labeled "B" and "C" in the illustration are used to _____.	provide oil to lubricate component "F"	supply a specific volume of oil to the engine governor	provide the required quantity of grease at specified maintenance intervals	supply the force required to shift the engine camshafts axially to reverse engine rotation
942	The dashed lines shown in the illustration, labeled "Y", represents the _____.	cooling water lines	telescopic oil lines	tie rods	fuel oil lines
943	The degree of fuel atomization in a diesel engine cylinder depends primarily on _____.	the size of the holes in the fuel nozzle	timing of the pump	supply pressure to the pump	shape of the combustion chamber
944	The delivery valve installed in a port and helix fuel injection pump is designed to _____.	maintain constant pressure in the discharge line	maintain a column of fuel in the line	accurately meter the quantity of fuel injected	close with hydraulic action
945	The depth of fuel oil in a tank is normally measured through the _____.	vent line	overflow line	feed line	sounding tube
946	The desirable properties of a marine fuel oil should include _____.	high flash point and high viscosity	low flash point and high viscosity	low heating value and high sulphur content	high heating value and low sulphur content
947	The device allowing for the change in volume of the cooling water in a propulsion diesel engine closed cooling system is the _____.	fresh water expansion tank	sea water expansion tank	thermostatic expansion valve	jacket water cooler accumulator
948	The device labeled "A" shown in the illustration is termed a/an _____.	precombustion chamber	energy cell	turbulence or swirl chamber	air cell
949	The device labeled "A", shown in the illustration, is known as the _____.	centripetal pump cover	bowl assembly hood	regulating ring	kinetic converter
950	The device labeled "B" in the illustration is a _____.	crankshaft rotating at twice the speed of the camshaft	camshaft rotating at the speed of the crankshaft	crankshaft rotating at the speed of the camshaft	camshaft rotating at twice the speed of the crankshaft
951	The device labeled "B", shown in the illustration is known as the _____.	upper ring chamber	set of regulating rings	comminuting device	centripetal pump chamber cover
952	The device labeled "B", shown in the illustration rotates at _____.	the same speed of the component labeled "7"	one half the speed of "T"	the same speed of the crankshaft	the same speed of the device labeled "2"
953	The device labeled "B", shown in the illustration rotates at _____.	one half the speed of the component labeled "10"	a speed not equal to that of the camshaft	the same speed of the device labeled "T"	the same speed of the device labeled "N"
954	The device labeled "C" shown in the illustration is known as the _____.	upper locking ring	lower paring device	upper paring gasket	pump lock
955	The device labeled "D", as shown in the illustration, is the bowl _____.	hood	top	cover	hub

ID #	Question	Choice A	Choice B	Choice C	Choice D
956	The device labeled "H", shown in the illustration is referred to as the _____.	upper chamber bowl gasket	centrifugation chamber bottom gasket	sliding piston upper seal	sliding piston lower seal
957	The device labeled "T", shown in the illustration rotates at _____.	one half the speed of the component labeled "10"	a speed not equal to that of the camshaft	the same speed of the device labeled "N"	the same speed of the device labeled "B"
958	The device shown in figure "A" of the illustration is used to _____.	inject fuel into the cylinder	admit starting air to the cylinder	provide lubrication to the cylinder	provide an adapter to obtain combustion pressure readings
959	The device shown in the illustration and indicated as the part labeled "B" is the _____.	heavy phase discharge port	light phase discharge port	dirty oil inlet port	sealing water inlet port
960	The device shown in the illustration can be automatically or manually activated for self-desludging. The desludging process is initiated by which of the labeled components listed below?	"F"	"P"	"Q"	"R"
961	The device shown in the illustration can be automatically or manually desludged. The closing sequence at the end of the desludging cycle is initiated by opening which of the labeled components listed below?	F	P	Q	R
962	The device shown in the illustration is a _____.	rotary type air start pilot distributor for slow speed diesel engines	photo-electric, explosive gas indicator, for use in fuel oil tank cofferdams	comparator type mist detector for large low speed, crosshead type engines	tank level indicator manifold for bunker tanks
963	The device shown in the illustration is a _____.	rotary type mist detector, designed for use in four-stroke, high speed diesel engines	photo-electric, explosive gas indicator, for use in high speed, two-stroke, trunk type piston engines	comparator type mist detector for large low speed, crosshead type engines	level type explosimeter, for small medium speed, trunk piston type engines
964	The device shown in the illustration is classified as a/an _____.	comparator type mist detector	exhaust gas vapor condenser	Ringleman exhaust gas analyzer	reflective type explosion meter
965	The device shown in the illustration is classified as a/an _____.	lube oil viscosity analyzer	comparator type oil mist detector	starting air distributor	stack gas analyzer
966	The device shown in the illustration is classified as a/an _____.	engine start air rotary distributor	auxiliary boiler flame sensor	exhaust gas analyzer	crankcase oil mist detector
967	The device shown in the illustration is closed by force as provided by _____.	"E"	"F"	"H"	"J"
968	The device shown in the illustration is opened by force as provided by _____.	pneumatic pressure	spring pressure	scavenging air pressure	hydraulic pressure

ID #	Question	Choice A	Choice B	Choice C	Choice D
969	The device shown in the illustration is screwed directly into the cylinder head through an opening in the combustion space. The purpose of the device is to _____.	attach a special gauge to take firing and compression readings	remove moisture accumulation from the cylinder prior to starting	inject fuel oil into the cylinder	warn of excess combustion pressure in the cylinder
970	The device shown in the illustration is used to secure the air supply to a diesel engine when the engine overspeeds. In order for this to occur, supplied oil pressure must _____.	move the piston rod to the left	move the piston rod to the right	decrease allowing the spring to move the piston rod to the right	decrease allowing the butterfly valve to turn counterclockwise
971	The device shown in the illustration may be closed by using pressurized air on some recently built large low speed engines and would replace the component identified as _____.	"E"	"F"	"H"	"J"
972	The device shown in the illustration may be closed by using pressurized air on some recently built large low speed engines and would replace the component identified as _____.	"E"	"J"	"H"	"F"
973	The device shown in the illustration operates on the basic principle of _____.	variable photo-electric cell output voltage	variation of specific volume of a vapor	Venturi effect (square root of vapor velocity)	kinetic energy imparted through centripetal force
974	The device shown in the illustration, is known as a _____.	sliding piston type self cleaning centrifuge	sliding bowl type self cleaning centrifuge	solid bowl type self cleaning centrifuge	variable displacement axial piston pump
975	The device used to engage a diesel engine starting motor with the flywheel ring gear is the _____.	automatic follow-up mechanism	muff coupling and release mechanism	solenoid pinion-shift mechanism	friction clutch mechanism
976	The device used to store a charged pressure for an hydraulic starting system is called the _____.	reservoir	hand pump	accelerator	accumulator
977	The devices labeled "1" and "2" shown in the illustration are properly termed the _____.	starting gear and shrouding	slinger ring and lip seal	jacking ring and indicator	flywheel and indicator
978	The diagram shown in the illustration may be used to determine the proper operation of the engine. Which of the following statements represents an accurate interpretation of the diagram?	The engine may be operated in any area of the diagram provided steps are taken to reposition the load indicator.	Operation within area "B" is permitted for extended time periods provided no changes are made to the air intake system.	Ideally the engine should be operated in area "A", however, it is permissible to intermittently operate the engine in area "B".	Assuming the load indicator reads 90% and the engine speed is at 80% the engine can be operated until maintenance requirements become apparent.

ID #	Question	Choice A	Choice B	Choice C	Choice D
979	The diameter of a piston is usually less at the crown than at the skirt, in order to _____.	facilitate the installation of piston rings	allow for the expansion of the piston during operation	prevent crankcase vapors from entering the combustion chamber	reduce wearing of the upper cylinder liner
980	The diesel engine combustion chamber shown as figure "C" in the illustration is a/an _____.	stratified charge combustion chamber	precombustion chamber	turbulence chamber	open combustion chamber
981	The diesel engine component labeled "1", shown in the illustration is called a/an _____.	inlet valve spring	external thread	conical speed/surge prevention device	exhaust valve spring
982	The diesel engine component labeled "19", shown in the illustration is called a/an _____.	inlet valve	exhaust valve	air start valve	unit injector
983	The diesel engine component labeled "3", shown in the illustration is called the _____.	head valve assembly	cylinder head	scavenging air space	cylinder liner
984	The diesel engine component labeled "5", shown in the illustration is known as the _____.	piston crown	connecting rod end assembly	heat sink space	piston thrust washer
985	The diesel engine component labeled "Z", shown in the illustration is called the _____.	inlet valve bridge	EGT monitor	exhaust valve bridge	scavenging air inlet
986	The diesel engine connecting rod shown in the illustration is classified as a/an _____.	marine-type rod	fork-and-blade type rod	articulated type rod	primary type rod
987	The diesel engine connecting rod shown in the illustration is called a/an _____.	marine-type rod	articulated rod	fork-and-blade rod	master rod
988	The diesel engine connecting rods shown in the illustration are distinctively named _____.	hook and nail	fork and blade	male and female	left hand and right hand
989	The diesel engine piston crown is indicated by the component labeled _____.	K	3	4	6
990	The diesel engine rocker arms shown in the illustration serve to _____.	open the intake and exhaust valves	operate the exhaust and starting valves	convert rotational energy to reciprocating pressures	open the exhaust valves and operate the unit injectors
991	The diesel engine shown in the illustration has the highest fuel pressure developed in the part labeled _____.	E	X	Y	Z
992	The diesel engine shown in the illustration is a _____.	four-stroke/cycle engine at the end of the intake stroke	two-stroke/cycle engine at the end of the intake stroke	four-stroke/cycle engine at the end of the exhaust stroke	two-stroke/cycle engine at the beginning of the power stroke
993	The diesel engine shown in the illustration is a _____.	four-stroke/cycle engine at the end of the compression stroke	two-stroke/cycle engine at the end of the compression stroke	four-stroke/cycle engine at the end of the exhaust stroke	two-stroke/cycle engine at the beginning of the power stroke

ID #	Question	Choice A	Choice B	Choice C	Choice D
994	The diesel engine shown in the illustration utilizes the type of cylinder construction identified as _____.	a dry liner	a wet liner	integral with a removable sleeve	integral with a non-removable sleeve
995	The diesel engine shown in the illustration, which of the lettered parts listed is cooled by sea water?	Q	W	Y	P
996	The diesel engine starting motor returns the drive/clutch mechanism to the position illustrated by _____.	reversing the direction of the starting motor	the higher peripheral speed of the flywheel	the potential energy of spring "D" once the solenoid has been de-energized	mechanical interaction of the left hand thread and the energy imparted by the rotation of the over-running clutch
997	The diesel engine starting motor shown in the illustration, is driven by _____.	electric current	hydraulic compression	compressed air	none of the above
998	The diesel engine starting motor, shown in the illustration, utilizes which of the following types of drive/clutch mechanisms?	Bendix-drive	overrunning clutch drive	hydraulic shift drive	single phase 110 volt induction
999	The diesel engine water inlet jumper illustrated is represented by the letter or number _____.	"M"	"N"	"W"	"14"
1000	The diesel engine wrist pin in the illustration is indicated by the component labeled _____.	"7"	"G"	"17"	"S"
1001	The difference in crank lead between the upper and lower cranks of an opposed piston engine causes the lower crankshaft to _____.	receive less power than the upper shaft	receive more power than the upper shaft	operate the fuel oil booster pump	rotate faster than the upper shaft
1002	The direct cause of a crankcase explosion can be attributed to _____.	extremely hot scavenge air	excessive cooling water temperature	an overheated bearing	jacket water contamination of the oil in the crankcase
1003	The discharge nozzle shown in the illustration, is indicated by the letter _____.	A	K	S	X
1004	The dripping of fuel from an injector nozzle after injection terminates, often results in _____.	early combustion	incomplete combustion and decreased fuel consumption	decreased cylinder wall temperatures and increased exhaust gas temperatures	coking and blocking of the fuel nozzles
1005	The duration of fuel injection developed by an individual port-and-helix fuel injection pump, is determined by the _____.	total pump stroke	pump plunger diameter	plunger helix angle	effective pump stroke
1006	The duration of the power event shown in the four cycle engine polar timing diagram is represented by how many crankshaft degrees of revolution?	75 degrees	85 degrees	125 degrees	180 degrees

ID #	Question	Choice A	Choice B	Choice C	Choice D
1007	The effective pump stroke of an individual port-and-helix fuel injection pump is determined by the _____.	fuel delivery pressure	pump plunger diameter	plunger control rack position	total pump stroke
1008	The effective stroke of a constant-stroke, individual, fuel injection pump is varied by the _____.	control rack	delivery valve	governor speed	plunger crossbar
1009	The efficient burning of fuel in a diesel engine is dependent upon the _____.	temperature of compression	atomization of the fuel	penetration of the fuel	all of the above
1010	The end of fuel injection in a port-and-helix metering pump can be controlled by _____.	uncovering a fuel port in the pump barrel	covering a fuel port in the pump barrel	closing the fuel pump delivery valve	opening the fuel pump delivery valve
1011	The engine cylinder illustrated is of the _____.	dry liner type	wet liner type	type integrally machined in the block	integral wet liner type
1012	The engine shown in the illustration is a _____.	four-stroke/cycle on the exhaust stroke	two-stroke/cycle on the exhaust stroke	four-stroke/cycle on the intake stroke	two-stroke/cycle on the intake stroke
1013	The exhaust ports shown in the illustration are initially uncovered in figure _____.	#3	#4	#5	#6
1014	The expansion tank for a diesel engine closed cooling system is designed to maintain a constant head on the system and _____.	reduce water temperature	reduce water turbulence	provide an air cushion	allow for an increase in water volume as the engine warms up
1015	The expansion tank in a diesel engine closed freshwater cooling system is located at _____.	the highest point in the system	the lowest point in the system	or near the floor plate level	or near the tank top level
1016	The face surface appearance of a shallow groove, stainless steel, chrome plated compression ring should exhibit through its operating life a _____.	smooth, shallow grooved, chrome surface	smooth surface of stainless steel	smooth surface displaying areas of stainless steel and chrome	surface of gradually deepening grooves
1017	The flywheel reduces speed fluctuations by _____.	maintaining a constant rack setting	storing kinetic energy	maintaining equal exhaust pressure	maintaining even camshaft speed
1018	The force developed by the liquid within space "J" of the device shown in the illustration depends upon _____.	the speed of the bowl and the condition of seal "H"	the angular velocity at which the liquid travels	the speed of the bowl and the condition of seal "U"	inertia forces during starting and stopping
1019	The formation of carbon monoxide in diesel exhaust gases is reduced by _____.	spraying water into the exhaust pipe	keeping the exhaust system free of carbon deposits	maintaining proper combustion and scavenging	avoiding light load operation
1020	The formula ' $\frac{N \cdot \text{plan}}{33,000}$ ' is equal to the _____.	IHP	BMEP	BHP	SHP
1021	The four cams shown in the illustration are in position with their respective pistons at top dead center. Which of the cams is the air starting cam?	A	B	C	D

ID #	Question	Choice A	Choice B	Choice C	Choice D
1022	The fuel injection pump shown in the illustration, the position of the plunger would give maximum _____.	effective stroke	effective pressure	injection duration	fuel bypass
1023	The fuel injection pumps on a diesel engine are controlled by a linkage system attached to the _____.	camshaft	crankshaft	governor	flywheel
1024	The fuel injector for the diesel engine shown in the illustration, is identified as _____.	"H"	"19"	"M"	"Z"
1025	The fuel injector shown in the illustration is opened by fuel pressure acting upward on _____.	part #33	part #36	the needle valve	the plunger
1026	The function of device "O" shown in the illustration is to _____.	regulate the amount of brine entering the unit	control the amount of brine exiting the evaporator	control the amount of feed water entering the evaporator	provide a positive suction head for the brine pump
1027	The function of diesel engine piston compression rings is to _____.	prevent piston side thrust	prevent engine friction losses	transmit heat from the piston to the cylinder liner	remove oil from the cylinder combustion space
1028	The function of the device shown in the illustration is to _____.	rotate the camshafts to insure proper lubrication	provide the engine with a braking device	slide the camshafts axially when changing engine rotation	eliminate the need for mechanical interlocks
1029	The function of the device shown in the illustration is to _____.	slide the camshafts to insure proper lubrication	provide the engine with a braking device	change the engines direction of rotation	eliminate the need for mechanical interlocks
1030	The function of the device shown in the illustration is used to _____.	slide the camshafts to insure proper lubrication	provide the engine with a braking device	change the directional rotation of the engine	eliminate the need for mechanical interlocks
1031	The function of the piston compression rings used in a diesel engine is to _____.	seal the space between the piston and liner	transmit heat from the piston to the cylinder liner	reduce the amount of combustion gas blow-by	all of the above
1032	The function of the window cast into the housing of an individual jerk pump is to _____.	allow the pump to be timed to the engine	check for sludge on the pump barrel	check that the fuel return passages are clear	set up the fuel rack calibration in cubic millimeters
1033	The gasket "U" shown in the illustration, is used to seal the liquid space below the _____.	ring dam	inner bowl	outer bowl	sliding piston
1034	The graphic dotted line between items "27", "12", "9", and "20", shown in the illustration, is used to indicate the use of _____.	ambient venting devices	thermal venting devices	single wire controls	electrical conduits and circuitry
1035	The greatest difference between the centrifuge bowl shown in the illustration and that of a tubular bowl, with straight, vertical, interior surfaces, is that the illustrated unit _____.	is self desludging	rotates at 1000 rpm higher than the old tubular bowl type	rotates at 1000 rpm slower than the old tubular bowl type	does not require a discharge ring when operated as a separator

ID #	Question	Choice A	Choice B	Choice C	Choice D
1036	The greatest turbulence in a diesel engine cylinder is created by the _____.	shape of the combustion chamber	fuel injection spray pattern	cylinder swept volume	degree of penetration of the fuel oil droplets
1037	The greatest turbulence in a diesel engine cylinder is created by the _____.	intake port design	fuel injection spray pattern	cylinder swept volume	degree of penetration of the fuel oil droplets
1038	The growth rate of microbiological organisms as found in some fuel supplies will _____.	increase in direct proportion to an increase in temperature	decrease if bleaches are added to the fuel on a regular basis	remain unchanged provided complete consumption of the fuel occurs monthly	All of the above
1039	The heat exchanger plates, used in the device shown in the illustration, are produced from which of the listed materials?	Titanium	Anodized aluminum	Phosphor bronze	Copper
1040	The heat exchanger plates, used in the device shown in the illustration, are produced from which of the listed materials?	Titanium	Cast iron	Tin	Zinc
1041	The highest indicated lube oil pressure in a diesel engine should be expected when the engine oil is _____.	cold at idle	warm at idle	warm at full speed	warm at full speed and no fuel dilution exists
1042	The highest indicated lube oil pressure in a diesel engine should be expected when the _____.	engine is running at its highest allowable temperature	engine is running at its normal operating speed and lowest operating temperature	load on the engine is at its rated maximum	diesel fuel dilution of the lube oil exceeds 5%
1043	The highest pressure in a diesel engine cylinder normally occurs _____.	at TDC	before TDC	after TDC	during air starting
1044	The highest pressure in any closed diesel engine freshwater cooling system is at the _____.	jacket water outlet	expansion tank inlet	heat exchanger inlet	cooling water pump outlet
1045	The hydraulic starting motor is operated by hydraulic fluid flow under pressure from the _____.	accumulator	hand pump	engine-driven pump	reservoir
1046	The ignition quality of a diesel fuel is indicated by the _____.	cetane number	volatility point	viscosity index	octane number
1047	The ignition quality of a fuel oil is an important operational consideration because it _____.	indicates the amount of abrasive material in the fuel	affects the starting ability of a cold engine	determines the amount of fuel penetration	affects the compression ratio of an operating engine
1048	The ignition quality of diesel fuel becomes LESS critical as _____.	lube oil additives are increased	designed piston speeds are increased	designed injection pressures are decreased	designed engine speeds are decreased
1049	The ignition quality of diesel fuel is indicated by its _____.	neutralization number	cetane number	viscosity in Saybolt seconds	air fuel ratio
1050	The ignition quality of diesel fuel oil is indicated by the _____.	specific gravity	cetane number	viscosity	calorific value

ID #	Question	Choice A	Choice B	Choice C	Choice D
1051	The illustrated cylinder lubricator quill check valve can be inspected without draining the cylinder cooling water jacket by _____.	unbolting and removing the cover, item #14	unscrewing and removing item #6 from the cylinder	unscrewing and removing item #4	inspection can not be done without first draining the jacket cooling water
1052	The illustrated device is operated directly by _____.	a rocker arm and push rod	cam action	fuel oil pressure	excessively high combustion pressure
1053	The illustrated device is used to _____.	supply cylinder lubricating oil to the engine	meter fuel oil to the injectors	admit the correct amount of starting air to the cylinders in proper order	actuate exhaust valves in the correct sequence
1054	The illustrated diesel engine starting motor initially disengages the drive/clutch mechanism from the engine flywheel once the engine has started by _____.	de-energizing the solenoid	the potential retraction energy possessed by the return spring "D"	the mechanical interaction between the overrunning clutch and the splined sleeve	centripetal force exerted by the rotating armature
1055	The illustrated figure "A" represents _____.	a correctly tightened centrifuge bowl	fuel pump timing marks	fuel rack alignment marks	a stroboscopic speed scale for timing
1056	The illustrated starting motor disengages the drive/clutch mechanism after the engine has started due to _____.	a centrifugal switch in the commutator	the potential retraction energy of the armature	the mechanical interaction between the overrunning clutch and the splined sleeve	centripetal force exerted by the rotating armature
1057	The illustration is of a/an _____.	power take-off driven, vane type, air compressor	battery powered, electric motor driven vane type, hydraulic pump	air driven starter motor assembly	air driven DC generator
1058	The illustration shown describes a _____.	two cycle opposed piston diesel engine	two cycle opposed cylinder diesel engine	four cycle opposed piston diesel engine	four cycle opposed cylinder diesel engine
1059	The illustration shown describes the _____.	cylinder pressure through 90 degrees of crankshaft rotation	cylinder pressure through 180 degrees of crankshaft rotation	compression and power event in a two cycle diesel	intake and exhaust event in a four cycle diesel
1060	The indicated position of the fuel injection pump plunger as shown in the illustration, will provide fuel delivery to the diesel engine in an amount approximately equal to _____.	zero fuel flow	normal fuel flow	light fuel flow	maximum fuel flow
1061	The indicator card shown in the illustration is produced with a/an _____.	oscillating drum	rotating drum	balanced-diaphragm indicator	sliding camshaft
1062	The injection pressure of a hydraulic fuel injection nozzle can be increased by _____.	increasing fuel oil booster pump pressure	increasing the injector nozzle orifice size	removing shims from under the nozzle spring	increasing compression on the pressure spring

ID #	Question	Choice A	Choice B	Choice C	Choice D
1063	The injector rack of the diesel engine shown in the illustration is indicated by the component labeled _____.	"B"	"E"	"F"	"G"
1064	The inlet valves for the diesel engine shown in the illustration are indicated by the letter or number _____.	"2"	"19"	"H"	none of the above are correct
1065	The insertion of shims between the foot of a marine type connecting rod and a bearing box would result in _____.	increased compression ratio	decreased compression ratio	increased bearing clearance	decreased bearing clearance
1066	The instrument shown in the illustration would be used on a diesel engine to _____.	measure exhaust gas pressure	measure cylinder compression or firing pressures	balance exhaust gas temperature readings	measure concentration of chromate in jacket water
1067	The instrument shown in the illustration would be used on a diesel engine to _____.	measure exhaust manifold pressure	measure air intake manifold pressure	take compression and firing readings	measure turbocharger torque
1068	The intake and exhaust valves used in a diesel engine are returned to their seats by _____.	push rod pressure	spring force	combustion pressure	exhaust pressure
1069	The interior of some diesel engine saltwater heat exchangers are protected from electrolytic corrosion by the use of _____.	aluminum plates	lead cathodes	copper baffle plates	zinc plates
1070	The item indicated by the letter "F" of the device shown in the illustration is the _____.	guide band	guide pin	locating dowel pin	upper bowl gasket
1071	The item labeled "T" as shown in figure 4 of the illustration is identified as the _____.	air filter	after cooler	air blower	exhaust gas turbine
1072	The item labeled #16 in the illustration is a stack of spring washers. Their function is to _____.	prevent bolt failure by allowing limited movement of the injector when excessively high cylinder pressures are developed	maintain the same hold-down force on the injector regardless of varying engine operating temperatures	permit accurate stretch gauge measurement of bolt elongation during installation	absorb the high pressure pulses developed during the fuel injection process
1073	The items labeled "21" and "22", shown in the illustration are used to remove _____.	distillate and non-condensable gases	non-condensable gases from two separate sections of the distiller	non-condensable gases and brine	brine and jacket water from the condenser
1074	The items, shown in the illustration, labeled "P" are _____.	water cooling valves	cylinder quill lubricators	air check valves	diffuser vanes
1075	The jacket water temperature in a diesel engine closed freshwater cooling system is normally controlled by _____.	regulating the level of corrosion inhibitor in the primary cooling system	the level of the freshwater expansion tank	varying the engine load to meet temperature requirements	the operation of the thermostatic valve

ID #	Question	Choice A	Choice B	Choice C	Choice D
1076	The knock occurring when a cold diesel engine is started and continues while running at low speed, but stops when the engine reaches normal operating speed and temperature, is _____.	caused by retarded injection timing	caused by a mechanical defect in one cylinder	caused by high fuel injection pressures	normal for these conditions
1077	The large, slow-speed, main propulsion diesel engine shown in the illustration, the part labeled "B" contains _____.	water	oil	diesel oil	exhaust gas
1078	The light and medium fuels utilized in diesel engines also provide a source of _____.	lubrication for the fuel injection pump	cooling of the cylinder liner	oxygen for combustion	all of the above
1079	The line identified as "I" in the illustration is used to _____.	deliver fuel oil to the injector	supply lubricating oil for actuating the exhaust valve	exhaust gas and vapors from the power cylinder	deliver cooling water to the exhaust valve actuating device
1080	The line shown in the illustration, identified by the letter "S", is the _____.	distillate pump discharge	brine pump discharge	condensate pump discharge	ejector supply pump discharge
1081	The linear motion of a diesel engine piston is converted into the rotary motion required to drive gears, propeller shafts, and generators by the _____.	flywheel	crankshaft	journal bearings	camshaft
1082	The liquid line labeled "P" in the device shown in the illustration, is used to _____.	initiate the bowl opening procedure for the self-cleaning cycle	initiate the bowl closing procedure after the self-cleaning cycle	initially prime the bowl	directly position the oil emulsion interface throughout the operation of the centrifuge
1083	The liquid line labeled "Q" on the device shown in the illustration is used to _____.	initiate the bowl opening procedure for the self-cleaning cycle	initiate the bowl closing procedure for the self-cleaning cycle	initially prime the bowl	directly position the oil emulsion interface throughout the operation of the centrifuge
1084	The load is always placed on the lower half of the main bearings in a/an _____.	two-stroke/cycle engine	four-stroke/cycle engine	reverse cycle engine	double acting engine
1085	The long drilled passages shown in the illustration of the cutaway view II-II are for _____.	cooling water flow	fuel supply to nozzle tip	fuel return from nozzle tip	fuel recirculation within the nozzle for cooling purposes
1086	The longer ignition delay period resulting from the use of low cetane fuel, will result in _____.	less fuel entering the cylinder	lower cylinder combustion temperature	more complete fuel combustion	higher cylinder firing pressures
1087	The loss of the diesel engine cylinder air charge through leaky valves, piston rings, worn or scored liners, would be indicated by which of the following sets of conditions?	Low compression pressure and high exhaust temperature	Low firing pressure and high mean effective pressure	Low compression pressure and low exhaust temperature	Low firing pressure and low exhaust temperature
1088	The lower end of the piston rod, shown in the illustration, is fitted into the _____.	piston pin	crosshead	crank pin	crosshead guide
1089	The lower section of a piston is called the _____.	land	skirt	crown	plate

ID #	Question	Choice A	Choice B	Choice C	Choice D
1090	The lower water seal on a diesel engine wet cylinder liner must allow for liner axial movement. This seal is most commonly a _____.	neoprene O-ring	soft copper gasket	precision ground flange joint	flexible metallic seal ring
1091	The lower water seal on a diesel engine wet cylinder liner must allow for liner expansion and contraction. This seal is most commonly a _____.	neoprene O-ring	soft copper gasket	precision ground flange joint	flexible metallic seal ring
1092	The lube oil cooler is located after the lube oil filter in order for _____.	the filter to operate more efficiently	the lube oil cooler to be bypassed	positive lube oil pump suction to be assured	galvanic action in the cooler to be minimized
1093	The lube oil pump used in a diesel engine is normally a _____.	volute pump	centrifugal pump	diaphragm pump	gear pump
1094	The lube oil strainer shown in the illustration is used on the reduction gear of a mid-size diesel engine. The strainer elements consist of _____.	pleated paper	wire mesh	fibrous braid	metal disks
1095	The main advantage of unit injectors over other fuel injection systems is _____.	the lack of high pressure fuel lines	their relatively low injection pressures	reduced wear of spray orifices	the lessened chance of fuel leaks into the engine sump
1096	The main advantage of unit injectors over other fuel injection systems is _____.	the lack of high pressure fuel lines	their relatively low injection pressures	reduced wear of spray orifices	the reduced probability of fuel leaks contaminating the engine lube oil sump
1097	The main difference between an 'APF' and an 'APE' jerk type fuel injection pump, is the _____.	design of the plunger helix	method of controlling ignition lag	function of the delivery valve	'APE' type pump contains multiple plungers and cylinders
1098	The main difference between an 'APF' and an 'APE' type fuel injection pump, is that _____.	the plunger helix is reversed	the control rack is reversed	a delivery check valve is not required on the 'APF' pump	multiple plungers are housed in the 'APE' pump
1099	The main difference between an 'APF' and an 'APE' type fuel injection pump, is the design of the _____.	plunger helix	control rack gear profile	delivery valve	plunger cylinder housing arrangement
1100	The main engine thrust bearing shown in the illustration contains how many thrust shoes?	6	10	12	20
1101	The main function of piston compression rings is to _____.	prevent excessive cylinder liner wear	reduce friction losses in the engine	seal the space between the piston and the liner	limit upward flow of lube oil into the combustion space

ID #	Question	Choice A	Choice B	Choice C	Choice D
1102	The main function of tie rods in the construction of large, low speed diesel engines is to _____.	stiffen the bedplate in way of the main bearings to increase the engine's longitudinal strength	accept most of the tensile loading that results from the firing forces developed during operation	mount the engine frame securely to the hull to prevent shaft coupling misalignment	connect the crosshead solidly to the piston rod
1103	The main lube oil manifold, for the diesel engine shown in the illustration, is represented by the letter or number _____.	"11"	"17"	"N"	"O"
1104	The main operating characteristic of diesel engines which distinguishes them from other internal combustion engines is the _____.	method of supplying air	cooling system	method of igniting fuel	valve operating mechanism
1105	The main propulsion diesel engine jacket water temperature rises above normal, with the raw water sea suction and the expansion tank water level being normal. Which of the following problems is most likely the cause?	Faulty thermostatic bypass valve.	Eroded zinc pencils in the heat exchanger.	Steam formation in the expansion tank.	Excessive leakage from jacket water pump seals.
1106	The main purpose of the piston oil scraper rings is to _____.	seal the space between the piston and the liner	reduce the amount of lube oil burned in the combustion chamber	transmit heat from the piston to the cylinder liner	damp out fluctuations of the piston side thrust
1107	The main reason counterweights are added to crankshafts is to _____.	reduce piston side thrust	reduce crankshaft end thrust	provide uniform loading and wear of main bearings	increase the strength of the crank webs
1108	The main reason for using bimetallic piston rings is to _____.	increase engine thermal efficiency	reduce specific fuel consumption	reduce the probability of ring fracture	allow for ring expansion
1109	The main source of fuel injection system malfunctions is _____.	improper adjustments	contaminated fuel	coated fuel lines	excessive vibration
1110	The main source of fuel pump and injection system malfunctions is _____.	improper adjustments	contaminated fuel	coated fuel lines	excessive vibration
1111	The major cause of fuel pump and injection system problems is _____.	improper adjustments	contaminated fuel	kinked fuel lines	excessive engine vibration
1112	The major cause of problems occurring with fuel injection equipment is _____.	incorrect replacement of barrels and plungers of jerk pumps	overheating of the nozzle orifices	cracked pump housings	dirt in the fuel
1113	The metal edge type filters used in diesel engine fuel oil and lube oil systems are normally cleaned in place by _____.	back flushing the system and draining the filter	opening the drain plug and blowing through the filter	manually operating a built-in scraper and draining the filter	flushing with any approved solvent then draining the system

ID #	Question	Choice A	Choice B	Choice C	Choice D
1114	The metal-edge strainer, shown in the illustration, is used on medium-speed diesel engine reduction gear lube oil systems. Which of the following statements is true concerning this type of strainer?	Sludge and dirt accumulate on the inner surface of the strainer disks.	One turn of the T-handle is sufficient for cleaning the disks.	Particles of solid matter larger than the distances between the disks flow up through the inner space.	Drain lines are connected to the upper center section for cleaning.
1115	The method of engine cylinder scavenging shown in the illustration is known as _____.	cross flow	uniflow	loop	supercharging
1116	The method of engine cylinder scavenging shown in the illustration is known as _____.	cross flow	uniflow	loop	pressurized differential
1117	The method of piston cooling in which oil is delivered through the connecting rod to a compartment within the piston, then distributed by the motion of the pistons, and allowed to drain to the crankcase via one or more holes or pipes, is termed _____.	Quaker	shaker	circulation	spray
1118	The microbiological growths that affect fuel supplies can easily be transported from one location to another by _____.	roaches and other insects	air, solids, or liquids	other non-hydrocarbon fuels	All of the above
1119	The minimum delivery pressure required for diesel engine fuel oil injection depends primarily on the _____.	degree of cylinder air turbulence	firing pressure in the engine	compression ratio of the engine	duration of the combustion period
1120	The minimum fuel oil delivery pressure required for efficient injection depends primarily on the _____.	degree of cylinder air turbulence	maximum pressure in the engine cylinders during injection	quantity of the fuel to be injected	duration of the injection delay period
1121	The minimum speed an engine must attain before ignition can occur depends upon _____.	the type and size of the engine	the condition of the engine	ambient temperature	all of the above
1122	The most common diesel engine fuel system problems are caused by _____.	incorrect adjustments	dirty fuel	broken fuel lines	excessive vibration
1123	The most critical time for any bearing with regards to diesel engine lubrication is during _____.	warm-up	low load operation	initial start-up	shut-down
1124	The most effective method in removing water from diesel fuel oil is by _____.	centrifuging the fuel	using it in the engine	heating the fuel tanks	straining the fuel
1125	The most important factor in engine performance is the actual power output at the end of the crankshaft available for doing work. This is known as _____.	indicated horsepower	brake horsepower	net horsepower	friction horsepower

ID #	Question	Choice A	Choice B	Choice C	Choice D
1126	The most practical way of detecting an overload in one cylinder of an operating large, low-speed, main propulsion diesel engine is to _____.	check the cylinder exhausts for black smoke	listen for combustion knock in that cylinder	isolate each cylinder and inspect the injector	check the cylinder exhaust temperature frequently
1127	The most rapid period of fuel combustion and cylinder pressure increase in a diesel engine should begin just before the piston reaches top dead center and should be completed _____.	shortly before bottom dead center	shortly after bottom dead center	immediately after injection lag	shortly after passing top dead center
1128	The most rapid period of fuel combustion occurring in a diesel cylinder should begin just before the piston reaches top dead center and _____.	when fuel injection has been completed	when fuel vaporization has been completed	should continue through the afterburning period	should be completed after top dead center
1129	The most severe cavitation erosion occurring on the waterside of diesel engine wet cylinder liners normally occurs _____.	throughout the lower one-half of the liner	throughout the upper one-half of the liner	at TDC opposite the thrust side of the liner	near the middle of the thrust side of the liner
1130	The operation of the lube oil cooler, shown in the illustration as item #4, will be characterized by which of the following statements?	The temperature of the sea water entering the cooler will be higher when operating with the distiller.	The temperature of the lube oil entering the cooler will be lower at higher engine speeds.	The pressure of the sea water to the lube oil cooler will be higher when the distiller is on line.	The pressure of the lube oil to the cooler will be higher when the distiller is on the line.
1131	The operation of the lube oil cooler, shown in the illustration as item #4, will be characterized by which of the following statements?	The temperature of the sea water entering the cooler will be higher when operating with the distiller on line.	The temperature of the lube oil entering the cooler will decrease whenever the distiller is on line.	The pressure of the sea water to the lube oil cooler will increase with the distiller on line.	The pressure of the lube oil to the cooler will increase whenever the distiller is on line.
1132	The outlet from an expansion tank of a closed freshwater cooling system should be piped to the _____.	cylinder head water outlet header	cylinder jacket inlet main	heat exchanger inlet connection	jacket water pump suction line
1133	The output pressure of a diesel engine lube oil pump is regulated by a/an _____.	relief valve	metering valve	variable speed pump drive	orifice in the lube oil header
1134	The output signal from the viscosimeter shown in the illustration is used to control the _____.	fuel oil heater steam flow input	fuel booster output	day tank steam flow input	metering of fuel injection pump output
1135	The overspeed trip installed on most diesel engines will stop the engine by shutting off the _____.	water supply	fuel and/or air supply	lube oil supply	exhaust damper
1136	The overspeeding of the diesel engine driving an electric generator could cause _____.	low voltage trip to trip	reverse power trip to trip	damage to the field windings	excessive exhaust temperatures
1137	The oxidation by-products forming in diesel engine lube oil can cause _____.	pitting	sludge	hard varnish	All of the above
1138	The part labeled "E", as shown in the illustration, is the _____.	bearing shell	connecting rod bushing	piston pin bushing	connecting rod cap

ID #	Question	Choice A	Choice B	Choice C	Choice D
1139	The part labeled "F" shown in the illustration, is the _____.	connecting rod cap	bearing shell halves	connecting rod bushing	piston pin bushing
1140	The part labeled "G", as shown in the illustration, is a _____.	bearing shell	connecting rod bushing	connecting rod cap	piston bushing
1141	The part labeled "R" on the device shown in the illustration is used to _____.	prevent part "F" from independently rotating	drain off the closing water at the beginning of the self-cleaning cycle from under the sliding bowl bottom	drain off the closing water at the end of the self-cleaning cycle	drain off the opening water at the end of the self-cleaning cycle
1142	The part labeled "X" shown in the illustration is a _____.	fuel line	water line	lube oil line	control linkage
1143	The pH value of water in a diesel engine closed cooling water system should be maintained between _____.	6.0 to 7.5	8.0 to 9.5	10.0 to 11.5	12.0 to 13.5
1144	The pilot valves in an air pilot starting system for a two-stroke/cycle, direct-reversing, main propulsion diesel engine are operated by either a ported distributor disc or a/an _____.	regulator valve	quick opening main air valve	pilot air start check valve	individual cam for each pilot valve
1145	The pinion of an auxiliary diesel electric starting motor normally engages the flywheel ring gear by means of a/an _____.	automatic follow-up	muff coupling and release	magnetic type coupling	Bendix drive or similar mechanism
1146	The pipe identified by the letter "J" shown in the illustration is _____.	attached to the outlet of the brine ejector	directly connected to the feed water supply line	directly connected to the jacket water supply line	attached to the air ejector
1147	The piston pin shown in the illustration should be classified as _____.	fixed	semi-floating	full floating	anchored
1148	The piston rod scraper box incorporated in a two-stroke/cycle, crosshead diesel engine serves to _____.	eliminate the necessity for an oil scraper ring	prevent side thrust and cylinder scoring	prevent sludge and dirty oil from entering the crankcase	scrape oil and carbon deposits off the cylinder walls
1149	The piston shown in the illustration is a _____.	double-acting crosshead piston	single-acting crosshead piston	double-acting trunk piston	single-acting trunk piston
1150	The piston wrist pin used in some diesel engine pistons is prevented from contacting the cylinder wall by a _____.	piston relief groove	cotter pin	snap ring	bronze bushing
1151	The plunger in a jerk pump is rotated until the release port is uncovered. If the port remains uncovered all of the time, which of the listed operations will occur?	No fuel will be delivered.	The maximum effective stroke will be attained.	The fuel delivered to the cylinder will be excessive.	The injection nozzle will overheat and carbonize.
1152	The port "X" shown in the illustration allows water to enter the adjoining chamber. During what cycle of operation will this occur?	Operating back flush cycle	Bowl retention cycle	Clarification cycle	Sludge discharge cycle
1153	The port labeled "D" in the device shown in the illustration is used for discharging _____.	the light phase	accumulated sludge	the dosing water	the closing water

ID #	Question	Choice A	Choice B	Choice C	Choice D
1154	The port labeled "G" on the device shown in the illustration is used to _____.	bleed off the opening water from the operating slide	bleed off the closing water from the operating slide	directly discharge accumulated sludge from the bowl	directly maintain the position of the oil emulsion interface
1155	The port labeled "H" in the device shown in the illustration is used to _____.	bleed off the opening water from the operating slide	bleed off the closing water from the operating slide	directly remove accumulated sludge from the bowl	directly maintain the position of the oil emulsion interface
1156	The port labeled "H" of the device shown in the illustration, is used to _____.	prevent water from accumulating beneath the operating slide	provide water flow for closing the bowl at the end of the desludging cycle	bleed off the opening water to permit the closing sequence of the bowl at the end of the desludging cycle	directly discharge accumulated sludge from the bowl
1157	The port-and-helix metering pumps, used in diesel fuel injection systems, are usually designed to produce a constant beginning and a variable ending of fuel injection. These pumps are usually _____.	timed for port opening	timed for port closing	controlled by cam stroke	controlled by plunger stroke
1158	The possibility of a diesel engine crankcase explosion will be increased by operating an engine _____.	with a crankcase vacuum between 1.5" and 2" of water	with a leaking crankcase inspection cover gasket	equipped with a crankcase exhaust blower which vents to fresh air	in cooler sea water temperatures
1159	The possibility of damage from operating a diesel engine at critical speeds is reduced by the use of _____.	an isochronous governor	elastic engine mounts	a vibration damper	a cast iron bed plate with good flexible qualities
1160	The power/expansion stroke shown in the illustration is indicated by the diagram numbers _____.	1 through 3	4 through 6	1 through 4	3 through 6
1161	The pressure in an operating diesel engine cylinder continues to rise for a short period after the piston passes top dead center as a result of the _____.	expansion during the combustion process	exhaust and intake valves just closing	maximum compression pressure is just being attained	fuel injection occurring at that point and combustion begins
1162	The pressure in an operating diesel engine cylinder continues to rise for a short period after the piston passes top dead center as a result of the _____.	expansion during the combustion process	exhaust and intake valves just closing	maximum compression pressure is just being attained	fuel injection cutoff
1163	The pressure in an operating diesel engine cylinder continues to rise for a short period after the piston passes top dead center as a result of the _____.	gas expanding during the combustion process	exhaust and intake valves just closing	maximum compression pressure is just being attained	fuel injection cutoff
1164	The pressure-volume diagrams illustrated are of four internal combustion engine cycles. Which one represents the theoretical diesel cycle?	A	B	C	D

ID #	Question	Choice A	Choice B	Choice C	Choice D
1165	The primary function of a fuel delivery check valve assembly is to _____.	deliver proper fuel quantity to the injection nozzle	provide rapid fuel injection cutoff	control fuel quantity entering the pump body	control fuel pressure delivered to the combustion chamber
1166	The primary function of line "J" shown in the illustration is to _____.	remove air and non-condensable gases from the unit	allow for removal of produced distillate	prevent backflow of eductor discharge	remove condensable gases from the unit
1167	The primary purpose of oil control rings on a diesel engine piston is to _____.	provide a reservoir for cylinder lubrication	pump oil into the combustion space for cylinder cooling	prevent excessive lubricating oil consumption	allow hydraulic oil film formation on the cylinder
1168	The primary purpose of the open combustion chamber used in diesel engines is to _____.	improve piston cooling	stratify the fuel charge	prevent carbon buildup	provide a place for combustion
1169	The principal hazard to personnel when using a diesel engine fuel nozzle tester is _____.	electrical shock	toxic fumes	explosion	blood poisoning
1170	The proper location for journal bearing oil grooves is _____.	in the region of the load bearing surface	as a side relief where the two shells meet	at the bottom of the bearing	halfway between bottom and where shells meet
1171	The proper method for tightening connecting rod and main bearing bolts, is to use a _____.	torque wrench	monkey wrench	pipe wrench	slugging wrench
1172	The purpose of a heat dam used in some diesel engine cast iron pistons is to _____.	concentrate all heat in the piston crown	increase the distance heat must travel from the crown to the top ring groove	ensure that all heat in the piston crown is conducted to the top ring	provide a short direct path for heat to flow from the crown to the top ring
1173	The purpose of an intercooler installed on a high pressure starting air compressor is to _____.	reduce the inlet air suction pressure drop	absorb the heat of compression in the air charge formed in the first stage	assist in cooling the first stage cylinder walls	prevent interstage vapor lock
1174	The purpose of an oil mist detector in a main propulsion diesel engine is to warn of _____.	a possibility of an overheated bearing	excessively high crankcase vacuum	low cylinder oil pressure	excessive carbon buildup around the cylinder liner ports
1175	The purpose of an oil mist detector in a main propulsion diesel engine is to warn of _____.	a possible overheated bearing	excessively high crankcase vacuum	low cylinder oil pressure	excessive carbon buildup in the lube oil
1176	The purpose of compressing the air within the cylinder of a diesel engine is to _____.	produce the heat for ignition	decrease injection lag	increase ignition delay	aid in exhausting burnt gases
1177	The purpose of end clearance on a diesel engine piston ring is to _____.	allow the combustion gases to press the ring down on the land	allow the combustion gases to get behind the ring and press it against the cylinder liner	prevent buckling and breaking of the ring as it expands	aid in protecting the oil film

ID #	Question	Choice A	Choice B	Choice C	Choice D
1178	The purpose of the delivery check valve used in a diesel fuel injection jerk pump is to _____.	assist in a quick cutoff of fuel injection	allow oil backflow from the injector to the helix	reduce fuel oil pressure between injection strokes	meter the quantity of fuel delivered
1179	The purpose of the delivery check valve used in a diesel fuel injection jerk pump is to _____. I. assist in a quick cutoff of fuel injection II. prevent fuel oil backflow from the injection pump	I only	II only	both I and II	neither I nor II
1180	The purpose of the device illustrated is to _____.	take firing and compression readings	remove moisture accumulation from the cylinder prior to starting	inject fuel oil into the cylinder	relieve excess pressure in the cylinder
1181	The purpose of the drilled passages in the crown of the piston, shown as item "S" the illustration, is to _____.	provide cooling for the piston	supply oil to the cylinder liner	allow excess oil captured by the scraper rings to drain back to the sump	provide cooling for the control ring groove
1182	The purpose of the energy cell, or air cell, is to _____.	cause auto ignition in the cell rather than in the main combustion chamber	create a high turbulence within the main combustion chamber	allow the spray to hit the piston rim rather than the cooler cylinder wall	make a blast in the main chamber prior to the piston expansion stroke
1183	The purpose of the engine-driven hydraulic pump in an auxiliary diesel engine hydraulic starting system is to _____.	restore hydraulic pressure in the accumulator after starting	engage the starter motor with the flywheel	fill the sump and prevent low level in the system	bypass the hydraulic motor when the engine is running
1184	The purpose of the flywheel is to _____.	provide energy to operate the engine between power impulses	neutralize the primary inertia force of the crankshaft	reduce the shock of starting loads on the main bearings	prevent the engine from operating at critical speed
1185	The purpose of the interlocked three-way valve shown in the illustration is to _____.	control the rate of fuel oil flow to the engines	act as an emergency fuel shut off, regardless of the fuel being used	change fuel from heavy to light oil or vice-versa while insuring that oil is returned to the proper day tank	recirculate fuel through the heater during warm-up
1186	The rate of cylinder lubricating oil metered to each cylinder of a large, low-speed, main propulsion diesel engine is _____.	the same, whether at sea, or during maneuvering	adjusted during each hour of operation while at constant RPM	reduced during periods of low load operation	lower at sea than while maneuvering

ID #	Question	Choice A	Choice B	Choice C	Choice D
1187	The rate of pressure rise during the period following fuel ignition in a diesel engine is influenced by the length of the ignition delay period and the _____.	valve overlap	volumetric efficiency	turbulence of the air charge	fuel efficiency
1188	The rate of pressure rise during the period following initial fuel ignition in a diesel engine, is influenced chiefly by the _____.	percent of CO2	range of inflammability	theoretical fuel/air ratio	length of the ignition delay period
1189	The rate of pressure rise in a diesel engine cylinder following fuel injection and ignition, is mainly influenced by the _____.	valve overlap	volumetric efficiency	fuel quality	fuel efficiency
1190	The rate of wear on a cylinder liner depends on the _____.	quality of air filtration	effectiveness of lubrication	type of fuel used	all of the above
1191	The ratio of the brake horsepower to the indicated horsepower of a diesel engine is its _____.	thermal efficiency	mechanical efficiency	brake thermal efficiency	volumetric efficiency
1192	The reason some two-stroke/cycle, diesel engine piston rings are pinned to prevent rotation, is _____.	cylinder lubricant is spread more evenly on the cylinder wall	less blow-by as the pin seals the end gap	to keep the ring ends from catching in the scavenging ports	to promote more even ring wear
1193	The replacement piping for diesel engine high pressure fuel systems must be the same length and diameter as the original piping to _____.	avoid unnecessary parts inventory	keep torsional vibration constant	use existing supports and braces	maintain specified injection characteristics
1194	The reversing cams of some four-stroke/cycle diesel engines are brought into position by _____.	sliding the camshaft along its axis	rotating the cam 180°	rotating the cam followers 180°	moving the idler sprockets in the drive chain
1195	The reversing mechanism on a large four stroke main propulsion diesel engine, can be operated by _____.	using double roller followers engaging individual cams lobes	displacing the camshaft axially according to a double cam lobe design	using a separate camshaft having a symmetrical cam lobe design and rotating the camshaft by an appropriate angle	all of the above
1196	The ring lands on a large, low-speed, main propulsion diesel engine piston may crack due to _____.	insufficient cylinder liner wear	contaminated lubricating oil	high main lubricating oil system temperature	insufficient ring groove clearance
1197	The rocker arms of the diesel engine shown in the illustration are indicated by _____.	"C"	"D"	"B"	"C" and "Y"
1198	The rotary motion of a diesel engine crankshaft is obtained from the up and down motion of the piston via the _____.	camshaft	reduction gears	rocker arm	connecting or piston rod

ID #	Question	Choice A	Choice B	Choice C	Choice D
1199	The service life of a worn aluminum piston for an auxiliary diesel, for which no spares are readily available, can be extended by _____.	turning down the piston skirt to concentric values	knurling the piston skirt surface	building up the piston skirt with a liquid epoxy material and then remachining	increasing the dimensions of the ring land grooves
1200	The shape of a diesel engine cam determines the _____.	points of opening and closing of the valve	velocity of opening and closing of the valve	amount of the valve lift from its seat	all of the above
1201	The side clearance of the compression rings on diesel engine pistons is necessary to _____.	permit gas pressure behind and on top of the rings	prevent carbon accumulation behind the rings	allow for lube oil drainage behind the rings	prevent combustion gases burning the ring grooves
1202	The side pressure per unit of area, resulting from the angularity of the motion of the connecting rod, depends primarily on the _____.	weight of the piston	length of the piston	length of the cylinder liner	speed of the engine
1203	The sludge tank installed in the diesel engine room is used to collect _____. I. sludge from the fuel oil centrifuge II. water that has been collected in the settling tank.	I only	II only	both I and II	neither I or II
1204	The small end of a connecting rod for an auxiliary diesel is attached to the piston with a _____.	crankpin	sliding wedge	wrist pin	torque bushing
1205	The small end of the connecting rod is attached to the piston with a _____.	crankpin	sliding wedge	wrist pin	torque bushing
1206	The speed of the camshaft in a two-stroke/cycle diesel engine, running at 950 RPM, is _____.	475 RPM	950 RPM	1900 RPM	2400 RPM
1207	The speed of the diesel engine camshaft shown in the illustration would be _____.	half that of the crankshaft	twice that of the crankshaft	the same as the crankshaft speed	dependent on the diameter of the lower timing gear
1208	The spray holes in diesel engine fuel valves should be cleaned using carbon solvent and _____.	diesel fuel	a special cleaning wire	a copper wire brush	a shaved wooden dowel
1209	The standard diesel engine lubricating oil filtering system shown in the illustration is classed as a _____.	full flow system	bypass system	shunt system	batch system
1210	The start of fuel oil injection into the cylinder of a four-stroke/cycle diesel engine occurs during the _____.	intake stroke	exhaust stroke	power stroke	compression stroke

ID #	Question	Choice A	Choice B	Choice C	Choice D
1211	The starter control valve in the hydraulic system shown in the illustration is malfunctioning. Before removing the valve, you must first _____.	drain the reservoir	remove all plugs from the system	bleed off all accumulator pressure in "E"	ensure that the accumulator piston is in the charged position
1212	The starting air rotates a diesel engine at the proper speed, but the engine fails to start. You should check _____.	the overspeed trip	for an obstructed air filter	for air-bound fuel lines	all of the above
1213	The starting air supply for a diesel engine is generally produced by a/an _____.	exhaust powered turbocharger	Roots-type blower air pump	centrifugal air compressor	multistage reciprocating air compressor
1214	The system shown in the illustration utilizes a water transducer which is _____.	similar to those used in sonar systems	located in the oil outlet piping	essential in monitoring the amount of water entering the separator	a mechanical/electrical device with a variable dc output
1215	The TBN value of diesel engine lube oil refers to its ability to _____.	resist changes in viscosity with changes in temperature	resist emulsification	neutralize acids	resist oxidation at high temperatures
1216	The temperature at which an adjustable bellows type thermostatic valve operates is determined by _____.	changing the position of the actuating bulb	replacing the bellows with a heavier spring	varying air loading pressure to the bellows	changing the spring compression opposing the bellows
1217	The temperature of contaminated heavy fuel oil fed to the centrifuge, shown in the illustration, should be at 95°C (203°F) to no greater than 99°C (210°F) in order to _____.	avoid vaporizing the water entrained in the fuel oil	prevent the fuel oil from attaining its flash point	prevent the melting of the tin plate on the bowl interior	avoid warping of the disks in the bowl
1218	The temperature of the contaminated fuel oil fed to the heavy fuel oil centrifuge shown in the illustration should be _____.	greater than 212°F	203°F to less than 212°F	160°F to 180°F	selected according to the oil's viscosity index
1219	The term 'PLAN/33,000' is equal to the _____.	BMEP	IHP	BHP	SHP
1220	The term 'proper metering', as applied to a diesel fuel injection system, can be best defined as _____.	delivering the same quantity of fuel to each cylinder for each power stroke according to engine load	maintaining the metering adjustment for a reasonable period under all load conditions	timing fuel injection to obtain maximum power and good fuel economy	distributing the fuel to all parts of the combustion chamber for proper combustion
1221	The theoretical minimum compression ratio necessary to ensure compression ignition in a direct injection diesel engine is _____.	8 : 1	10 : 1	12 : 1	20 : 1
1222	The theoretical minimum compression ratio necessary to ensure compression ignition in a direct injection diesel engine is _____.	10 : 1	12 : 1	16 : 1	20 : 1

ID #	Question	Choice A	Choice B	Choice C	Choice D
1223	The theoretical minimum compression ratio necessary to ensure compression ignition in a direct injection diesel engine is _____.	8:1	10:1	12:1	18:1
1224	The thermal energy produced by an internal combustion engine is transformed into _____.	combustion energy	internal energy	external energy	mechanical energy
1225	The thermostatic valve in the illustration is used for controlling the coolant temperature in a main propulsion diesel engine. Which of the following can be used to verify proper valve operation with the valve disassembled?	Remove and examine the contents of the power pellet.	Check spring compression values against data given in manufacturer's handbook.	Place the thermostatic element in a container of water at various operating temperatures and note the movement of the valve stem.	Chemically analyze contents of power pellet.
1226	The thickness of the oil film to be developed in a diesel engine main bearing, depends upon the _____.	bearing pressure	viscosity of the oil	rpm of the shaft	all of the above
1227	The thrust bearing shown in the illustration has over eight years of ahead running time. Measurements show 'i1' is 4 mm and 'i2' is 1mm. Which of the following conditions is indicated and what steps should be taken, if any?	No appreciable wear has occurred, and the proper maintenance procedures should continue to be followed.	A wear rate of 1.6 mm per year occurred. Although not excessive, this condition may require more frequent monitoring.	The stops in which the thrust bearing block rides are worn, and it is necessary to return these to their original specifications.	A wear rate of 1.6 mm per year is excessive and requires immediate assistance from the manufacturer's field support.
1228	The time between injection and ignition of the fuel is known as _____.	turbulence lag	after burning ratio	injection lag	ignition delay
1229	The timing of diesel engine air starting valves is controlled by _____.	the air start valve timing gears and rods	a cylinder check valve	individual cams and valve gear	an air manifold poppet valve
1230	The two strokes of a two-stroke/cycle diesel engine are _____.	power and intake	intake and exhaust	exhaust and compression	compression and power
1231	The unit shown in the illustration is beginning the sludge discharge cycle. The operating liquid solenoid valve has been energized and space "J" is filling up. Which of the following actions should occur next?	The liquid enters the opening space, controlled by the discharge port "S", thereby causing the sliding bowl bottom to move upwards.	The liquid enters via port "X" into the opening space with the net resultant force causing the piston slide to move down.	The liquid enters via port "X", travels through the closing chamber, and exits port "S", maintaining an upward force against the bowl bottom,	The liquid remains trapped in space "J", developing an upward force to open the bowl.
1232	The unit shown in the illustration is called a/an _____.	combustion rod	fuel injector	interstage unloader	governor relief valve
1233	The upper edges of the piston rings, shown in the illustration are rounded off to _____.	obtain increased strength	reduce oil pumping	keep the ring from sticking in the groove	reduce the probability of ring fracture

ID #	Question	Choice A	Choice B	Choice C	Choice D
1234	The upper piston compression ring can be protected from overheating by a heat dam. This physical concept is shown in the illustration and designated by the figure lettered as _____.	A	B	C	D
1235	The upper piston rings in large, slow-speed, two-stroke/cycle diesel engines are most effectively lubricated by oil _____.	fed from mechanical lubricators	thrown off from the main bearings	supplied from wick fed drip lubricators	flow from a centrifugal or banjo oiler
1236	The upper section of a piston is called the _____.	land	skirt	crown	plate
1237	The use of push rods becomes necessary in a diesel engine when _____.	the camshaft is located some distance below the valve gear	the rocker arms are pivoted near their centers	two or more valves must be opened and closed at the same time	hydraulic valve lash adjusters are used
1238	The valve cam slope angle determines the _____.	opening and closing points of the valve	opening and closing rate of the valve	height of valve opening	amount of time the valve remains open
1239	The valve cam slope angle determines the _____.	engine torque characteristics	acceleration rate of valve opening and closing	engine fuel efficiency	diameter of intake and exhaust valves
1240	The valve shown in the illustration operates by which of the following principles?	Direct cam action closes the valve.	Shop service air pressure closes the valve.	Hydraulic pressure opens the valve.	A cam operated mechanical pushrod opens the valve.
1241	The volume of liquid retained in space "J" of the device shown in the illustration is _____.	minimal while the sliding piston is in the sludge discharge position	Tends to create a closing force on the sliding piston	maximum while the sliding piston is in the closed position	All of the above
1242	The water inlet manifold for the diesel engine shown in the illustration is represented by the letter or number _____.	"M"	"N"	"W"	"13"
1243	The wear liner shown in the illustration is indicated by the letter _____.	"G"	"N"	"P"	"R"
1244	Theoretical perfect combustion in a diesel engine yields by-products of _____.	aldehydes and carbon dioxide	water vapor and carbon monoxide	nitrogen and carbon monoxide	water vapor and carbon dioxide
1245	There are two glands provided where the piston rod exits the cylinder shown in the illustration. The purpose of the top gland is to _____.	seal against scavenge air leakage	prevent crankcase oil leaking out	maintain crankcase vacuum	maintain crankcase pressure
1246	Thin bronze rings are inserted in the face of some chromium plated piston rings to _____.	promote piston ring seating in the cylinder	prevent rapid wear on the ring face	provide better lubrication of the piston ring	produce an even glaze on the cylinder
1247	To determine if the lube oil filter elements need changing, _____.	open the filter and inspect the elements	check the lube oil pump discharge pressure	check the lube oil header pressure	check the pressure drop across the filter

ID #	Question	Choice A	Choice B	Choice C	Choice D
1248	To determine the main bearing clearance of a propulsion diesel engine, you should measure the main bearing shell using a ball anvil outside micrometer and measure the crankshaft journal using a/an _____.	telescoping gauge	ring 'snap' gauge	inside vernier caliper	outside micrometer
1249	To determine the main bearing clearances in a small auxiliary diesel engine, you should use _____.	a depth micrometer	an anvil faced micrometer	plasti-gage	a vernier caliper
1250	To facilitate early ring seating of newly installed piston rings, while still providing extended ring wear, _____.	a taper faced ring can be used	the cylinder liner is polished to the smoothest surface attainable	the ring end gap clearances are usually doubled	the ring back clearances are usually doubled
1251	To facilitate early ring seating of newly installed piston rings, while still providing extended ring wear, _____.	a taper faced ring can be used	the cylinder surface is honed to the smoothest surface attainable	the ring gap should be decreased and side clearance increased	rings with increased back clearance are provided
1252	To function properly, oil control rings used on a diesel engine piston must distribute sufficient oil to all parts of the cylinder wall and must also _____.	prevent any lubricant from reaching the compression rings	prevent excessive lubrication from reaching the combustion space	provide metal-to-metal contact to seal the cylinder against blow-by	assure a positive means of scraping carbon accumulation from the cylinder
1253	To manually bypass a strainer or filter in a shunt type lube oil filtering system, _____.	first, parallel the drain lines	open the bypass valve and then close the isolation valves	open the bypass valve to the sump and then close the isolation valves	close the isolation valves and then open the bypass valve to the storage tank
1254	To measure bearing clearances, a special small diameter plastic rod (plasti-gage) is placed between the crankshaft journal and the connecting rod bearing shell. The actual reading is obtained by _____.	using a micrometer to determine the thickness of the crushed plastic rod	accurately measuring the elongation of the plastic rod along the bearing surface	directly measuring the width of the flattened plastic rod with a vernier caliper	using the paper or cardboard gauge printed on the plastic rod package to measure the flattened width
1255	To minimize corrosion in a metal-edge strainer used in a fuel oil system, strainer disks, spacers and scraper blades are commonly made of _____.	brass	copper	iron	monel metal or stainless steel
1256	To minimize corrosion, fuel oil strainer disks, spacers and scraper blades are made of _____.	brass	copper	iron	monel metal or stainless steel
1257	To minimize the formation of carbon deposits on fuel injection nozzles, you should _____.	avoid using liquid-cooled nozzles whenever possible	avoid low cooling water temperatures	avoid prolonged overloading of the engine	make certain the gasket seal between the nozzle and cylinder head is tight
1258	To properly clean the disks of a metal-edge type strainer in a diesel engine lube oil system, you should _____.	remove the disks and soak them in kerosene	rotate the T-handle spindle one turn	wire brush the disks to remove sludge	blow compressed air through the disks

ID #	Question	Choice A	Choice B	Choice C	Choice D
1259	To reduce load during jacking operations, which of the listed devices should be opened?	Fuel line	Expansion tank	Cylinder test valves	Sea valve
1260	To reduce the weight of the reciprocating parts, pistons of high-speed engines are made considerably shorter. This results in _____.	less piston slap and quieter running	increased crankshaft bearing wear	slightly greater piston wear	decreased side pressures
1261	Trunk type diesel engine pistons are effectively cooled when heat is _____.	radiated through the engine block	transferred to water cooled cylinder walls	conducted through the piston crown	transferred to escaping exhaust gases
1262	Trunk-type diesel engine pistons are most effectively cooled by heat _____.	conducted through the engine block	conducted to water cooled cylinder walls	conducted through the piston crown	losses to escaping exhaust gases
1263	Turbulence in a diesel engine cylinder is of major importance in providing _____.	proper fuel metering	complete fuel/air mixing	minimal fuel penetration	proper fuel timing
1264	Turbulence in the combustion chamber of a diesel engine can be induced by _____.	delayed ignition	increased clearance volume	directional intake ports	multi-orifice fuel nozzles
1265	Turbulence in the cylinder of a two-stroke/cycle main propulsion diesel engine is mainly created by _____.	directional intake valve ports	masked intake valves	precombustion chambers	intake port design
1266	Turbulence is created in the cylinders of a diesel engine to _____.	obtain injection lag	help mix fuel and air	decrease combustion pressure	utilize higher injection pressures
1267	Turbulence of the compressed air charge in a diesel engine cylinder increases _____.	ignition lag	piston side thrust	the efficiency of fuel combustion	compression pressure
1268	Turbulence of the compressed air charge in a diesel engine cylinder will increase _____.	ignition lag	piston side thrust	the efficiency of combustion	compression pressure
1269	Two important considerations for the proper lubrication of a diesel engine include, the delivery of the oil in sufficient amount, and _____.	cetane number	pour point	maintaining proper oil temperature	specific gravity
1270	Two important considerations for the proper lubrication of a diesel engine include, the delivery of the oil in sufficient amount, and the _____.	cetane number	pour point	viscosity temperature	quality of the oil
1271	Two important considerations to maintain proper lubrication of a diesel engine include the delivery of oil in sufficient amount along with an acceptable _____.	cetane number	pour point	viscosity index	specific gravity
1272	Under normal operating conditions, the main source of crankcase oil contamination in medium speed diesel engines is attributed to _____.	metal particles loosened by wear	scavenging air when air cleaners are not used	condensation of water vapors	combustion gas byproducts caused by piston blow by
1273	Under what condition would valves "4" and "5", as shown in the illustration, be closed?	Operating the main engine on D.O.	Loading the HFO bunkers.	Operating in normal mode.	Operating D.O. purifier on HFO.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1274	Uneven bolt tightening during the installation of a fuel injection pump can result in _____.	binding of pump moving parts	ignition delay	high torsional shock to fuel lines	improper pump-to-engine timing
1275	Unusually low oil pressure in the lube oil header of a diesel engine is the result of a/an _____.	pressure regulating valve being stuck in the closed position	restricted lube oil passage in the engine	air leak in the lube oil cooler	air leak in the oil pump suction line
1276	Using a cooling water temperature of 225°F (107.2°C), instead of 180°F (82.2°C) in an auxiliary diesel engine, will _____.	reduce the probability of scale formation in the jacket cooling passages	reduce the opportunity for the formation of sulfuric acid in the cylinder bore exhaust passages	allow for smaller water passages within the engine	increase fuel consumption per horsepower hour
1277	Using a diesel engine indicator P-V diagram, the cylinder mean effective pressure is calculated to be 21.3 kg/cm ² . What is the scale of the spring used on the indicator if the diagram area is 18.46 cm ² with a length of 13 cm?	1.5 kg/mm	5.0 kg/mm	10 kg/mm	15.0 kg/mm
1278	Using a diesel engine indicator P-V diagram, the cylinder mean effective pressure is calculated to be 21.3 kg/cm ² . What is the scale of the spring used on the indicator if the diagram area is 18.46 cm ² with a length of 13 cm?	9.0 kg/cm	10.0 kg/cm	12.5 kg/cm	15.0 kg/cm
1279	Using the graph shown in the illustration, the oil being separated has a specific gravity of .87 kg/dm ³ at 72.5°C. What will be the specific gravity if the temperature is lowered to 40°C?	0.872 kg/dm ³	0.882 kg/dm ³	0.892 kg/dm³	0.902 kg/dm ³
1280	Using the information given in the illustrated table, which of the cylinders listed will fire next?	2	3	4	5
1281	Valve "1", as shown in the illustration when, should be operated when _____.	entering or departing port.	starting auxiliary boilers.	viscosimeter "V" measures low viscosity.	mixing tank is "full".
1282	Valve cages are used on some large diesel engines to _____.	reduce wear on the valve stem	permit the use of alloy valve seat materials	reduce heat transfer from the valve seat	facilitate valve removal for servicing
1283	Valve lash, or clearance refers to the _____.	clearance between the top of the valve stem and the rocker arm	compression force of the valve springs	clearance between the valve seat inserts and the valve head	fuel injection cam profile
1284	Vibrations from diesel engines and engine driven equipment are isolated from the hull structure by _____.	torsional-vibration dampers	harmonic balancers	a detuner flywheel	flexible engine mountings
1285	Visual inspection of a fuel injector valve, removed during overhaul, shows heat discoloration of the lower end of the valve. This is indicative of _____.	valve leakage	insufficient valve lift	choking of nozzle holes	return check valve leakage

ID #	Question	Choice A	Choice B	Choice C	Choice D
1286	Visual inspection of chrome-plated piston compression rings reveals a black ring face at the position of the cylinder liner ports. This condition indicates a ring which _____.	has a crown-face	exceeds wear limits through normal wear	has excessive blow-by	is in good condition
1287	Water accumulating in the crankcase of a diesel engine could indicate _____.	a cracked cylinder liner	excessive water in the fuel	a leaking intercooler	excessive moisture in the scavenge air
1288	Water accumulation in the cylinder of a secured engine is an indication that the _____.	soft water pump was not secured along with the engine	jacket water thermostat has failed	cylinder liner may be cracked	raw water pump is overspeeding just prior to engine shutdown
1289	Water in the fuel can prevent the engine from starting, prevent it from developing full power, or _____.	run at an irregular speed	create high lube oil temperature	cause the engine to overspeed	cause blue smoke in the exhaust
1290	Wear is usually greatest at the top of the cylinder bore of a diesel engine due to the _____.	piston side thrust being the greatest at TDC	skirt making the greatest amount of contact	highest pressures being exerted against the compression rings	acceleration rate being maximum at TDC
1291	What activates the water drain valve (V5) of the separator as shown in the illustration?	Activation of the drain valve occurs when the associated increase of oil pressure is sensed by the transducer, causing the signal from the controller to decrease.	The transducer detects the presence of water in the processed oil. It then sends a signal to the controller which initiates the opening of the drain valve.	The water under centrifugal force developed within the bowl acts upon the underside of the valve, overcoming the opposing spring force, causing it to open.	The water drain valve is used primarily when the bowl is flushed preceding a shut down period. Its opening is the result of a pre-programmed memory format.
1292	What are the effective stroke characteristics for the injection pump plunger shown in the illustration?	Constant beginning and variable ending	Constant beginning and constant ending	Variable beginning and constant ending	Variable beginning and variable ending
1293	What causes diesel fuel to be ignited in the cylinder of an operating diesel engine?	Spark plug	Heat of compression	Carburetor	Glow plug
1294	What characteristic in lube oil, helps to reduce the amount of deposits formed in the piston ring belt during the combustion process in a diesel engine?	Low viscosity index	Low carbon forming tendencies	High film strength	High noncorrosive qualities
1295	What contaminants found in engine lube oil will cause an increase in wear rate of metal components in a diesel engine.	abrasive particles	metallic oxides	corrosive acids	any or all of the above
1296	What could be the cause of inadequate starting speed during the cranking of a cold diesel engine?	High lube oil viscosity	Low lube oil viscosity	Late fuel injection	Early fuel injection
1297	What could cause the bypass valve in a full-flow lubrication system to open?	Clogged filter element	Bypass valve setting is too high	Check valve stuck open	Fuel dilution of the lubricant

ID #	Question	Choice A	Choice B	Choice C	Choice D
1298	What determines the number of events occurring in a cycle of operation in an internal combustion engine?	Crankshaft revolution	Method of air charging a cylinder and expelling exhaust gases	Distance a piston travels during a stroke	Number of pistons
1299	What function is provided by the crankcase ventilation system on some diesel engines?	Increases the sludge forming tendency of lube oil.	Prevents the accumulation of combustible gases.	Improves lube oil cooling.	Improves cold weather starting.
1300	What function is served by the spring piece #34 shown in the illustration?	It closes the nozzle valve when the release port is uncovered.	It opens the nozzle valve when the release port is uncovered.	It opens the nozzle valve when the supply port is covered.	It closes the nozzle valve when the supply port is covered.
1301	What is a function of the device labeled "1" shown in the illustration?	It provides a point for the removal of chemicals from the air coolers.	It relieves the excessive pressure developed in the lube oil cooler.	It aids in the removal of combustible gases formed in the exhaust manifold.	It provides a reservoir for the expansion of engine jacket water as the engine temperature increases.
1302	What is a function of the device labeled "1" shown in the illustration?	It provides a point for the removal of chemicals from the air coolers.	It relieves the excessive pressure developed in the lube oil cooler.	It aids in the removal of combustible gases formed in the exhaust manifold.	It provides a low pressure point for adding chemicals into the jacket water system.
1303	What is a function of the device labeled "1" shown in the illustration?	It provides a low pressure point for combustion air filtration.	It relieves the excessive pressure developed in the jacket water cooler.	It aids in the removal of combustible gases formed in the crankcase.	It provides a low pressure point for adding chemicals into the jacket water system.
1304	What is commonly used to create turbulence in a diesel engine combustion system?	Shape of the piston crowns.	Increasing the compression ratios.	Increasing the effective plunger stroke.	Increasing the turbocharger gear ratio.
1305	What is the average piston speed of a 4 cycle diesel engine with a 12 inch stroke, operating at 900 RPM?	450 ft/min	900 ft/min	1500 ft/min	1800 ft/min
1306	What is the average piston speed of a five cylinder low-speed engine with a bore of 29.5 inches (75 cm), a stroke of 63 inches (160 cm), and a rated speed of 123 RPM?	645 ft/min (196 m/min)	1291 ft/min (393 m/min)	2582 ft/min (787 m/min)	7749 ft/min (2362 m/min)
1307	What is the average piston speed of a seven-cylinder, two-stroke/cycle diesel engine with a 580 mm bore and a 1700 mm stroke operating at 100 RPM?	2.8 m/sec	4.5 m/sec	5.7 m/sec	9.0 m/sec
1308	What is the crank angle between cylinder firing of a four-stroke/cycle, in line, eight cylinder diesel engine?	45°	60°	90°	120°

ID #	Question	Choice A	Choice B	Choice C	Choice D
1309	What is the function of a diesel engine's stationary parts?	To add power to the engine.	To keep the engine firmly attached to its auxiliary pumps.	To maintain the engine's moving parts in their proper relative positions.	To rotate the crankshaft.
1310	What is the function of component "13" shown in the illustration?	The inlet jumper directs cooling water to the cylinder liner.	The sample tube monitors the cylinder for evidence of piston blow by.	The water pipe is the mechanism in which the 'shaker' method of piston cooling is accomplished.	The device delivers the oil for piston cooling, in addition to liner lubrication.
1311	What is the function of component "G" shown in the illustration?	The roller assists in maintaining the main crankshaft axial alignment.	The roller "G" is incorporated into the device to reduce the frictional forces acting upon component "F".	Roller "G" develops an output pressure at fitting "H", directly proportional to the rate of reciprocation of component "D".	The blocking roller, utilizing spring force and engine oil pressure, maintains the reversing control in its two end positions.
1312	What is the function of component "G" shown in the illustration?	The blocking controller assists in maintaining the reversing control in its end positions.	The roller "G" is incorporated into the device to reduce the frictional forces acting upon component "F".	Roller "G" develops an output pressure at fitting "H", directly proportional to the rate of reciprocation of component "D".	The blocking roller, utilizing spring force and engine oil pressure, maintains the reversing control in its two end positions.
1313	What is the function of device "A" shown in the illustration?	It provides a conduit for incoming feed water.	It is only used as a lifting beam during installation.	It serves as a hinge for ease of opening the shell.	It aids in removing condenser tube bundles.
1314	What is the function of device "B" shown in the illustration?	It serves to cool incoming feed water.	It condenses the vapors formed in section "G".	It removes sensible heat from the jacket water.	It serves to boil off incoming feed water.
1315	What is the function of device "C" shown in the illustration?	It removes moisture entrained in the vapors produced in section "G".	It allows for access into section "F".	It controls the amount of vapor produced in section "F".	The division plate creates a pressure drop between the two stages.
1316	What is the function of item "D" shown in the illustration?	It heats the entering feed water.	It heats the jacket water entering the device.	It causes the jacket water to evaporate.	It condenses the distillate.
1317	What is the function of the device labeled "3" shown in the illustration?	The heat exchanger serves to heat the jacket water during cold water operation.	The jacket water cooler is used to raise the temperature of the sea water flowing through it.	The device specifically serves to remove the latent heat of vaporization from the jacket water.	The cooler removes sensible heat from the jacket water.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1318	What is the function of the item "7" shown in the illustration?	This jacket water pump circulates salt water through the jacket water cooling system to provide engine cooling.	This jacket water pump supplies the distiller with sea water feed while also powering the eductors.	This circulating salt water pump will supply feed water for the operation of the distiller.	This jacket water pump circulates fresh water throughout the engine cooling and distiller heating systems.
1319	What is the maximum allowable clearance permitted between the bearing, shown in the illustration and the shaft along its vertical axis?	1.00 mm	0.30 mm	0.46 mm	0.80 mm
1320	What is the metric brake horse power developed per cylinder by an 83% efficient, six cylinder, two-stroke/cycle diesel engine with a cylinder constant of 0.998 and a mean effective pressure of 15 kg/cm ² at 100 RPM?	1,497 MBHP	1,243 MBHP	1,116 MBHP	621 MBHP
1321	What is the normal bearing clearance permitted at the horizontal axis of the shaft for the bearing shown in the illustration?	The tolerances established are dependent on machining processes used and will vary amongst manufacturers.	The clearance on one side of the shaft at the axis will be one twentieth of a millimeter.	The clearance is determined by the thickness of the hydrodynamic wedge formed and is not usually measured while underway.	The normal play on both sides of the shaft will be one tenth of a millimeter.
1322	What is the primary function of item '15' shown in the illustration?	It removes the vapor condensed in area "23".	It removes the distillate condensed in area "24".	It is the chemical cleaning pump used in conjunction with valve "12".	It is used to empty the evaporator section when there is tube leakage while the unit is secured.
1323	What is the purpose of a hydraulic valve lash adjuster?	Compensates for the expansion and contraction of the valve stem due to changes in operating temperature.	Insures proper pressure in a hydraulic system.	Eliminates need to remove valve springs.	Provides easier removal of the valve cage.
1324	What is the purpose of the device shown in the illustration?	Regulate lube oil pressure in a diesel engine.	Protect the crankcase from overpressure in the event of explosion.	Utilize exhaust gas pressure to supercharge a diesel engine.	Secure the engine in the event of dangerous overspeed.
1325	What is the purpose of the 'window' installed in the housing of an individual jerk pump?	To allow the pump to be timed to the engine.	To check for sludge on the pump barrel.	To check that fuel oil return passages are clear.	To set up the fuel rack calibration in cubic millimeters.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1326	What is the speed of the crankshaft in a four-stroke/cycle engine when the camshaft is turning at 750 rpm?	375 RPM	500 RPM	750 RPM	1500 RPM
1327	What is the swept volume per cylinder per revolution of a six-cylinder, two-stroke/cycle diesel engine with a 580 mm bore and a 1700 mm stroke operating at 100 RPM?	0.45 cubic meters (450 L)	0.90 cubic meters (900 L)	2.7 cubic meters (2700 L)	5.4 cubic meters (5400 L)
1328	What is the term given to the process of breaking up fuel oil into very fine particles for better combustion?	Settling	Straining	Spraying	Atomizing
1329	What is used as the primary operating medium during the sludge discharge cycle, shown in the illustration?	Light phase liquid	Heavy phase liquid	Hydraulic fluid	Water
1330	What occurs in the area labeled "G" of the device shown in the illustration?	Jacket water is heated in the boiling chamber.	The feed water is vaporized under vacuum conditions.	The feed water is cooled prior to being pumped into section "F".	Water vapor is condensed and collected.
1331	What occurs in the combustion space of a diesel engine cylinder shortly after ignition and before the piston reaches TDC?	Rapid increase in temperature with constant pressure.	Rapid increase in pressure with constant temperature.	Rapid increase in pressure and temperature.	Rapid increase in volume and decrease in pressure.
1332	What occurs in the space labeled "D" of the device shown in the illustration?	Jacket water is heated in the boiling chamber.	The feed water is cooled prior to being pumped into section "F".	The feed water enters the device and vaporizes under vacuum conditions.	Moisture is separated from the steam vapor.
1333	What occurs in the space labeled "G" of the device shown in the illustration?	Jacket water is heated in the boiling chamber.	The feed water enters the device and vaporizes under vacuum conditions.	The feed water is cooled prior to being pumped into section "F".	Scale accumulates at position "E".
1334	What occurs within the tubes of the device labeled "23" shown in the illustration?	The heat from the jacket water passing within the tubes is being transferred to the feed water on the outside of the tubes.	The feed water flowing through the inside of the tubes is being heated by the jacket water on the outside of the tubes.	The heat being transferred is subliminal, therefore expansion is taking place within the tubes.	The heat of combustion from the engine is being transferred azeotropically, adding latent heat to the entering jacket water.
1335	What preventative maintenance should be done frequently to diesel engine starting air receivers?	Drain the accumulated moisture.	Test the relief valves.	Watch the temperature to prevent fluctuations in pressure.	Clean the interior to remove oil and foreign matter.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1336	What prevents the thrust bearing blocks shown in the illustration from rotating within the housing?	The bearing blocks are massive and their weight provides sufficient force to prevent rotation.	The thrust shoes are dove-tailed into the collar.	Found within the thrust bearing cap or cover are extended protrusions to position the thrust shoe segments and maintain minimum clearance.	The bearing assembly is specifically designed to allow for rotation, permitting the transmittal of axial forces across a greater surface area and minimizing loading densities.
1337	What terminates the sludge discharge cycle of the device shown in the illustration?	The solenoid valve opens, directs high pressure fluid into the closing chamber, and results in an upward movement of the sliding piston.	The solenoid valve closes, reduces the water pressure to the paring chamber, and allows the spring force to move the sliding piston upward.	The solenoid valve closes, allows the water in the opening chamber to bleed off through "S", and the sliding piston moves upward due to the force developed in area "J".	The solenoid valve closes, allows the weight of the sliding piston to oppose the low water pressure, and moves it along the axis of the spindle.
1338	What type of bearing is shown in the illustration?	Collar bearing	Kingsbury thrust bearing	Axial/radial bearing	Michell bearing
1339	What type of engine lubrication oil filter system sends filtered oil directly to the high pressure supply gallery?	centrifugal purifier system	bypass system	shunt system	batch system
1340	What type of fuel injector is installed in the diesel engine shown in the illustration?	Solid jerk	Air Assisted	Unit	Common rail
1341	What type of main bearings are commonly used on crankshafts for most propulsion diesel engines?	Solid roller ball bearings	Solid type tapered needle bearings	Solid copper or bronze bushings	Split Babbitt lined precision type
1342	What type of marine engine has a fuel nozzle and combustion chamber located between two pistons in a common cylinder liner?	Horizontal reciprocating	Vertical opposed piston	Single acting in-line cylinder	Double acting in-line cylinder
1343	What type of valve, shown in the illustration, is indicated by the letter "I"?	Air start check valve	Air start valve	Reversing air valve	Pilot air valve
1344	What would be considered a normal temperature increase between the inlet and outlet jacket cooling water of a medium or high-speed diesel engine operating at normal load?	1° to 5°F	5° to 10°F	10° to 20°F	50° to 100°F
1345	What would be the first indication that a tube leak has occurred in area "23"?	The level in area "1" would decrease.	The level in area "1" would increase.	The level in area "3" would increase.	The level in area "3" would decrease.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1346	What would be the result of adding phosphate compounds into the cooling system of a diesel engine ? I. Protect the coolant from freezing. II. Protect metallic surfaces from corrosion.	I	II	Both I and II	Neither I or II
1347	What would happen if valve '25', shown in the illustration, vibrated open with the unit in operation?	The unit would continue to operate with no adverse effects.	Jacket water would be automatically by-passed around the distiller.	The unit would automatically shut down due to the closing of the low pressure contacts.	The absolute pressure of the unit would increase, causing a decrease in distillate output.
1348	When a diesel engine compression pressure is checked, the indicator is connected to the _____.	cylinder exhaust ports	injection line	cylinder indicator cock	banjo oiler line
1349	When a diesel engine is operated with a piston ring having a cold gap clearance less than that recommended by the manufacturer, the ring will _____.	seize and buckle	seat in more slowly	slap in the groove	stick in the groove
1350	When a fuel injection nozzle overheats, which of the problems listed can be expected?	The fuel metering will vary.	The fuel will explode.	The cylinder head will crack.	The engine will stop.
1351	When a leak has developed in the lube oil cooler of an operating diesel engine, which of the listed operating conditions can be expected to occur?	Lube oil contaminated with saltwater	Lube oil level decreases	Lube oil contaminated with fresh water coolant	Lube oil level increases
1352	When a nozzle tester is being used to test a 'closed' type fuel injection nozzle, a clogged nozzle orifice will be indicated by a _____.	distorted spray pattern	chattering sound when the nozzle closes	squealing sound midway in the pump stroke	popping sound when the nozzle opens
1353	When a nozzle tester is used to check the spray pattern of a diesel fuel injection nozzle, which of the following statements is true?	The valve should normally begin to open at 1/2 the popping pressure	The needle valve spring should always be removed first before testing	The needle valve should remain open after the nozzle pops open	A serious hazard of blood poisoning exists if the fuel spray penetrates the skin of the operator
1354	When a piston is removed from a diesel engine for maintenance, the piston should be examined for _____.	scoring	cracks and burned spots	gummy deposits and sticking rings	all of the above
1355	When an air started, four-stroke/cycle diesel engine is being cranked over, the starting air is admitted to each cylinder during the beginning of its _____.	intake stroke	compression stroke	power stroke	exhaust stroke
1356	When an engine fitted with a hydraulic starting system starts up, the starter is protected from the higher speed of the engine by _____.	the immediate increase in hydraulic pressure	the overrunning clutch	closing the starting check valves	the pivoting of the shaft from being engaged with the flywheel

ID #	Question	Choice A	Choice B	Choice C	Choice D
1357	When associated with main propulsion diesel engines, shaker, circulation, and spray are the three general methods used in _____.	pre-injection fuel oil treatment	lube oil filtration	lube oil purification	piston cooling
1358	When attempting to restart a warm high-speed engine, which of the following reactions can you expect?	Excessive fuel use	Higher than normal temperatures for start up	Longer starting periods	Higher than normal lube oil pressure
1359	When calculating the indicated power developed in a diesel engine cylinder, 1 horsepower is equivalent to "33,000 foot-pounds per minute". What conversion factor would be used if the values are based on metric "kilogram-meters per minute"?	4500 kg-meters per minute = 1 HP	5500 kg-meters per minute = 1 HP	11000 kg-meters per minute = 1 HP	16500 kg-meters per minute = 1 HP
1360	When centrifuging heavy fuel oil, an important factor to consider is the _____. I. flow rate II. viscosity of the fuel oil	I only is correct	II only is correct	both I and II are correct	neither I or II are correct
1361	When checking zincs in a saltwater cooled heat exchanger, you should _____.	paint the zincs to stop corrosion	insulate the zincs to alter the temperature	replace the zincs if they are approximately 50% consumed	file the zincs to change the shape
1362	When cleaning a duplex strainer, it is important for _____.	the pressure to be bled prior to opening the compartment cover	the lube oil to be allowed to cool before removing the basket	the cleaning fluid viscosity to be more viscous than the lube oil	a new cover gasket to be installed when reassembling the unit
1363	When comparing different fuels for different engines, the ignition quality of the fuel oil becomes a less critical consideration as _____.	the amount of lube oil additives increase	piston speeds increase	injection pressures decrease	engine speeds decrease
1364	When disassembling or assembling an injection pump plunger and barrel you should _____.	keep the parts immersed in diesel fuel	always keep the plunger and barrel as a matched set	work over a linoleum-type surface	all of the above
1365	When excessive fuel dilution is noted in the lube oil, the oil should be _____.	centrifuged	filtered	strained	changed
1366	When fuel enters the crankcase of a diesel engine, it _____.	dilutes the lube oil and reduces its viscosity	forms sulfuric acid in the lube oil	causes pitting and failure of the bearings	causes sludge deposits on valve stems
1367	When fuel is injected late into a diesel engine cylinder, _____.	the exhaust will be clear	fuel consumption will be low	all the fuel will be burned at top dead center	fuel consumption will be high
1368	When fuel is injected too early in the injection cycle, it may cause the engine to have _____.	high fuel economy	smoky exhaust	early detonation and a loss of power	high exhaust temperatures

ID #	Question	Choice A	Choice B	Choice C	Choice D
1369	When fuel oil has seriously contaminated a diesel engine lubricating oil, you should _____.	filter to remove the fuel oil	use the settler to remove the fuel oil	remove the fuel oil by centrifuging	drain and then renew the lube oil supply
1370	When fuel oil is accidentally mixed with lube oil which of the following processes can be used to separate them? I. filtering II. Settling	I only	II only	either I or II	neither I nor II
1371	When high firing pressures and low exhaust temperatures occur simultaneously in a diesel engine, this may be a result of _____.	decreased piston-to-cylinder head clearance	increased exhaust back pressure	early timing of fuel injection	low scavenge air temperature
1372	When in automatic mode, the output signal of the viscosimeter, shown in the illustration, will vary as a result of measuring the fuel oil _____.	final heater outlet pressure	final heater inlet pressure	inlet and outlet pressure differential	inlet temperature and outlet pressure
1373	When inspecting piston rings through the ports of a two-stroke/cycle diesel engine, black areas on the sealing surfaces are the result of _____.	insufficient lubrication	improper piston cooling	blow-by	overload operation
1374	When inspecting pistons, liners, and rings of a large two-stroke/cycle diesel engine through the cylinder ports, a wet piston crown would indicate a _____.	faulty piston lubricator	leaky fuel injector	broken compression ring	faulty oil ring
1375	When installing new rings during a engine piston overhaul, the piston ring gap should first be measured with feeler gages by _____.	placing the ring in the cylinder liner near the top	placing the ring in the cylinder liner near the bottom	placing the ring in the piston ring groove while using a ring compressor	comparing it with the old ring gap
1376	When installing the bearing cap on the device shown in the illustration, which of the precautions listed must be observed?	If the device is covered with abrasive material or contaminates, the unit may be reassembled, provided an abnormal method of reassembly is followed.	After applying anti-sieze to the external threads, tighten one side at a time to the final torque value using a quality torque wrench.	Once the bearing cap bolts are properly torqued, insure that the end gap dimensions do not exceed a difference of 0.2 mm to ascertain even tightening of the cap.	Prior to installing the cap, position the thrust shoes in their proper locations.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1377	When installing the bearing cap on the device shown in the illustration, which of the precautions listed must be observed?	If the device is covered with abrasive material or contaminates, the unit may be reassembled, provided an abnormal method of reassembly is followed.	After applying anti-sieze to the external threads, torque one side at a time to the appropriate values using a quality torque wrench.	Once the bearing cap is properly torqued, measure the end gap dimensions to ascertain even tightening of the cap.	Prior to installing the cap, position the thrust shoes in their proper locations.
1378	When is fuel injected into a cylinder of diesel engines?	Before air in the cylinder is compressed.	After air in the cylinder is compressed.	After combustion gases in the cylinder have expanded.	As air is taken into the cylinder.
1379	When oil vapor, oxygen and hot spots are present at the same time within a crankcase, which of the following hazards could develop?	Explosion	Implosion	Misfire	Dieseling
1380	When operating the HFO purifiers in "parallel", as shown in the illustration _____.	valve "3" would be closed	valve "2" would be closed	valve "6" would be closed	All of the above
1381	When overhauling a diesel engine, the best tool to use to remove the wear ridge at the top of the engine cylinder liner, prior to removing the piston, is _____.	an electric hand grinder	a knurling tool	a reamer	a wire brush
1382	When piloted by a small amount of control air, the pneumatic relay valves, shown in the illustration, will provide a large flow of air from a separate source. The flow will stop when the control pressure is vented through the port numbered _____.	9	10	11	12
1383	When preparing to clean the fuel oil centrifuge shown in the illustration, the bowl must be brought to a complete stop to avoid _____.	contamination of the clean fuel oil	irreparable damage to the unit	contamination of the unit's lube oil supply	premature loss of the bowl seal liquid
1384	When reassembling the bowl of a disk-type centrifuge, the bowl or locking ring is rotated _____.	clockwise, due to the bowl rotating clockwise	clockwise, due to the bowl rotating counterclockwise	counterclockwise, due to the bowl rotating clockwise	counterclockwise, due to the bowl rotating counterclockwise
1385	When reassembling the bowl of the centrifuge, shown in the illustration, the alignment mark on the locking ring passes the bowl cover mark in excess of the manufacturer's specifications. This is due to _____.	too many disks being left out of the bowl during reassembly	the paring devices have been reinstalled in the wrong order	the disks have not been placed back in the bowl in numerical sequence	excessive wear of the locking ring and/or bowl threads
1386	When restarting a heavy fuel diesel engine that has been stopped for some time, the engineer should _____.	increase the starting air pressure	use a higher than normal cranking speed	increase the fuel injection pressure	use a fuel having a lower ignition temperature

ID #	Question	Choice A	Choice B	Choice C	Choice D
1387	When running a large, dual fuel, main propulsion diesel engine on heavy fuel, which of the following precautions should be observed when switching from heavy fuel oil to diesel oil?	The diesel oil must never be allowed to mix with the heavy fuel.	The temperature of the fuel from the preheater should be gradually reduced after switching over the three-way valve.	The heating steam to the preheater should be increased as soon as the diesel fuel passes through the three-way valve.	The heating steam must be secured before the diesel oil passes through the three-way valve.
1388	When starting a diesel engine at temperatures below 70°F, the frictional resistance to turning will be _____.	reduced by increasing lube oil pressure	controlled by reducing the compression ratio	proportional to the lube oil viscosity	eliminated by heating the intake air
1389	When starting air is admitted, a diesel engine turns over very slowly without firing. The cause may be _____.	an obstruction in an engine cylinder	water accumulation in some engine cylinders	low starting air pressure	low scavenge air pressure
1390	When the #1 piston, shown in the illustration, is at top dead center, the #9 piston is _____.	on the exhaust stroke	on the compression stroke	at top dead center	at bottom dead center
1391	When the air valve is opened to admit starting air to a diesel engine pneumatic starting motor, the valve should be opened rapidly to _____.	prevent damage to the air line lubricator	ensure proper operation of the Bendix drive pinion	prevent damage to the valve seat	increase the air charge density to the motor
1392	When the lower edge of the spiral begins to uncover the release port in a jerk pump, the _____.	pumping continues until the plunger travels its full stroke	effective pumping stroke of the plunger ends	pressure drops slowly until the full stroke is attained	plunger rotates to the zero delivery position until the next stroke
1393	When the normal compression ratio of a diesel engine is not very high, misfiring at light loads may be caused by _____.	overloading the engine	low exhaust valve lift	excessive cylinder cooling	insufficient mechanical clearance
1394	When the opening pressure of a diesel engine fuel injector is greater than that specified by the engine manufacturer, which of the following problems can be expected?	Quantity of fuel injected tends to be decreased.	Quantity of fuel injected will always be increased.	Start of injection tends to be advanced.	Duration of injection will always be greater.
1395	When the opening pressure of a diesel fuel injector is greater than that specified by the engine manufacturer, the _____.	quantity of fuel injected is decreased	quantity of fuel injected will always be increased	start of injection is advanced	duration of injection will always be greater
1396	When tightening the plate type heat exchangers shown in the illustration, care must be taken to _____.	prevent damage to the aluminum plates	avoid fracturing the backing plate	use a specific opposing pattern while measuring the distance to which the plates have been compressed	avoid using a torque wrench that has not been recently calibrated

ID #	Question	Choice A	Choice B	Choice C	Choice D
1397	When tightening the threaded ring "G" of the device shown in the illustration, two events are simultaneously accomplished. Which of the following statements represents these events?	The ring insures proper contact between the bowl top and the sliding bowl bottom, in addition to compressing the disc stack.	The ring forces the disc stack onto the spindle, providing a positive means of rotation and locating the bowl top to seal the separation chamber.	When tightened, the ring allows for movement of the sliding piston and positions the sliding piston within the bowl bottom.	The ring insures proper positioning of the disc stack and maintains a positive contact of the bowl top and bowl bottom.
1398	When turning a new cylinder head stud on a lathe, the minimum effective thread length of the stud is determined primarily by the _____.	stud length	stud diameter	head nut diameter	stud material
1399	When two cams of the same diameter, one with tangential flanks and the other with convex flanks are compared, the cam with convex flanks will cause _____.	greater valve lift	more abrupt valve action	less valve seat wear	less valve gear wear
1400	When two cams of the same diameter, one with tangential flanks and the other with convex flanks are compared, the cam with tangential flanks will cause _____.	greater valve lift	more abrupt valve action	less valve seat wear	less valve gear wear
1401	When using a fuel with a higher than normal sulfur content in an auxiliary diesel engine, you should _____.	maintain higher than normal jacket water temperature	change the lube oil more frequently than normal	maintain a higher air-box temperature than normal	maintain a higher air-box pressure than normal
1402	When using a fuel with an above normal sulfur content in a main propulsion diesel engine, you should _____.	maintain a higher jacket water temperature	change the lube oil more frequently	maintain a higher air-box temperature	maintain a higher air-box pressure
1403	Where diesel engine speed and clutch controls are combined into one operation by a single control lever, movement of the lever from the 'stop' position to the 'ahead' position will FIRST _____.	decrease the engine speed	increase the engine speed	engage the ahead clutch	disengage the astern clutch
1404	Where does the shoot cycle operating liquid first come in contact with the rotating forces of the device shown in the illustration?	While traveling under disc stack "N".	At the inlet cone labeled "O".	In the opening chamber labeled "L".	At the inlet orifice labeled "S".
1405	Where is the air charge for an air starting system stored?	Air compressor	Pressurized tank	Distributor assembly	Cylinder check valve
1406	Where is the cam follower most likely to leave the surface of the cam?	ramp	flank	nose	convex contour
1407	Where is the fuel delivery check valve located in a jerk pump fuel injection system?	In the cylinder head	On the suction side of the delivery pump	In the injection pump housing discharge	On the inlet side of the spray valves
1408	Where is the latent heat obtained to create vapor from the feed water in the illustrated distiller?	Only as it passes through device "20".	During its contact period with heat exchanger "3".	From having passed through "23".	While it is in contact with device "24".

ID #	Question	Choice A	Choice B	Choice C	Choice D
1409	Where would a coarse screen wire-mesh strainer normally be found on a diesel engine lubrication system?	pump discharge line	gravity tank inlet line	filter bypass return line	pump suction line
1410	Where would a metal-edge disk type strainer normally be found on a diesel engine lubrication system?	pump discharge line	gravity tank inlet line	oil sump return line	pump suction line
1411	Whether using a centrifuge or a simple filter, oil cleaning and filtration will be the most effective when the oil is at a _____.	high temperature and a high viscosity	high temperature and a low viscosity	low temperature and a high viscosity	low temperature and a low viscosity
1412	Which area of the indicator diagram illustrated, indicates the afterburning period in a diesel engine cylinder?	G	H	J	K
1413	Which area of the indicator diagram illustrated, indicates the ignition delay period in a diesel engine cylinder?	H	K	G	J
1414	Which characteristic of the theoretical Otto cycle does not occur in the theoretical Diesel cycle.	No pressure increase during combustion.	Rapid pressure decrease during compression.	Rapid volume increase during combustion.	The entire fuel charge is present for ignition.
1415	Which chemical is most often utilized to prevent and correct most microbial contamination occurring within fuel storage systems?	Potassium salts	Sodium chlorides	Biocides	Paraffin waxes
1416	Which component will receive the greatest load in a two-stroke/cycle diesel engine?	Lower half of the connecting rod bearing at the crankshaft end of the rod.	Upper half of the main bearing.	Lower portion of the piston pin bushing in the connecting rod.	All bearing halves share an equal load.
1417	Which construction detail is apparent in the connecting rod and piston assembly shown in the illustration?	The piston is designed with a heat dam.	It is a fork assembly.	The piston is water cooled.	The wrist pin is free floating.
1418	Which device is used to prevent over pressurization of the illustrated distiller?	"13"	"19"	"26"	"12"
1419	Which device will normally shut down a diesel engine after it exceeds its maximum speed setting?	Speed limiting governor	Overspeed governor	Overspeed trip	Speed droop relay
1420	Which factor determines the size of the ring dam for a fuel oil centrifugal purifier?	The viscosity of the fuel.	The quantity of water to be removed from the fuel.	The specific gravity of the fuel.	The quantity of dirt to be removed from the fuel.
1421	Which harmful consequence may be the result of lube oil sludge accumulation?	Clogged oil pump suction screens.	Increased oil operating temperatures.	Sticking piston rings.	All of the above
1422	Which instrument is used to take crankshaft deflection readings?	Trammel gage	Dial type outside micrometer	Dial type inside micrometer	Gage block
1423	Which instrument is used to take crankshaft deflection readings?	feeler gage	Outside micrometer	Strain gage	Gage block

ID #	Question	Choice A	Choice B	Choice C	Choice D
1424	Which internal combustion engine starting system uses a vane type fluid motor?	Jet flow	Electric	Compressed air	Centrifugal
1425	Which is the first bearing designed to absorb the load created on the piston by combustion in the engine cylinder.	Crankshaft journal bearing	Crankpin bearing	Wrist pin bearing	Thrust bearing
1426	Which letter represents the entrance point for combustion air to the cylinders of the engine shown in the illustration?	"D"	"J"	"K"	"N"
1427	Which letter represents the exhaust gas exit point for the diesel engine shown in the illustration?	"K"	"J"	"N"	"V"
1428	Which letter represents the top deck (valve) cover of the engine shown in the illustration?	"A"	"H"	"8"	None of the above are correct.
1429	Which lubricating oil additive is used in diesel engines to reduce the tendency for sludge and varnish to form on the engine parts?	Flash point improvers	Pour point improvers	Inhibitors	Foam suppressors
1430	Which of the bearings listed are most widely used for the main and connecting rod bearings of a diesel engine?	Roller	Sleeve	Precision insert	Needle
1431	Which of the bearings listed below is most widely used for the main and connecting rod bearings of a modern high-speed diesel engine?	Steel-lined	Poured Babbitt, self-aligning	Split roller	Precision insert
1432	Which of the bearings listed is most widely used for main and connecting rod bearings of modern diesel engines?	Steel-lined	Poured Babbitt, self-aligning	Split roller	Precision insert
1433	Which of the combustion chambers shown in the illustration is referred to as an 'energy cell' used in some small diesel engines?	A	B	C	D
1434	Which of the combustion parameters listed is used in a diesel engine, but NOT related to the injection system?	Fuel cam lift	Metering	Atomization	Penetration
1435	Which of the combustion parameters listed is used in a diesel engine, but NOT related to the injection system?	Atomization	Metering	Scavenging	Penetration
1436	Which of the components listed is only found in an opposed piston engine?	Exhaust valves	Scavenging ports	Combustion chambers	Upper and lower crankshafts
1437	Which of the components listed is used to control the diesel engine speed shown in the illustration?	"C"	"D"	"E"	"G"
1438	Which of the conditions listed could cause the cylinder relief valves on a large, low-speed, propulsion diesel engine to lift?	Plugged injector nozzles	Excessive fuel injection	Very late injection timing	Incorrect crankshaft clearances

ID #	Question	Choice A	Choice B	Choice C	Choice D
1439	Which of the conditions listed may occur in an operating diesel engine if air pockets form within the cylinder head circulating water passages?	Hydraulic stress and distortion will develop.	Hot spots will develop.	Fuel oil viscosity will increase.	An increase in trapped deposits of scale and dirt.
1440	Which of the conditions listed occurring in a diesel engine would cause carbon deposits to develop in the piston ring belt?	Faulty combustion	Excessive ring temperatures	Over lubrication	All of the above.
1441	Which of the conditions listed would cause simultaneous high cylinder firing pressure and low exhaust temperature?	Improper fuel rack positioning.	Lengthy opening of the exhaust valve.	Excessively early injection timing.	Extended light load operation.
1442	Which of the conditions listed would indicate a large condenser tube leak within the distiller shown in the illustration?	A decrease in the level of the main engine expansion tank as indicated by a low level alarm.	An increase in distiller output resulting from the combination of jacket water and the distillate produced.	A slow continuous rise in the lube oil cooler outlet temperature indicated at device "4".	The activation of the salinity monitoring equipment's annunciator circuit.
1443	Which of the contaminants listed would remain in the lube oil after filtering?	Acid sludge	Fuel oil	Sediment	Water
1444	Which of the devices is commonly used in measuring the clearances between the main engine bearings and the crankshaft?	Plasti-gage	Persian blue	Copper shims	Wooden gaging pegs
1445	Which of the devices listed is installed on a diesel engine to isolate some of the crankshaft vibrations caused by rotational and reciprocating forces?	Planetary gear set	Torsional vibration damper	Friction clutch	Air bladder clutch
1446	Which of the diesel engine cylinder liners listed has internal cooling water passages?	Internally finned liner.	Externally finned liner.	Wet liner.	Integral water-jacket liner.
1447	Which of the events listed does NOT occur during the instant the piston just reaches top dead center?	Intake	Ignition	Power	Combustion
1448	Which of the factors listed has the greatest effect on the mechanical efficiency of a diesel engine?	Temperature of the intake air.	Friction in the engine.	Type of cooling system.	Type of air filtration system.
1449	Which of the following characteristics can be determined about the standby diesel engine shown in the illustration?	The camshaft rotates at one half the engine speed.	The cam follower for the fuel pump is located above the camshaft.	The fuel pump stroke is manually adjusted by rotating piece K.	The valve lash is mechanically adjusted by rotating piece E.
1450	Which of the following conditions can be a cause for the control unit of the separator shown in the illustration to indicate alarm A06?	Back pressure oil outlet is too high.	Leakage from the sealing ring occurs into the bowl periphery.	No control air supply is provided to the liquid sensor.	All of the above.
1451	Which of the following conditions can cause excessive lube oil consumption in a diesel engine?	Low lube oil temperature	Dirty lube oil strainer	Low lube oil pressure	High lube oil temperature

ID #	Question	Choice A	Choice B	Choice C	Choice D
1452	Which of the following conditions can cause high salinity of the distillate due to sea water leakage in the illustrated device.	Improper venting during start-up.	Improper venting during operation.	Failure to properly tighten the bolts of the evaporator heat exchanger.	Failure to properly tighten the bolts of the condenser heat exchanger.
1453	Which of the following conditions can cause oil to accumulate in the cooling system of a diesel engine?	Excessive valve train lubrication.	Defective oil cooler core.	Excessive lube oil pressure.	Overfilled lube oil system.
1454	Which of the following conditions can result in the cracking of the piston lands?	High lubricating oil temperature	Dirty lubricating oil	Minimal cylinder liner wear	Insufficient ring groove clearance
1455	Which of the following conditions could be a cause of excessive fuel dilution of diesel engine lube oil?	Leaking fuel injectors	Lower than normal compression	Delayed fuel injection	All of the above are correct.
1456	Which of the following conditions could contribute to the cracking of a diesel engine cylinder head?	Leaking seal ring	Insufficient heat transfer from the exhaust valves	Blocked cooling water passages to the head	Excessive scavenging air provided to the engine
1457	Which of the following conditions indicates the dilution of diesel engine lube oil by fuel oil?	Water discharging from the waste water outlet of the lube oil purifier.	Fuel oil discharging from the waste water outlet of the lube oil purifier.	Lube oil discharging from the waste water outlet of the lube oil purifier.	A change in the lube oil viscosity.
1458	Which of the following conditions is indicated when the lubricating oil of a diesel engine turns dark after a few hours of use?	The oil should be purified.	The lubricating quality of the oil has dangerously deteriorated.	The oil is functioning normally.	Normal engine operating temperatures have been exceeded.
1459	Which of the following conditions is most likely to occur if oil containing moisture is continuously fed to a purifier operating as a clarifier?	The purifier must be operated at a higher temperature.	The purifier must be operated at a higher speed.	The purifier will gradually change operation to separation.	The bowl will eventually fill with water.
1460	Which of the following conditions is most likely to occur if the electric starter motor pinion gear fails to disengage from the flywheel of a diesel engine after the engine has started?	Flywheel will be damaged	Engine will stop	Starting motor will dangerously overspeed	Combustion gases will enter the air starting system
1461	Which of the following conditions is most likely to occur when unburned fuel contaminates the crankcase of a diesel engine?	Lube oil is diluted and its viscosity is reduced.	Sulfuric acid is formed.	Bearings become pitted and immediately fail.	Valve stems develop sludge deposits.
1462	Which of the following conditions is NOT an indication of microbial contamination of the fuel supply?	Evidence of corrosion	Pitting of metal surfaces	Presence of green slime	Brightening of copper bearing metals
1463	Which of the following conditions is NOT an indication of microbial contamination?	Objectionable odors	Increased air filter changes	Occurrences of flow restrictions	Increased corrosion of tank plating
1464	Which of the following conditions may be responsible for allowing lube oil to contaminate the jacket water cooling system of an auxiliary diesel engine?	Excessive valve train lubrication	Leaking oil cooler core	Leaking lube oil filter gasket	Operating with high lube oil levels in the sump

ID #	Question	Choice A	Choice B	Choice C	Choice D
1465	Which of the following conditions occurs in the section labeled "F" of the device shown in the illustration?	Non-condensable vapors are removed and water vapors are preheated.	The sea water flowing through device "I" is cooled.	The jacket water flowing through device "I" is heated.	The vapors produced in section "G" are condensed and the non-condensable gases are removed.
1466	Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration?	Fouled hull	Inclement weather	Excessive propeller cavitation	Damaged propeller blades
1467	Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration?	Fouled hull	Inclement weather	Damaged propeller blades	Vessel operating with minimum loading
1468	Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration?	Fouled hull	Inclement weather	Running in shallow water	Running under "light ship" conditions
1469	Which of the following conditions will cause the greatest increase to the wear rate in a cylinder liner?	increasing the amount of scavenge air to the cylinder	reducing the quality of fuel injected	using excessive fuel booster pump pressure	reducing the compression ratio in the cylinder
1470	Which of the following conditions will develop if the flow of 'raw' cooling water to a diesel engine is obstructed?	Air will enter the cooling system.	Carbon will plug the water cooled exhaust manifolds.	The jacket water temperature will rise.	The lube oil viscosity will increase.
1471	Which of the following conditions will occur if the height position of the paring disc or bowl spindle is incorrect in the device shown in the illustration?	The separator will fail to reach rated speed.	An alarm for 'emergency stopping or vibrations' may be indicated by the program unit alarm panel.	The unit will experience substantial damage.	None of the above are correct.
1472	Which of the following conditions will tend to increase the ignition delay period of combustion in a compression ignition engine?	Using a fuel oil with a higher cetane number.	Decreasing the air charge temperature.	Reducing the injected fuel oil droplet size.	Increasing the compression ratio.
1473	Which of the following conditions would be the most probable cause for the 'low oil temperature after preheater' LED indicators, as shown in the illustration, to be illuminated?	Steam trap bypass valve leaking.	Incorrect steam control valve setting.	Too high a temperature in settling tank.	Too low a temperature in day tank.
1474	Which of the following conditions would be the most probable cause for the 'low oil temperature after preheater' LED indicators, as shown in the illustration, to be illuminated?	Improper steam trap selection.	Incorrect steam control valve setting.	Too high a temperature in settling tank.	Too low a temperature in day tank.
1475	Which of the following conditions would cause a ships engine to operate in area "A" of the diagram shown in the illustration?	Fouled hull	Inclement weather	Vessel operating with maximum draft (loaded)	Vessel operating with minimum draft (unloaded)
1476	Which of the following conditions would cause carbon deposits to form in the piston ring belt of a diesel engine?	Faulty combustion	Excessive ring temperature	Over lubrication	All of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
1477	Which of the following conditions would cause the 'high oil temperature after preheater' alarm as shown in the illustration to be indicated?	Overheating oil supply pump.	Properly operating steam trap.	Excessively fouled heat exchanger.	Steam control valve opened too far.
1478	Which of the following conditions would cause the LEDS for the alarm 'emergency stopping or vibrations' shown in the illustration to illuminate?	Insufficient tightening of lock ring.	Improper cleaning of bowl.	Uneven sludge deposits in sludge space.	All of the above are correct.
1479	Which of the following conditions would NOT be considered a valid reason for the diesel engine to operate in the area indicated by letter "B" shown in the illustration?	Operating the vessel in shallow water	Operating the vessel against high winds and current	Operating with minimal hull drag and under light draft	Operating with a fouled or damaged propeller
1480	Which of the following conditions would result in the necessity for an increased frequency of oil and oil filter changes for an auxiliary diesel engine.	piston ring blow-by	dirty air filter	excessive oil pressure	excessive fuel oil temperature
1481	Which of the following design features will reduce the possibility of overheating the top compression rings of a cast iron piston?	The top ring is located as close to the piston rim as possible.	The inside surface of the piston head is rounded into the ring belt.	A nickel-bearing insert is cast into the top ring groove.	A heat dam design is sometimes used in the piston head.
1482	Which of the following devices controls the discharge flow rate of an attached, positive displacement, rotary gear, diesel engine, lube oil pump?	A pressure regulating valve	A pressure relief valve	The engine speed	An orifice
1483	Which of the following devices is normally provided to prevent oil starvation in a diesel engine lubrication system utilizing the 'full flow' principle?	Duplex strainer	Three-way valve	Pressure relief bypass line around the filter	Mechanical straining filter
1484	Which of the following effects will excessively cold lube oil have on the operation of a diesel engine?	The engine will crank slowly and may fail to start.	The engine will overspeed when started.	The fuel oil supply will become diluted resulting in rough running.	The cooling system will overheat causing the engine to stall.
1485	Which of the following factors tends to increase scale formation on the saltwater side of a heat exchanger used in a diesel engine cooling water system?	Baffle plates that have been bent during prior removal.	Leaks in the cooler tube nest.	Operating the engine while maintaining a high sea water outlet temperature.	A punctured sea water strainer supplying cooling water to the heat exchanger.
1486	Which of the following is an example of a solid bearing?	Piston pin bushing	Turbo-generator turbine bearing	Spring bearing	Thrust bearing
1487	Which of the following is an indication that diesel oil contamination is present in the main engine lube oil system?	Lube oil viscosity has decreased	Octane number is increased.	Cetane number has decreased.	Increase in lube oil pump discharge pressure.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1488	Which of the following is NOT a function of the water supply through item "P" shown in the illustration?	It supplies feed water to evaporator.	It supplies the operating medium used in the removal of the distillate.	It supplies the operating medium used in the removal of the brine.	It supplies the operating medium used in the removal of air and non-condensable gases.
1489	Which of the following is true regarding the auxiliary diesel engine shown in the illustration?	the camshaft rotates at the one half the speed of the crankshaft	the oil spray method is used to cool the pistons	wet type cylinders liners are used in the engine	all of the above
1490	Which of the following mechanisms is a feature of the standby diesel engine shown in the illustration?	The camshaft rotates at the same speed as the crankshaft.	The exhaust valve cam follower is located below the camshaft.	The pistons ride in dry-type cylinder liners.	Fuel pump camshafts are located on each side of the engine.
1491	Which of the following methods is normally used to lubricate bearings in a small high-speed diesel engine?	Splash lubrication	Pressure lubrication	Sight feed lubricators	Mechanical lubricators
1492	Which of the following methods is used to prevent throttling of compressed air through the diesel engine air starting valves?	Holding the valve open for a long period	Increasing the starting air pressure used	Opening the starting air valve quickly	Reducing the starting air valve size
1493	Which of the following notations does the "N" represent in the formula shown below? $IHP = \frac{PLAN}{33000}$	Number of power strokes per revolution.	Number of revolutions per minute for both two-stroke and four-stroke engines.	Number of power strokes per minute.	Number of power strokes per second.
1494	Which of the following operating characteristics of the Bendix drive friction clutch is associated with a Bendix drive starter?	Helps absorb the shock when the pinion engages the flywheel ring gear.	Disengages the pinion from the flywheel ring gear.	Engages the pinion with the air start distributor.	Prevents the pinion starter from overrunning on the starter shaft.
1495	Which of the following operating conditions will occur when shims are removed from the joint between the foot of a marine type diesel engine connecting rod and the bearing box?	Decreased connecting rod bearing clearance	Increased connecting rod bearing clearance	Decreased compression ratio	Increased compression ratio
1496	Which of the following operating procedures should be carried out immediately after any diesel engine is started?	Take all exhaust temperature readings.	Check the sump oil level.	Verify proper lube oil pressure.	Check the water level in expansion tank
1497	Which of the following operational conditions will occur to the diesel engine lube oil at extremely high temperatures?	The oil oxidizes and forms carbon deposits.	The viscosity increases.	Engine oil consumption decreases.	Lubricating qualities of the oil are enhanced.
1498	Which of the following operations will have a direct impact on the rate of wear in a cylinder liner _____.	amount of scavenge air to the cylinder	quality of fuel injected	viscosity of the lube oil	compression ratio of the piston
1499	Which of the following operations will have a direct impact on the rate of wear in a cylinder liner _____.	amount of scavenge air to the cylinder	quality of fuel injected	temperature of the scavenging air	compression ratio of the piston

ID #	Question	Choice A	Choice B	Choice C	Choice D
1500	Which of the following precautions must be taken if an electric immersion heater is used to keep the coolant warm in a diesel engine when the engine is secured?	The coolant temperature must be maintained at 180°F.	The thermostatic bypass valves must be manually opened before the engine is started.	The pressure cap must be removed while the engine is secured.	Electrical power to the heater must be secured if the cooling system is to be drained.
1501	Which of the following precautions should be taken prior to starting the separator shown in the illustration?	Make sure the separator is properly assembled.	Check for the correct oil level in the gear housing.	Release the bowl brake and confirm proper valve line up.	All of the above are correct.
1502	Which of the following problems can cause excessive consumption of the lubricating oil in a diesel engine?	Dirty lube oil filters	Excessive piston ring wear	Excessively high lube oil viscosity	Excessively low lube oil temperatures
1503	Which of the following problems can cause fluctuating pressures in the closed cooling system of a main propulsion diesel engine?	Defective temperature controls in the system.	Cavitation in the cooling water pump.	Opened vent in the cooling system.	Restricted water passages in the engine.
1504	Which of the following problems can occur if accumulating condensate is not drained off from a starting air receiver?	Internal corrosion and eventual failure of the tank.	Gumming of the tank relief valves.	Decreased compressor discharge pressure.	Boiling of the water oil mixture as pressure is reduced.
1505	Which of the following problems can occur if you continually fail to drain off condensate from a starting air receiver?	Corrosion and eventual failure of the tank.	Gumming of the tank relief valves.	Immediate failure of components downstream of the compressed air system.	Boiling of the water oil mixture as pressure is reduced.
1506	Which of the following problems could cause misalignment between the needle valve and nozzle in a fuel injection nozzle?	A bent fuel needle.	A defective nozzle tip seat.	A distorted valve body.	All of the above.
1507	Which of the following problems could develop due to the accumulation of oil vapors in the crankcase of a diesel engine?	Reduced lubrication	Poor fuel economy	Combustion knock	Crankcase explosion
1508	Which of the following problems is the main source of fuel pump and injection system malfunctions?	Improper lubrication	Air in the fuel system	Coated fuel lines	Excessive vibration
1509	Which of the following problems may occur if the clearance between a piston and cylinder liner is insufficient?	Excessive wear	Scuffing of the liner	Piston seizure	All of the above
1510	Which of the following problems may occur if the opening pressure of a fuel injection nozzle is greater than specified by the engine manufacturer?	The amount of fuel injected will be increased.	The start of injection will be retarded.	The nozzle will permit fuel to dribble.	The spray pattern will be distorted.
1511	Which of the following problems may occur when using fuel oil with a high sulphur content?	Injection lag	Lube oil dilution	Preignition	Corrosion
1512	Which of the following problems will cause above normal cooling water temperatures in a diesel engine using a closed freshwater cooling system?	An air leak in the header tank cover	Benzotriazole found in the primary water	Eroded baffle in the cooler	Low level in expansion tank

ID #	Question	Choice A	Choice B	Choice C	Choice D
1513	Which of the following problems will occur if the needle valve in a fuel injection nozzle sticks in the open position?	Fuel injection timing will change	Nozzle operation will be unaffected	Fuel will leak into the drain line	Fuel will not be delivered
1514	Which of the following procedures should be carried out when a large, low-speed, diesel engine is operated with one cylinder secured?	Lubrication to the defective cylinder should be increased.	Cooling water temperature to the engine should be increased.	Only the turbocharger speed should be reduced.	Engine speed should be reduced.
1515	Which of the following processes is indicated by the flow arrows shown in the illustration?	Return air flow during start-up upon achieving ignition.	Return flow of excess fuel oil from the injector.	Relief of excessively high pressure gases from the cylinder.	Cooling water bypass flow to the heat sink.
1516	Which of the following reasons represents why the designed compression ratio of a gasoline engine is lower than that of a diesel engine?	Compression must be low for effective spark ignition.	Compression must be low for smooth operation.	The heat of compression is not used as an ignition source of the fuel.	Compression must be low to have effective preignition.
1517	Which of the following reasons represents why the designed compression ratio of a gasoline engine is lower than that of a diesel engine?	Compression must be low for effective spark ignition.	Compression must be low for required horsepower and torque generation.	Compression must be low to prevent preignition.	Compression must be low to have effective preignition.
1518	Which of the following relationships exist between the temperature developed in a combustion space, and the compression ratio of the engine?	Higher compression ratios create higher temperature.	Higher temperatures create higher compression ratios.	Lower temperatures create higher compression ratios.	Higher compression ratios create lower temperatures.
1519	Which of the following represents the diesel engine camshaft shown in the illustration and its relative rotating speed?	"B" is the camshaft and it rotates at one half of the crankshaft speed.	"T" is the camshaft and its speed equals crankshaft speed.	"Y" is the main camshaft drive and rotates at crankshaft speed.	"B" is the camshaft and its rpm will match that of the flywheel.
1520	Which of the following represents the motivating power fluid used in conjunction with the ejector pumps on evaporators?	The ejectors do not require a motive power.	The motive power is the feed water supply.	The motive power is the brine pump output, prior to being discharged overboard.	The motive power is the jacket water flowing through the ejectors.
1521	Which of the following represents the significance the fuel oil cetane number?	The cetane number has no affect on injection lag.	The cetane number is an indication of the fuel's viscosity.	Ignition lag is reduced with fuels having a high cetane number.	The cetane number is of little significance in the combustion process.
1522	Which of the following ring designs is commonly used on new piston rings to facilitate run-in or seating?	Machining a special ring face groove filled with antifriction metal.	Increasing ring tension as high as possible.	Machining the ring from extra soft nonferrous alloys.	Provide a minimum gap clearance under cold conditions to prevent ring expansion.
1523	Which of the following should always be checked prior to starting a diesel engine?	Air filters	Fuel oil strainers	Crankcase oil level	Pyrometer readings

ID #	Question	Choice A	Choice B	Choice C	Choice D
1524	Which of the following statements best represents how the start air valve, shown in the illustration, operates to admit starting air to the main engine cylinder?	The valve spring exerts downward force on the valve spindle.	Air pressure from the starting air inlet is applied to the top of the starting valve piston.	Control air pressure is applied to the top of the starting valve piston.	The downward intake stroke of the main engine cylinder draws the starting valve open.
1525	Which of the following statements concerning a closed type fuel injection nozzle is true?	The hole type of a closed nozzle is self-cleaning.	Multi-hole type nozzles are only suitable for use in engines with precombustion chambers.	Most closed nozzles open by fuel oil pressure acting on the differential area of the needle valve.	The pintle type nozzles are most susceptible to carbon deposits building up in and around the orifice.
1526	Which of the following statements concerning cylinder liner wear in a single acting diesel engine is correct?	Uniformly excessive liner wear will not cause wear on the piston rings and grooves.	Liner wear is distributed equally between upper and lower portions of the cylinder.	Excessive liner wear causes increased wear between piston rings and grooves.	Liner wear is normally greatest in the middle of the cylinder.
1527	Which of the following statements concerning cylinder liner wear is true?	Liner wear is distributed equally between the upper and lower portions of the cylinder.	Excessive liner wear causes wear between piston ring and groove.	Excessive, but uniform liner wear will not cause wear between piston ring and groove.	Liner wear is normally greatest in the middle of the cylinder.
1528	Which of the following statements concerning fuel atomization in a diesel engine cylinder is correct?	The greater the atomization, the greater the penetration.	The greater the atomization, the lesser the penetration.	The degree of atomization has nothing to do with the degree of penetration.	Atomization and penetration are one and the same.
1529	Which of the following statements concerning the factors affecting ignition delay is correct?	An increase in intake air temperature will increase ignition delay.	An increase in coolant temperature will decrease ignition delay.	An increase in combustion chamber turbulence will increase ignition delay.	An increase in compression ratio will increase ignition delay.
1530	Which of the following statements concerning the systems shown in the illustration is correct?	The jacket water primarily loses its heat at the cooler and is further cooled in the evaporator section.	The feed water acquires heat passing through devices "2" and "23".	The jacket water absorbs heat in the evaporator section, while giving up its heat in the distiller section.	The feed water gains heat in section "23", while the vapor gives up heat in section "24".
1531	Which of the following statements concerning the systems shown in the illustration is correct?	The jacket water primarily loses its heat at the cooler and is further heated in the evaporator section.	The feed water acquires heat passing through devices "2" and "23".	The jacket water absorbs heat in the evaporator section, while giving up its heat in the distiller section.	The feed water gains heat in section "23", while the vapor gives up heat in section "24".
1532	Which of the following statements describes "N" shown in the illustration?	the included angle of oil flow	the centrifuge disc stack	the sole direction of heavy phase flow	the relative size of the separation zone

ID #	Question	Choice A	Choice B	Choice C	Choice D
1533	Which of the following statements describes a fuel injection pump marked 'timed for port closing'?	Injection has a constant beginning and variable ending.	The pump stroke determines the amount of fuel injected.	Fuel is metered by the pump's delivery valve.	Timing reference marks should be changed.
1534	Which of the following statements describes the action of the unit shown in the illustration?	The linearly measured movement of the camshaft is equal to the movement of the control piston.	The pneumatic forces required to operate the device are dependent upon the speed of the engine.	The horizontal movement of the control piston is transmitted by levers to the camshafts, with the control piston movement being greater than the camshaft movement.	The reversing unit is always used in conjunction with a controllable pitch propeller, permitting greater astern power.
1535	Which of the following statements describes the action of the unit shown in the illustration?	The linearly measured movement of the camshaft is equal to the movement of the control piston.	The pneumatic forces required to operate the device are dependent upon the speed of the engine.	The reversing unit is always used in conjunction with a controllable pitch propeller, permitting greater astern power than the sole use of a controllable pitch propeller.	The axial movement of the control piston is transmitted by levers to the camshafts, with the piston axial movement being greater than the camshaft movement.
1536	Which of the following statements describes the approximate relation between the feed water entering the unit shown in the illustration and brine being removed?	The brine will be removed at a faster rate than feed water entering to prevent the possibility of flooding.	Seventy-five percent of the feed water entering the unit is removed as brine.	Twenty-five percent of the feed water entering the device is removed as brine.	The amount of feed water entering the distiller is dependent upon the condition of device "7", while the amount of brine leaving is dependent upon the condition of device "21".
1537	Which of the following statements describes the function of an expansion tank in a diesel engine cooling system?	Maintains a constant head on the system.	Reduces the likelihood of air or steam pockets formation.	Provides a low pressure point for the addition of makeup cooling water and chemicals.	All of the above.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1538	Which of the following statements describes the function of the unit shown in the illustration as found on some medium speed diesel engines?	The wye arrangement provides variable positioning of the intake port dampers.	The braking unit prevents engine rotation by the engagement of brake splines into the ends of the camshaft.	The reciprocating action of the device provides prestart lubrication to the cylinder walls.	The arrangement is used to position the cam shafts for the desired direction of engine rotation.
1539	Which of the following statements describes the operating characteristics of a precombustion chamber?	When fuel oil is injected into the precombustion chamber, it does not need to be as finely atomized as the fuel oil in diesel engines having direct injection.	When operating correctly, combustion should not occur in the precombustion chamber.	Engines which are designed with precombustion chambers are more likely to suffer blocked nozzle holes, due to fuel oil impurities, than engines designed with direct injection.	Engines with precombustion chambers, which do not have an increased compression ratio, are not as difficult to start when cold, as engines with direct injection.
1540	Which of the following statements describes the operating characteristics of a precombustion chamber?	When fuel oil is injected into the precombustion chamber, it does not need to be as finely atomized as the fuel oil in diesel engines having direct injection.	When operating correctly, combustion should not occur in the precombustion chamber.	Engines which are designed with precombustion chambers are more likely to suffer blocked nozzle holes, due to fuel oil impurities, than engines designed with direct injection.	Engines with precombustion chambers, are easier to start when cold, when compared to engines with direct injection.
1541	Which of the following statements describes the operational characteristics of figure "B" in the illustration?	The valve will lift abruptly.	Full valve opening will occur slowly.	The valve will reseat abruptly.	The valve gear will not bounce.
1542	Which of the following statements describes the operational characteristics of figure "B" shown in the illustration?	The valve will lift abruptly, and reseat gradually.	Full valve opening will occur slowly, but reseat quickly.	Full valve opening will occur slowly, but abruptly reseat.	The valve gear will not bounce.
1543	Which of the following statements describes the operational characteristics of valve cam, figure "B" shown in the illustration?	Full valve opening will occur slowly.	The valve will reseat abruptly.	The valve gear will not bounce.	The valve will reseat gradually.
1544	Which of the following statements describes what will occur if the annular spaces, indicated by the letter "K" of the device shown in the illustration, became restricted?	The bowl will fail to close, but the unit will be capable of shooting while in operation.	Operating water will be supplied through port "S".	The unit will not start due to pressure/time delay relays.	The bowl will fail to close when starting and the unit will not shoot when operating.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1545	Which of the following statements describes what will occur to the volume of water vapor as it is exposed to the lower temperatures existing in the device labeled "24" shown in the illustration?	The volume is increased as condensation occurs at the tube surfaces.	The latent heat of condensation is removed causing the volume to increase.	The volume will increase if the valve labeled "J" is opened excessively, resulting in an increase of the distiller absolute pressure.	The volume is greatly reduced, contributing to condensation within the condenser.
1546	Which of the following statements is accurate concerning the vibration sensing device used with the separator shown in the illustration?	Vibration sensors are not used with centrifuges currently installed on diesel vessels due to excessive vibrations developed by the main propulsion units.	The vibration switch is sensitive to vibration in a direction horizontal to its mounting base and is normally installed low on the separator where movement is magnified.	The detector mechanism consists of an armature suspended on a flexure pivot and restrained from motion by a permanent magnet acting through a small air gap.	The detector is so arranged to prevent abnormal harmonic frequencies from being developed while the separator is passing through its critical speed range.
1547	Which of the following statements is correct concerning the connecting rod and piston assembly shown in the illustration?	The piston has a heat dam.	The piston pin is bolted to the connecting rod.	The piston is free to rotate on the carrier thrust washer.	All of the above.
1548	Which of the following statements is true concerning a main diesel engine oil cooler?	The oil temperature is less than the cooling water temperature.	The oil pressure is less than the cooling water pressure.	The oil pressure is greater than the cooling water pressure.	The oil flow control valve is always installed in the oil input line.
1549	Which of the following statements is true concerning the air starting system shown in the illustration?	During starting, the starting valve is held opened by air pressure.	When starting air is secured, the air starting valve is closed.	The starting air valve is opened by cam action during starting.	During normal engine running, the starting air valve opens and closes constantly due to cam action.
1550	Which of the following statements is true concerning the air starting valve, labeled "III", as shown in the illustration?	When starting, the air starting valve is held open by air pressure.	When starting air is secured, the air starting valve is closed.	The air starting valve is opened by cam action.	During normal engine running, the air starting valve opens and closes constantly due to cam action.
1551	Which of the following statements is true concerning the cetane number of diesel fuel?	The cetane number affects the amount of injection lag.	The cetane number is an indication of the fuel's viscosity.	Ignition lag is reduced with fuels having a high cetane number.	The cetane number is of little significance in the combustion process.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1552	Which of the following statements is true concerning the cetane number rating of diesel fuel?	The cetane number is obtained by comparing the fuel with cetane, a colorless liquid hydrocarbon.	The higher the cetane number, the shorter the ignition lag.	The highest cetane number of fuel is 100.	All of the above.
1553	Which of the following statements is true concerning the diesel engine cylinder head and valve mechanism shown in the illustration?	The rocker arm causes a valve bridge to open the valves simultaneously.	The intake valve requires no adjustment.	The illustrated engine utilizes a dry type cylinder liner.	Intake and exhaust valves open simultaneously
1554	Which of the following statements is true concerning the hydraulic starting system shown in the illustration?	Reservoir "A" maintains pressure on the accumulator "E".	The right end of the accumulator "E" is charged with nitrogen.	This system cannot operate at temperatures below 32°F.	Hand pump charging of the system is not possible.
1555	Which of the following statements is true concerning the illustrated metal edge strainer?	As sludge and dirt accumulate on the outer surface of the strainer discs, the effective flow through the strainer increases.	One turn of the T-handle is sufficient for cleaning the discs.	Particles of solid matter larger than the distances between the discs flow up through the inner space.	The strainer discs, spacers, and scraper blades are magnetic to prevent small metal particles from damaging the reduction gear.
1556	Which of the following statements is true concerning the piston rings shown in the illustration?	Three compression and one oil scraper ring are pictured.	The top and bottom rings pictured are bimetal rings.	The top compression ring is protected from overheating by a ring dam.	Top compression ring has an inside bevel.
1557	Which of the following statements is true concerning the valve bridge and hydraulic lash adjuster assembly shown in the illustration?	The valves are directly closed by the action of the bridge spring.	The lash adjuster maintains zero lash between the end of the valve stem and the lash plunger.	The ball check is always closed when the valve is seated.	The bridge spring applies the required force to maintain contact between the lash plunger and the valve.
1558	Which of the following statements is true concerning the valve bridge and hydraulic lash adjuster assembly shown in the illustration?	The exhaust valves are directly closed by the action of the bridge spring.	The lash adjuster maintains zero lash between the end of the valve stem and the valve plunger.	The ball check is always open when the exhaust valve is seated.	The bridge spring applies the required force to maintain contact between the plunger and the exhaust valve.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1559	Which of the following statements is true regarding the installation of piston rings on two-stroke/cycle, diesel engines as compared to four-stroke/cycle, diesel engines?	In a two-stroke/cycle engine, the rings run hotter, requiring the end gap to be greater.	Some provision must be made in a two-stroke/cycle engine to keep the rings from binding in the ports.	No gap is required to exist between the ends of the ring when cold in a two-stroke/cycle engine, but a small gap is required in a four-stroke/cycle engine.	The end gaps should be staggered on either side of a piston in a two-stroke/cycle engine, while staggering is not necessary in a four-stroke/cycle engine.
1560	Which of the following statements represents the advantage of a precombustion chamber used in an auxiliary diesel engine?	Timing of injection does not need to be exact.	Turbulence is eliminated.	Lower mean effective pressures are developed.	Excellent control of combustion can be attained.
1561	Which of the following statements represents the function of the compression rings installed at the top of a diesel engine piston?	Control the amount of lube oil burned in the combustion chamber.	Transmit heat from the piston to the cylinder liner.	Prevent damage to ring groove inserts by acting as a heat dam.	Dissipate combustion chamber gas pressure by channeling it through the ring gap.
1562	Which of the following statements represents the function of the plunger flange labeled "A" shown in the illustration?	It limits the actual stroke of the plunger.	It takes the plunger off stroke when injection is completed.	It prevents the plunger from rotating in the barrel.	It transmits the control rack setting to the plunger.
1563	Which of the following statements represents the reason for rolling over a diesel engine with the cylinder indicator cocks open prior to starting?	To test the starting system.	To remove air bubbles from the jacket water.	To ensure that the lube oil system delivers pressure.	To ensure foreign material (water etc.) is not present in the cylinders.
1564	Which of the following statements represents the two major functions provided by the item labeled "20" shown in the illustration?	The pump supplies the motive force to the ejectors and removes the excess distillate.	The pump is used to drain the shell when the unit is secured, in addition to powering the ejectors.	The pump provides for venting of associated equipment while also powering the ejectors.	The pump supplies the motive fluid to the ejectors in addition to supplying the feed water to the distiller.
1565	Which of the following statements represents the working principle of the water transducer used with the separator shown in the illustration?	The probe and sensor measure the dielectric constant through capacitive reactance of the process fluid.	As the water content in the oil decreases, the dielectric constant increases.	The capacitor completes part of the inductive circuit which monitors pressure changes.	All of the above are correct.
1566	Which of the following statements represents the working principle of the water transducer used with the separator shown in the illustration?	The dielectric constant of the liquid flowing through the sensor increases with an increase in temperature.	The capacitive reactance of the clean oil is a function of its water content.	The capacitor completes part of the inductive circuit which monitors pressure changes.	All of the above are correct.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1567	Which of the following steps should be taken if the 'high oil temperature after preheater' LEDs, as shown in the illustration, are illuminated?	Increase temperature at the settling tank.	Re-adjust wing tank storage temperatures.	Confirm preheater set point temperature.	Adjust the PAS monitor and reset the proportional band controller.
1568	Which of the following test indicators should be considered a determining factor as to whether or not a diesel generator's lube oil should be drained and renewed?	An extremely low neutralization number.	An extremely high precipitation number.	The oil appears black in color.	A minor increase in flash point.
1569	Which of the following test indicators should be considered the most significant factor in determining as to whether or not a diesel generator's lube oil should be drained and renewed?	An extremely high neutralization number.	An extremely low precipitation number.	The oil appears black in color.	An increase in flash point.
1570	Which of the following will have the greatest effect on the mean effective pressure in a cylinder of a diesel engine operating at normal load?	Increasing the TBN of the lubricating oil.	Increasing the inlet temperature of the lubricating oil.	Increasing the quality of the fuel-air mixture	decreasing the temperature of the jacket water.
1571	Which of the following will occur when the lower edge of the spiral, on the plunger of a jerk pump, uncovers the spill port?	The plunger immediately reverses direction.	The pressure drops and fuel delivery stops.	The plunger rotates to the no fuel position.	The barrel rotates to the zero effective stroke position.
1572	Which of the fuel injection systems listed uses a spring loaded differential spray needle valve and an individual pump for each cylinder?	Common-rail injection	Air injection	Jerk pump injection	Distributor injection
1573	Which of the fuel nozzles listed requires the LEAST maintenance?	Pintle	Single hole	Multi-hole	Open
1574	Which of the fuel systems listed combines the injection pump and the injection nozzle in one housing?	Common rail	Unit injector	Air injection	Hydraulic governing
1575	Which of the indicator diagrams illustrated depicts the condition that should be corrected by advancing only the timing?	A	B	C	D
1576	Which of the indicator diagrams illustrated depicts the condition that should be corrected by retarding only the timing?	A	B	C	D
1577	Which of the indicator diagrams illustrated depicts the condition that should be corrected by the fitting of fewer or thinner shims to the connecting rod?	A	B	C	D
1578	Which of the indicator diagrams illustrated indicates the condition that should be corrected by retarding the timing, and the fitting of thicker shims to the connecting rod?	A	B	C	D

ID #	Question	Choice A	Choice B	Choice C	Choice D
1579	Which of the labeled figures illustrated, represents the correct alignment mark relationships of a properly reassembled centrifuge bowl?	A	B	C	D
1580	Which of the lettered items, shown in the illustration, identifies an oil control ring?	A	B	C	D
1581	Which of the listed bearing installations is subjected to swinging motion?	Crankshaft journal	Crankpin bearings	Wrist pin bearings	Thrust bearings
1582	Which of the listed bearing types is an example of a solid bearing?	Piston wrist pin bushing	Turbine bearing	Spring bearing	Diesel engine main bearing
1583	Which of the listed conditions can cause a diesel engine to use too much lube oil?	Dirty lube oil filter	Too much piston ring wear	High lube oil viscosity	Low lube oil temperature
1584	Which of the listed conditions can cause lacquer to be deposited on a piston skirt?	High sulphur content fuel	High lube oil temperatures	High vanadium content fuel	Excessive piston slap
1585	Which of the listed conditions is most likely to cause a crankcase explosion?	A high cooling water temperature	Fuel dilution of the lube oil	Excessive engine speeds	Improper lube oil viscosity
1586	Which of the listed contaminants will be satisfactorily removed from fuel oil by centrifuging?	Sludge	Diesel fuel	Lube oil	Gasoline
1587	Which of the listed cylinder head design features is shown in the illustration?	The valve cages are provided for the exhaust valves.	The engine is equipped with a dry liner.	A gastight seal is provided by a gasket between the cylinder head and cylinder liner.	The engine cylinder head is fitted with replaceable valve seats.
1588	Which of the listed cylinder head design features is shown in the illustration?	The valve cages are provided for the exhaust valves.	The engine is equipped with a dry liner.	The cylinder head utilizes a precombustion chamber	The engine cylinder head is fitted with replaceable valve seat inserts.
1589	Which of the listed cylinder liner surface conditions indicates proper lubrication?	Dull black appearance.	Bright appearance.	Thin layer of lacquer.	Thick oily film.
1590	Which of the listed design features is most common with a two-stroke cycle, low-speed main propulsion diesel engine?	Piston rod and crosshead construction	90 degree "V" configuration	Double acting trunk type pistons	Single reduction gearing
1591	Which of the listed designs is effectively used to provide the turbulence necessary for proper combustion in a diesel engine cylinder?	Masked exhaust valves	Special piston rings	Turbocharger	Precombustion chamber
1592	Which of the listed devices could be used as a ring groove cleaning tool during preparation for the installation of new rings if a piston ring cleaning tool was not available?	Steel brush	Fine emery cloth or steel wool	A section of the removed compression ring	A case hardened scraper
1593	Which of the listed devices could be used as a substitute for a ring grooving tool?	Steel brush	Fine emery cloth or steel wool	A section of the removed compression ring	A case hardened scraper

ID #	Question	Choice A	Choice B	Choice C	Choice D
1594	Which of the listed devices could be used as a substitute for a ring groove cleaning tool when needed to remove hard carbon deposits from piston ring grooves in preparation for installing new rings?	Rotary steel brush	Fine emery cloth or steel wool	A section of the removed compression ring	A case hardened scraper
1595	Which of the listed devices is often used in combination with the flywheel of small and medium size diesel engines for the purpose of starting?	Magneto	Electric generator	Electronic SCR	Bendix drive air motor
1596	Which of the listed diesel engine operating conditions should be checked immediately after any diesel engine is started?	Exhaust temperature	Lube oil level	Lube oil pressure	Water level in the expansion tank
1597	Which of the listed diesel engine starting systems is most susceptible to difficulties in cold weather?	Direct cylinder admission air start	Hydraulic	Electric	Air motor starting
1598	Which of the listed diesel engine systems is likely to create the problem of a cylinder regularly misfiring?	Lubrication	Cooling	Fuel	Electric ignition
1599	Which of the listed effects would mixtures of ethylene glycol and phosphate compounds have on the metal surfaces of the cooling system of a diesel engine?	Increases the rate of heat transfer	Retards the flow of cooling water	Protects metallic surfaces from corrosion and the coolant from freezing	Tends to increase corrosion
1600	Which of the listed effects would mixtures of ethylene glycol and phosphate compounds have on the metal surfaces of the cooling system of a diesel engine? I. Protects the coolant from freezing. II. Protects metallic surfaces from corrosion.	I	II	Both I and II	Neither I or II
1601	Which of the listed effects would mixtures of phosphate compounds have on the metal surfaces of the cooling system of a diesel engine? I. Protects the coolant from freezing. II. Protects metallic surfaces from corrosion.	I	II	Both I and II	Neither I or II
1602	Which of the listed factors will indicate the most about the ability of a fuel to ignite in a diesel engine?	Viscosity	Sulfur content	Pour point	Cetane number
1603	Which of the listed fluids exits the device at flange "R" shown in the illustration?	Sea water from the condenser	Sea water from the service system	Evaporator feed water	Engine jacket water
1604	Which of the listed fluids exits the flange labeled "Q" shown in the illustration?	Sea water from the condenser plate assembly.	Sea water from the evaporator tube bundle.	Jacket water from the condenser plate assembly.	Sea water from the evaporator plate assembly.

ID #	Question	Choice A	Choice B	Choice C	Choice D
1605	Which of the listed item numbers represents the bearing surfaces of the bearing shown in the illustration?	"4" and "5"	"6" and "3"	"6" and "13"	"13" and "14"
1606	Which of the listed items should be secured before performing any maintenance on a solenoid operated air start valve?	Electric power and starting air	Lube oil standby pump and control air	Hydraulic switch and engage jacking gear	Motor drain and pneumatic control system power
1607	Which of the listed items should be secured before performing any maintenance on a solenoid operated air start valve?	Electric power	Lube oil standby pump	Hydraulic switch	Motor drain
1608	Which of the listed pre-start procedures should be carried out prior to starting a crosshead type diesel engine after an overhaul?	Prelube cylinders with hand cranks.	Open all air space drain cocks.	Open all indicator valves.	All of the above.
1609	Which of the listed problems can be a cause of low compression pressure in a diesel engine?	Clogged air filter	Leaky valve cage	Burned exhaust valves	All of the above
1610	Which of the listed problems would be indicated by an accumulation of water in one cylinder, in addition to the crankcase of an idle diesel engine?	Excessive condensation in that cylinder.	Water in the fuel system.	Cracked cylinder liner.	Leaking lube oil cooler.
1611	Which of the listed pumps, shown in the illustration, discharges directly to the fuel oil settling tanks of a diesel engine main propulsion plant?	Booster pump	Transfer pump	Auxiliary bilge pump	Centrifuge transfer and discharge pumps
1612	Which of the listed set of conditions indicates early fuel injection timing?	Loss of engine power and high exhaust temperatures	Higher than normal firing pressure and low exhaust temperature	High fuel consumption and high exhaust temperatures	Lower than normal compression pressure and high exhaust temperature
1613	Which of the listed substances can be satisfactorily removed from diesel fuel by centrifuging?	Sludge	Gasoline	Fuel oil	Lube oil
1614	Which of the listed types of cylinder liners is used in the diesel engine shown in the illustration?	Dry	Wet	Ported jacket	Integral jacket
1615	Which of the listed types of fuel injectors is shown in the illustration?	Unit injector	Reverse scroll	Air injection	Pintle type
1616	Which of the listed types of gasket material should be used on high pressure fuel oil lines on a diesel engine?	Fiberglass	Sheet asbestos	Neoprene	Soft copper
1617	Which of the listed types of precombustion chambers is used in the diesel engine shown in the illustration?	Common rail	Open type	Turbulence chamber	Energy cell
1618	Which of the listed types of starting systems is often used on large, low-speed, direct reversing, main propulsion diesel engines?	Electric	Hydraulic	Air	All of the above

ID #	Question	Choice A	Choice B	Choice C	Choice D
1619	Which of the routine maintenance procedures listed is required for starting air receivers?	Frequent draining of accumulated moisture.	Frequent testing of relief valves.	A close watch on temperature to prevent fluctuations in pressure.	Frequent cleaning to remove oil and foreign matter.
1620	Which of the substances listed is satisfactorily removed from the fuel by a centrifugal oil purifier?	Carbon particles	Lube oil	Gasoline	Diesel fuel
1621	Which of the tanks, shown in the illustration, supplies fuel to the emergency generator?	Light fuel oil service tank	Light fuel oil settling tank	Light fuel oil boiler tank	Light fuel oil booster tank
1622	Which of the terms listed below represents the operational speed at which excessive engine vibration is created?	Non-harmonic speed.	Critical speed.	Maximum speed.	Design maximum speed.
1623	Which of the tools listed must be used when retightening the plate type heat exchangers used in the device shown in the illustration?	Torque wrench	Steel ruler or tape measure	Cantilever wrench	Pneumatic impact wrench
1624	Which of the two events listed occurs simultaneously in a two-stroke/cycle diesel engine?	Exhaust and scavenging	Scavenging and compression	Ignition and expansion	Exhaust and compression
1625	Which of the valve arrangements listed would be correct for operating the distillation plant shown in the illustration?	Valves "H", "J", "K", "L", "M" open, valve "D" closed.	Valves "J", "K", "L", "M" open, valves "D" and "H" closed.	Valves "D", "H", "J", "K", "L", "M" open, valves "I", "G", "F", and "E" closed.	Valves "C", "J", "K", "L", "M" open, valves "A", "B", "D", and "H" closed.
1626	Which operating condition of a diesel engine is indicated by excessive firing pressures?	Overspeeding	Overload	Low exhaust temperature	High crankcase pressure
1627	Which operating parameter may need to be decreased when running a large main propulsion diesel engine at low load conditions?	Fuel injection pressure	Control air supply pressure	Cooling water flow through after coolers	Lube oil temperature
1628	Which precaution must be taken when securing a diesel engine if an electric jacket water heater is installed in the engine block?	The coolant temperature must always be maintained at 180°F.	The thermostatic bypass valves must be manually opened before the engine is started.	The pressure cap must be removed while the engine is secured.	Electrical power to the heater must be secured if the cooling system is to be drained.
1629	Which segment of the two cycle engine diagram shown in the illustration represents 'supercharging'?	I	II	III	IV
1630	Which segment of the two cycle engine diagram shown in the illustration represents the exhaust event?	I	II	III	IV
1631	Which segment of the two cycle engine diagram shown represents compression?	I	II	III	IV
1632	Which segment of the two cycle engine diagram shown represents the power stroke?	I	VI	V	IV

ID #	Question	Choice A	Choice B	Choice C	Choice D
1633	Which set of valves will be opened intentionally to remove heat from the main engine jacket cooling water system shown in the illustration?	"B" and "D", "L" and "M"	"J" and "K", "G" and "H"	"G" and "H", "E" and "F"	"A" and "C", "L" and "M"
1634	Which statement about diesel engine combustion is true?	Combustion does not begin until the piston starts down on the power stroke.	Maximum combustion pressure is reached before TDC.	Turbulence in the cylinder causes a delay in ignition.	Maximum cylinder firing pressure is not developed until the piston passes TDC.
1635	Which statement correctly applies to the illustration?	The piston is cooled by oil flowing through passages in the connecting rod.	The piston pin is free to rotate in the bushing.	The upper compression ring is protected from overheating by a heat dam.	The lower scraper rings are protected from overheating by a heat dam.
1636	Which term describes piston pins having bearing surfaces in both the piston bosses and connecting rod eye?	Stationary	Full floating	Semi-floating	Free rolling
1637	Which type of diesel engine air start system is shown in the illustration?	Direct mechanical type	Direct mechanical type with check valve	Pilot operated type	Distributor type
1638	Which type of diesel engine cylinder liner is shown in the illustration?	Dry liner	Wet liner	Jacket liner	Wet jacket liner
1639	Which type of diesel engine fuel nozzle is shown in the illustration?	Pintle	Multi-hole	Open	Self-cleaning
1640	Which type of motor listed is most commonly used in hydraulic starting systems for diesel engines?	Turbine	Axial Piston	Hypoid Gear	Centrifugal
1641	Which type of starter motor is normally used in a diesel engine hydraulic starting system?	Axial piston	Precision gear	Turbine drive	Centrifugal
1642	While inspecting the main bearings on a diesel engine you find impregnated dirt and scratches in the bearing surface. You would, therefore, suspect that _____.	the bearing had been overheated	water was present in the oil	the lube oil was not being properly filtered	the maximum allowable bearing pressure had been exceeded
1643	While operating the fuel oil centrifuge shown in the illustration, the bowl fails to open for sludge ejection. The probable cause is that _____.	one or more of the sludge ports is partially clogged	the operating water pressure is too high	the bowl disk set is clogged	the seal ring on the operating slide is defective
1644	While operating the fuel oil centrifuge shown in the illustration, the fuel oil is being continuously ejected with the sludge and the seal water. The probable cause is the _____.	gravity disk inside diameter is too large	gravity disk inside diameter is too small	back pressure is too low	incorrect number of disks have been placed in the disk stack
1645	While overhauling a jerk-type fuel pump it is necessary to replace the pump plunger. Which of the parts listed below must also be replaced?	Delivery check valve	Pump barrel	Tubing to the injector	Cam follower

ID #	Question	Choice A	Choice B	Choice C	Choice D
1646	While underway, which of the following would be the FIRST step in reversing a direct reversing large, low-speed, main propulsion, diesel engine?	Manually trip the overspeed device.	Set the fuel rack to zero.	Disengage the safety interlock.	Slide the camshaft to the neutral position.
1647	Why are heavy fuels not usually prone to the problems of microbiological infection?	Heavy fuels are subjected to better refining processes which prevent the formation of these growths.	Most heavy fuels contain chemicals which prevent the growth of fungi and other bacteria.	Microbiological infection does not affect marine fuel but rather the personnel who are involved with the handling, storage and purification of the fuel.	The necessary nutrients that the organisms feed on are in a more complex form and not available for microbial degradation.
1648	Why are some diesel engine cylinder liners plated on the wearing surface with porous chromium?	The chromium will not wear out the piston rings.	The chromium strengthens the liners in the way of the scavenging air ports.	Chromium eliminates the need for oil scraper rings.	Pores in the plating aid in maintaining the lube oil film.
1649	Why do most temperature control valves in diesel engine closed freshwater cooling systems bypass the flow of jacket water around the cooler instead of around the engine?	Changing the rate of flow in the jackets could cause localized hot spots.	Emergency hand control would not be possible if water flow through the jackets were controlled.	Excessive cooling would take place in the heat exchangers at high loads.	Excessive cavitation erosion would take place in the coolers.
1650	Why do most temperature control valves in diesel engine closed freshwater cooling systems vary the flow of jacket water through the cooler instead of through the engine?	Changing the rate of flow in the jackets could cause localized hot spots.	Emergency hand control would not be possible if water flow through the jackets were controlled.	Excessive cooling would take place in the heat exchangers at high loads.	Excessive cavitation erosion would take place in the coolers.
1651	Why is it necessary to compress the air charge in the cylinders of a diesel engine?	To ignite the fuel.	To insure pumping losses are held to a minimum.	To increase fuel consumption.	To keep exhaust temperature low.
1652	Why is the ring belt narrower in diameter than the skirt of a piston designed for a diesel engine?	To allow for greater expansion due to higher operating temperature.	To seal the cylinder against leakage of combustion gases.	To provide an additional surface for oil cooling.	To provide additional strength for the crown and lower structure.
1653	With regards to a diesel engine crankcase explosion, the most violent is the _____. I. primary explosion II. secondary explosion	I only	II only	both I and II	neither I or II
1654	With respect to diesel fuel, the ease with which a cold engine will start is dependent upon the _____.	ignition quality of the fuel	high heating value of the fuel	amount of carbon residue after combustion	internal flow resistance in the injectors

ID #	Question	Choice A	Choice B	Choice C	Choice D
1655	With respect to the flow of lubricating oil through a diesel engine, the lube oil coolers are located after filters in order to _____.	allow filtration of less viscous oil	decrease the pressure drop across the filter	improve overall filtration	all of the above
1656	Worn main bearings in a diesel engine can result in _____.	decreased compression pressure	increased lube oil pressure	lower lube oil temperature	excessive leakage past the piston rings
1657	Worn main bearings will cause the compression ratio of a diesel engine to _____.	increase	decrease	remain the same	increase on compression; decrease on expansion
1658	Wristpin bearings are difficult to lubricate because of their oscillating motion and _____.	their free-floating design	their relatively small size	the reciprocating motion of the piston	their position in the lubrication system
1659	You are installing new piston rings on a single acting diesel engine piston. To check the ring gap clearance, the rings should be placed at the _____.	point of minimum cylinder wear	center of the cylinder	point of maximum cylinder wear	point of maximum ring wear
1660	You are operating a main propulsion diesel engine at a constant load when the jacket water temperature begins to rise. This could be caused by _____.	a piston about to seize	dirty fuel oil filters	fuel oil being too heavy (viscous)	high water level in the expansion tank
1661	You are testing a closed fuel injection nozzle using a nozzle tester. A pressure slightly less than design valve opening pressure is applied. If no fuel appears at the spray tip, the _____.	nozzle orifices are too small	nozzle orifices are eroded	needle valve spring is defective	needle valve is operating properly
1662	Your vessel is about to begin maneuvering, in order to carry out easy restarting of a large heavy fuel diesel engine that has been stopped for some time, you should have _____.	used a higher than normal cranking speed	shifted to a fuel having a lower cetane number	shifted to a fuel having a higher cetane number	introduced supercharged air into the starting air system

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ID #	Question	Choice A	Choice B	Choice C	Choice D
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ID #	Question	Choice A	Choice B	Choice C	Choice D
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