

## Motor Plants II

ID #	Question	Choice A	Choice B	Choice C	Choice D
1	A built-up exhaust valve is one in which _____.	<b>the stem and head is made of different materials</b>	low-alloy steel is used throughout	a replaceable sleeve is shrunk on the valve stem	the valve requires double springs
2	A burned exhaust valve may be detected by a higher than normal _____.	firing pressure	<b>exhaust temperature from a particular cylinder</b>	cooling water temperature	compression pressure
3	A burner producing black smoke in an automatic auxiliary boiler, would be caused by a/an _____.	incorrect electrode setting	defective solenoid valve	grounded high tension lead	<b>incorrect primary air setting</b>
4	A burner responsible for producing black smoke in an automatic auxiliary boiler, would be caused by a _____.	defective solenoid valve	<b>dirty fuel nozzle</b>	grounded high tension lead	faulty ignition cable connector
5	A bypass line provided around a waste heat auxiliary boiler in a diesel engine exhaust system, may be used to avoid boiler _____.	<b>corrosion at low engine loads</b>	erosion at high engine loads	overload at low engine loads	scaling at all exhaust temperatures
6	A change in engine speed is required before a governor is able to make a corrective movement of fuel rack. This aspect of governing is commonly expressed as a percent and is known as _____.	<b>governor sensitivity</b>	governor promptness	speed droop	isochronous governing
7	A coil-type automatically fired auxiliary boiler is to be laid up wet for an indefinite period. The boiler water should be treated to ensure that _____.	<b>the manufacturer's recommended pH is maintained</b>	there is no excess of oxygen scavenging chemicals	sludge formation cannot occur in the steam separator	waterside blow down will not be required
8	A continuous fluctuation of the speed, due to over control by the governor, is known as _____.	<b>hunting</b>	sensitivity	promptness	speed droop
9	A controllable pitch propeller on a diesel driven vessel eliminates the need for _____.	friction clutches	disconnect clutches	<b>reversing gears</b>	reduction gears
10	A dark exhaust from a running diesel engine can be caused by _____.	<b>late ignition</b>	water in the fuel	high compression temperature	starting valve stuck open
11	A diesel engine emits blue exhaust smoke as a result of _____.	cold intake air	excessive compression pressure	<b>excessive cylinder lubrication</b>	a light load
12	A diesel engine experiences a sudden loss in speed, accompanied by black exhaust smoke, with the fuel rack at maximum, and the speed remaining below normal. The probable cause is _____.	<b>engine overload</b>	leaky valves	stuck or broken piston rings	low air injection pressure

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13	A diesel engine is equipped with an isochronous hydraulic governor. A decrease in load will cause the engine speed to _____.	decrease only	increase only	decrease slightly then returned to original speed	<b>increase slightly then returned to original speed</b>
14	A diesel engine is operating at 1800 RPM and driving a propeller at 600 RPM. What is the speed reduction ratio?	0.30 to 1	<b>3.00 to 1</b>	3.33 to 1	33.0 to 1
15	A diesel engine is operating under a normal load with low firing pressures and high exhaust temperatures. The most probable cause of this condition is _____.	a missing air intake filter	<b>a restricted exhaust manifold</b>	the fuel rack being too far in	the fuel rack being too far out
16	A diesel engine is operating with excessively high exhaust temperatures at all cylinders. To correct this condition, you should FIRST _____.	<b>reduce the engine load</b>	increase the cooling water flow	increase the lube oil pressure	adjust the fuel rack
17	A diesel engine is supercharged in order to _____.	lower the no-load RPMs	<b>provide more air for combining with the fuel</b>	increase the no-load RPMs	provide more fuel for combining with the air
18	A diesel engine is warmed up and white vapor is noted in the exhaust, this could indicate _____.	excessive cylinder lubrication	a lugging engine	<b>a leaking cylinder liner</b>	overloading of one cylinder
19	A diesel engine may be hard to start if the _____.	<b>air intake is restricted</b>	engine is cranked too fast	vibration dampener is faulty	exhaust back pressure is low
20	A diesel engine may fail to start due to _____.	<b>low air charge temperature</b>	high cranking speed	excessive fuel dilution of lube oil	high compression pressure
21	A diesel engine should not be operated at low loads for long periods of time because _____.	heavy carbon deposits will buildup on the valves and in the exhaust	fuel dilution is increased at low load	exhaust valves may be damaged	<b>all of the above</b>
22	A diesel engine valve spring is under compression when the valve is _____.  I. Open II. Closed	I only	II only	<b>both I and II</b>	neither I nor II
23	A diesel engine with a full speed of 1000 RPM drives a propeller at 300 RPM. What is the speed reduction ratio?	0.3 to 1	<b>3.33 to 1</b>	33 to 1	300 to 1
24	A diesel generator governor is hunting. After changing the oil, the governor is flushed and the compensation needle valve is adjusted, but the hunting persists. You should NOW _____.	check air intake manifold pressure	calibrate the fuel pump rack settings	set the speed droop adjustment to zero	<b>carefully check for binding in the governor linkage</b>

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25	A diesel generator has just been paralleled with an AC turbo generator, but the load can not be properly divided. This could be caused by _____.	<b>an incorrect diesel generator governor speed droop adjustment</b>	a faulty reverse power relay within the main circuit breaker assembly	unsynchronized isochronous load distribution adjustments	a different speed setting on each unit
26	A direct acting, pneumatically controlled governor for a diesel engine operates in a range of 10 to 50 psi. The fuel rack position is at 20 millimeters when the governor air pressure is 30 psi. If the governor air pressure changes to 20 psi, the fuel rack setting will change to _____.	<b>13 millimeters</b>	17 millimeters	22 millimeters	24 millimeters
27	A dirty atomizer sprayer plate in the burner of an auxiliary boiler, would be indicated by _____.	carbon on the register doors	a dazzling white atomizer flame	fluctuating pressure in the windbox	<b>an unevenly shaped burner flame</b>
28	A distorted furnace in a fire-tube auxiliary boiler may be the result of _____.	firing for extended periods in the low fire mode	<b>overheating, due to waterside deposits</b>	varying the water level above the crown sheet	carrying excessive alkalinity in the boiler water
29	A dry-type exhaust muffler clogged with soot, will cause _____.	low exhaust temperature	<b>loss of engine power</b>	burned intake valves	engine racing
30	A dry-type exhaust silencer clogged with soot, will cause _____.	low exhaust temperature	<b>loss of engine power</b>	burned intake valves	engine racing
31	A dry-type spark arrestor removes sparks from a diesel engine exhaust by _____.	increasing the linear velocity of the exhaust gases	<b>changing directions of exhaust gas flow</b>	decreasing the temperature of the exhaust gases	accelerating the exhaust gas through a reduced size orifice
32	A failure of any component of a flame safeguard control for an auxiliary boiler will result in _____.	a furnace explosion	<b>automatic burner shutdown</b>	uncontrolled firing	automatic restart
33	A failure to any component of a flame safeguard control for an automatically fired auxiliary boiler, will result in _____.	<b>the prevention of automatic restart</b>	an immediate furnace explosion	uncontrolled firing	automatic restart
34	A feed pump for an auxiliary boiler might lose suction if the _____.	boiler water level is low	<b>feed water is too hot</b>	boiler steam demand is low	feed water is too cold
35	A firebox explosion in an automatically fired auxiliary boiler may be the result of _____.	excessive purging before lighting off	insufficient trail for ignition period	a faulty transformer in the ignition circuit	<b>insufficient purging before lighting off</b>
36	A four-stroke, cycle, turbocharged, 1000 horsepower diesel engine has been operating under load. The load suddenly increases, causing excessive black exhaust smoke, and a rapid rise in the lube oil temperature. In response to this condition, you should _____.	<b>reduce load</b>	check your exhaust	adjust cooling water temperature	increase lube oil flow

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37	A gear type flexible coupling is precision built for _____.	reduced torsional vibration and resonance	increased slip and maneuvering capability	<b>high torque transmittal under limited misalignment conditions</b>	low axial thrust transmission under minimal alignment irregularities
38	A large change in ambient temperature, or using an oil of a viscosity different than the one recommended by the manufacturer in a mechanical hydraulic governor, will result in the need to adjust the _____.	pilot valve opening	<b>compensating needle valve</b>	compensating spring tension	accumulator spring tension
39	A large, low-speed, main propulsion diesel engine exhaust is designed to drain off _____.	rain water coming down the stack	seawater washing up exhaust pipes at the waterline	fuel oil due to leaky injector nozzles	<b>condensed water vapor produced from the exhaust gases</b>
40	A large, low-speed, main propulsion diesel engine is operating at 80% load and normal speed while the vessel is in calm seas. As the intensity of the seas increase, the engine speed governor maintains the same RPM, although the load indicator indicates an increase in load beyond its allowable limits. Which of the following actions should be taken?	Increase the load limit setting.	<b>Decrease the load limit setting.</b>	Increase engine RPM.	Ignore this situation as the engine can handle the load increase.
41	A large, low-speed, main propulsion diesel engine uses sea water to directly cool the _____.	cylinder heads	exhaust valves	<b>scavenging air</b>	injectors
42	A loop or cross scavenged engine utilizes the motion of its pistons and a turbocharger to provide scavenging air. Which of the listed mechanical designs prevents the air under the pistons from being pumped back through the scavenge ports during the piston power stroke?	Masked intake ports	<b>Length of the piston skirt</b>	Positive pressure from the blower	Lower liner seals
43	A loud clicking noise from the valve compartment of an operating diesel engine would indicate _____.	worn valve seats	worn main bearings	<b>excessive valve clearance</b>	weak rocker arm springs
44	A loud clicking noise occurring from within the valve compartment of an operating diesel engine would indicate _____.	worn valve seats	tight rocker arm springs	<b>excessive valve clearance</b>	weak rocker arm springs
45	A main propulsion diesel engine is fitted with a pneumatically actuated governor, having an operating range of 10 to 60 psig. The current fuel rack setting is 15 mm at 30 psig. If the air pressure to the governor is increased to 40 psig, the fuel rack setting will change to _____.	10 mm	14 mm	15 mm	<b>20 mm</b>

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46	A naturally aspirated diesel engine at full throttle will have an intake manifold pressure _____.	<b>slightly less than atmospheric pressure</b>	approximately equal to exhaust manifold pressure at all times	that is widely fluctuating	constantly decreasing as engine load increases
47	A photoelectric cell installed in an automatically fired auxiliary boiler burner management system _____.	<b>opens the burner circuit upon sensing a flame failure</b>	detects a flame failure by monitoring radiant heat from glowing refractory	requires mechanical linkage to secure the burner fuel supply	must be bypassed at low firing rates
48	A properly adjusted safety valve for an auxiliary boiler will _____.	attain maximum lift when it pops below its set pressure	<b>open with a sharp, clear pop at its set pressure</b>	close sharply when the pressure drops to its set pressure	operate most effectively when it has zero blow down
49	A propulsion diesel engine, having a maximum continuous output of over 300 HP, and driving a controllable pitch propeller, must be fitted with a separate overspeed device, in addition to the normal governor. This second device is to prevent the engine from exceeding the rated speed by more than _____.	5%	10-15%	<b>20%</b>	25-30%
50	A propulsion engine, using the speed control circuit shown in the illustration, fails to function at speeds lower than the low end of the critical speed range. Which of the following statements describes what should be done to correct this malfunction?	<b>Device 17A needs to be replaced, repaired, or reset to the set point coinciding with the RPM value for the low end of the critical speed range.</b>	The critical speed range will be varied as the set points of 17A or 17B are reset, therefore, another segment of the speed control circuit must be repaired.	To increase the critical speed range of the engine, reduce the set point of 17A and 17B respectively, to .80 bar and 1.0 bar.	Both 17A and 17B need to be reset to decrease the critical speed range, although this procedure will increase the operating range of the engine.
51	A pulsating flame, accompanied by a burner developing black smoke in an auxiliary boiler, is an indication that the _____.	electrode setting is incorrect	ignition current is too low	<b>fuel oil pressure is too low</b>	fuel nozzle is correctly positioned
52	A pyrometer is an instrument commonly used to measure _____.	cylinder pressure	flame intensity	<b>exhaust gas temperature</b>	crankshaft axial alignment
53	A pyrometer is an instrument used to measure the temperature of the diesel engine _____.	<b>exhaust</b>	fuel oil	cooling water	cylinder liner
54	A restricted air intake to a diesel engine may result in the engine _____.	<b>failing to reach rated speed</b>	knocking under maximum load	hunting or surging under light load	overspeeding and running away
55	A restricted diesel engine exhaust manifold operating under a normal load is indicated by _____.	low firing pressures and low exhaust temperatures	<b>low firing pressures and high exhaust temperatures</b>	high firing pressures and low exhaust temperatures	high firing pressures and high exhaust temperatures
56	A Roots-type blower installed on a direct reversible engine _____.	is engaged only when turning ahead	is geared so that air flow through the blower is always in the same direction	<b>reverses rotation along with the engine</b>	exhausts to atmosphere when turning astern

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57	A Roots-type blower installed on some diesel engines, serves to _____.	heat the cylinder for hotter compression	<b>push out exhaust gases and replace them with fresh air</b>	force cool air across the radiator, lowering the jacket water temperature	maintain a positive charge of fresh air in the crankcase thus eliminating the chances of a crankcase explosion
58	A safety valve on an auxiliary boiler simmers constantly and can not be stopped by several quick blow-offs using the hand relieving gear. The problem may be _____.	loose dirt on the seat	exposed valve springs	a clogged drain line	<b>a damaged seat</b>
59	A schematic diagram of an isochronous hydraulic governor is shown in the illustration. When the load is removed the speed increases, and the _____.	<b>pilot valve (piece #10) moves upward</b>	proportioner piston (piece #25) moves upward	flyweights (piece #8 and #9) move inward and the pilot valve (piece #10) moves downward	balance piston (piece #22) moves downward
60	A SECONDARY function of a waste heat boiler is to _____.	<b>reduce engine exhaust noise</b>	reduce engine back pressure	increase engine brake horsepower	increase turbocharger efficiency
61	A smoking burner with a pulsating flame in an auxiliary boiler, is an indication that the _____.	fuel oil supply temperature is normal	burner electrode is incorrectly positioned	<b>fuel/air ratio is incorrect</b>	ignition current is too low
62	A smoking exhaust from an operating diesel engine could be caused by _____.	low sulfur content in the fuel	a loose injector inlet connection	<b>late fuel injection</b>	high injection pressure
63	A sprayer plate marked 32Y20, as used in a return flow fuel oil system, should only be used with a/an _____.	burner tip marked 20	burner tip marked 32	orifice plate marked 20	<b>orifice plate marked 32</b>
64	A sprayer plate used in a return flow fuel oil atomizer is correctly installed if the oil _____.	passes through the whirling chamber before passing through the tangential slots	<b>passes through the tangential slots before passing through the whirling chamber</b>	leaves the burner as a straight stream until mixed with the primary flow of combustion air	leaves the burner as a straight stream until mixed with the swirling atomizing steam
65	A spring-loaded centrifugal flyweight governor responds to reduced engine load with an immediate increase in _____.	pilot valve oil pressure	engine torque	compensation needle valve clearance	<b>centrifugal force on the flyweights</b>
66	A substance found in residual fuels which tends to cause exhaust valve corrosion and grooving, is _____.	carbon	<b>vanadium</b>	calcium	hydrogen
67	A sudden drop in diesel engine cylinder compression pressure can be caused by _____.	a leaking fuel injector nozzle	a clogged air filter	excessively early fuel injection	<b>malfunctioning valves</b>
68	A sudden flame failure in an operating auxiliary boiler, equipped with an automatic combustion control system and burning light fuel, could be attributed to a _____.	dead or malfunctioning step up transformer	faulty ignition cable connector	<b>loose connection on the photocell</b>	rapid fuel viscosity increase

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69	A sudden power loss from a turbocharged and after cooled diesel engine is an indication of a/an _____.	<b>turbocharger malfunction or failure</b>	crankcase exhauster overload	overload on the intercooler	obstruction in the engine cylinders
70	A supercharged diesel engine, when compared to a similar naturally aspirated diesel engine, will develop an increase in _____.	ignition lag	<b>engine horsepower</b>	lube oil system pressure	specific fuel consumption
71	A thin film of oil on the lobes of a Roots-type blower indicates _____.	proper lubrication	timing out of adjustment	excessive cylinder lubrication	<b>leaking rotor bearing oil seals</b>
72	A thrust bearing is used with a propulsion diesel engine to _____.	<b>control axial movement of the crankshaft</b>	transmit engine thrust to the propeller shaft	absorb vibrations in the propeller shafting	prevent propeller thrust from being transmitted to the hull
73	A turbocharged and after cooled diesel engine can overspeed due to _____.	air in the hydraulic governor	high ambient air temperature	<b>oil leaking into the turbocharger compressor end</b>	insufficient piston ring blow-by
74	A turbocharged diesel engine will have an intake manifold pressure _____.	constantly decreasing as engine load increases	<b>constantly increasing as the amount of load increases</b>	approximately equal to exhaust manifold pressure at all times	approximately equal to atmospheric pressure at all times
75	A turbocharged, four-stroke/cycle diesel engine has a larger valve overlap than a naturally aspirated four-stroke/cycle diesel engine, in order to increase the _____.	temperature of the exhaust gases	energy supplied to the turbocharger	air pressure to the intake manifold	<b>purge of exhausted gases from the cylinders</b>
76	A turbocharged, four-stroke/cycle diesel engine has a larger valve overlap than a naturally aspirated, four-stroke/cycle diesel engine in order to increase the _____.	temperature of the exhaust gases	energy supplied to the turbocharger	air pressure to the intake manifold	<b>cooling effect on the exhaust valves</b>
77	A two-stroke/cycle diesel engine operates erratically, overspeeds, and fails to restart when cranked at normal speed. Which of the following problems is the most likely cause for the engine failing to restart?	Improper governor operation due to excess oil pressure	Damage to the governor due to excessive speed	<b>Failure to reset the overspeed trip</b>	Failure to reposition the fuel rack
78	A V-12 four-stroke/cycle 500 horsepower diesel engine is operating under a normal load, the firing pressures are low and the exhaust temperatures are high. Which of the following problems is the most probable cause of this condition?	Fuel pump rack setting is too far out.	The air intake filter is missing.	<b>The exhaust back pressure is too high.</b>	The fuel pump rack setting is too far in.
79	A variable capacity, pressure atomizing, fuel oil burner functions to _____.	maintain a constant fuel temperature	<b>provide a wide range of combustion</b>	provide a constant fuel return pressure	maintain smokeless fuel oil atomization
80	A waste heat boiler is installed on some diesel propelled vessels to _____.	provide steam for emergency propulsion	<b>provide steam for the turbo generator</b>	heat the waste water tanks	steam for warming engines

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81	A water jacket is placed around the exhaust manifolds of propulsion diesel engines to _____.	<b>reduce heat radiation to the engine room</b>	aid in preventing turbocharger overheating	condense and drain moisture from exhaust gases	dampen exhaust gas pulsations in the manifold
82	A waterside fusible plug, installed in a fire-tube auxiliary boiler _____.	would be located in the center of the crown sheet and inserted from the fireside	<b>by design, is drilled with a tapered hole so that boiler water pressure holds the fusible metal in the bronze body</b>	is required by Coast Guard Regulations as an excess pressure relieving device	all of the above
83	According to 46 CFRs, which of the following devices is prohibited for use on automatic auxiliary boilers?	Flame safeguard controls.	<b>Mercury tube actuated controls.</b>	Solenoid operated fuel valves.	Pneumatic combustion controls.
84	According to Coast Guard Regulations (46 CFR), the highest boiler pressure where a tubular type gage glass may be installed is _____.	100 psig	200 psig	<b>250 psig</b>	300 psig
85	According to Coast Guard Regulations (46 CFR), how often shall internal combustion engine driven emergency generators be operated under load?	Once a week for two hours	Once a week for four hours	<b>Once a month for two hours</b>	Every six months for four hours
86	According to Coast Guard Regulations (46 CFR), the fuel strainer installation located in the supply lines to the fuel pump of an auxiliary boiler, can be provided with _____.	duplex type strainers	single strainers of the self-cleaning type	single strainers fitted with bypasses	<b>all of the above</b>
87	According to Coast Guard Regulations (46 CFR), the maximum allowable boiler pressure in which a tubular gage glass may be installed is _____.	100 psig	200 psig	<b>250 psig</b>	300 psig
88	According to Coast Guard Regulations (46 CFR), when an automatically fired boiler has a flameout, which of the following actions should occur FIRST?	<b>The fuel valve should be de-energized.</b>	The purge cycle should begin.	An alarm should ring.	The fuel oil pump should stop.
89	According to Coast Guard Regulations (46 CFR), which of the following pressures is the highest boiler pressure where a tubular type gage glass may be installed?	100 psig	200 psig	<b>250 psig</b>	300 psig
90	According to Coast Guard Regulations (46 CFR), which of the following statements is true concerning the water level indicating device for the auxiliary boiler shown in the illustration?	The illustrated arrangement may be used on any steam boiler, for any steam pressure, up to 300 psig.	<b>The minimum size of the piping connecting the water column to the steam drum is to be one inch.</b>	The shutoff valve on the boiler drum must be of cast iron.	A minimum of three test cocks may serve as the primary water level indicator on boilers under 250 psig.



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91	According to U. S. Coast Guard Regulations (46 CFR), internal combustion engine driven emergency generators shall be operated under load for at least two hours at least once _____.	a week	every two weeks	<b>a month</b>	a quarter
92	Additional explosion relief valves are fitted on separate spaces of the crankcase such as gear or chain cases for camshaft or similar drives when the _____.	<b>gross volume of such spaces exceeds 21 cubic feet</b>	possibility of explosion exists due to the formation of volatile gases	unit is operating in extreme overload conditions	overall volume of the space exceeds 0.6 cubic meters
93	Adjustments to the compensating needle valve in a hydraulic governor should be made with the engine at _____.	maximum power at a normal load	maximum power and load under normal conditions	half speed and normal temperature	<b>normal operating temperature without a load</b>
94	After a normal, or safety shutdown, automatic combustion control systems for an auxiliary boiler are designed to prevent the immediate refiring of a burner in order for the _____.	<b>furnace to be repurged</b>	electric charge to buildup in the igniter	fuel pump to restart	drum level to stabilize
95	After cooling of a turbocharged diesel engine will result in _____.	higher torque but lower brake horsepower	lower torque but higher brake horsepower	<b>higher torque and higher brake horsepower</b>	lower torque and lower brake horsepower
96	After cooling of the cylinder air charge of a turbocharged diesel engine will result in _____.	higher torque but lower brake horsepower	lower torque but higher brake horsepower	<b>higher torque and higher brake horsepower</b>	lower torque and lower brake horsepower
97	After each speed change, the compression of the diesel engine governor speeder spring is returned to a constant value, regardless of the amount of movement of the fuel control mechanism and engine load. Hence, this results in _____.	speed droop governing	<b>isochronous governing</b>	high sensitivity governing	relay-type governing
98	After lighting off a cold, automatically fired, auxiliary boiler, as steam begins to form, you should _____.	<b>close the air cock</b>	give the boiler a bottom blow	test the safety valve	completely open the steam stop
99	Air bubbles in a hydraulic governor can cause _____.	<b>sluggish response</b>	speed droop variations	isochronous governing	sensitivity increase
100	Air receivers installed in starting air systems are to be _____.	cylindrical in shape with service connections located at the top and bottom	opened and made available for inspection during biannual inspections	provided with automatic drain traps for the removal of moisture	<b>so installed as to make the drain connections effective under extreme conditions of trim</b>
101	Air scavenging of a diesel engine cylinder _____.	blows out the exhaust gases	supplies oxygen for combustion	cools the valves and cylinder walls	<b>all of the above</b>
102	Air scavenging of the cylinder shown in the illustration, takes place between figures _____.	2 and 3	<b>3 and 4</b>	4 and 5	5 and 6

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103	Airflex clutches are used to transmit power from a diesel engine to the propeller shaft. A restricted orifice is used in the control air system of this unit to _____.	delay deflation of the clutch being disengaged	<b>delay inflation of the clutch being engaged</b>	reduce the deflation time of both clutches	reduce the inflation time of both clutches
104	All of the diesel engine cylinder firing pressures are normal, yet all of the exhaust temperatures are low. Which of the following situations is responsible for this condition?	Excessively early injection timing	Combustion knock	Leaking piston rings	<b>Light load</b>
105	All oil-fired boilers, regardless of intended mode of operation, with automatic safety control systems must automatically close the burner valve when _____.	flame in boiler furnace is confirmed	<b>actuated by boiler safety trip</b>	burner is properly seated	starting trial for ignition occurs
106	All oil-fired boilers, regardless of intended mode of operation, with automatic safety control systems must automatically close the burner valve when _____.	flame in boiler furnace is confirmed	starting trial for ignition occurs	burner is properly seated	<b>actuated by boiler safety trip</b>
107	An 8000 horsepower diesel engine has a specific fuel consumption of 0.4 lbs. of fuel per horsepower hour. If each pound of fuel contains 18,500 BTU's and 25% of the available heat leaves the engine with the exhaust, how many BTU's per hour are theoretically available for use in a waste heat boiler?	7.4 million BTU's per hour	<b>14.8 million BTU's per hour</b>	22.2 million BTU's per hour	29.6 million BTU's per hour
108	An AC diesel generator incapable of being paralleled with the main bus normally employs an isochronous governor in order to _____.	increase speed droop in proportion to load	<b>maintain a frequency of 60 cycles per second</b>	increase or decrease engine speed upon load demand	prevent attempts to parallel
109	An accumulation of carbon on one of its thermocouples of an exhaust gas pyrometer will _____.	<b>read low for that location due to the insulation effect of the deposits</b>	read high for that location due to the hot spots formed by the deposits	fluctuate due to the conductance of carbon	respond quickly to temperature changes
110	An after cooler installed between the turbocharger and the cylinder air inlet _____.	<b>increases the density of the air</b>	decreases the density of the air	increases the specific heat of the air	decreases the specific heat of the exhaust
111	An automatically fired auxiliary boiler is required by Coast Guard Regulations (46 CFR) to be shutdown as a result of _____.	low boiler pressure	<b>low water level</b>	wide flame cone angle	high fuel oil pressure
112	An automatically fired auxiliary boiler with carbon deposits formed on its burner electrodes, will experience _____.	flame failure	<b>ignition failure</b>	panting of the furnace	sputtering of the burner flame
113	An auxiliary boiler equipped with a return flow fuel atomization system, has a _____.	constant fuel combustion rate	constant fuel return pressure	variable fuel supply temperature	<b>variable fuel return pressure</b>
114	An auxiliary boiler is equipped with a return flow fuel atomization system, which uses a/an _____.	<b>constant fuel supply pressure</b>	constant fuel return pressure	variable fuel supply pressure	all of the above

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115	An electric motor failure in an electro-hydraulic steering gear system would cause the rudder to _____.	swing 35° right or left	<b>remain locked in its last position</b>	move to the midship position automatically	swing up against the rudder emergency stops
116	An engine is equipped with the overspeed trip similar to that shown in the illustration. The throw out weight is designed to run at 900 RPM and trip out at 10% overspeed. However, the overspeed trip is currently activating at 930 RPM. In order to correct this problem, _____.	<b>increase compression on spring #12</b>	decrease compression on spring #12	install a larger throw out weight piece #10	change the angle of the operating face by machining piece #10
117	An excessively high brine level in a low pressure distilling plant can be caused by _____.	excessive brine pump motor speed	an excessive brine blow down rate	<b>failure of the brine pump</b>	excessive distillate pump speed
118	An exhaust gas bypass is installed on a waste heat boiler in order to _____.	bypass exhaust gas at high loads to prevent excessive back pressure	bypass a portion of the exhaust gas at peak loads for better efficiency	<b>reduce corrosion in gas passages at low loads</b>	recycle exhaust gas to the turbocharger
119	An exhaust gas bypass is installed on a waste heat boiler in order to _____.	bypass exhaust gas at high loads to prevent excessive back pressure	bypass a portion of the exhaust gas at peak loads for better efficiency	recycle exhaust gas to the turbocharger	<b>minimize moisture condensation in the boiler gas passages at low loads</b>
120	An exhaust pipe from a internal combustion engine may not need to be insulated when _____.	installed on fishing vessels	<b>it is of the water jacketed type</b>	it is used as an emergency generator	special provision is made by the Chief Engineer
121	An important design characteristic of an explosion relief valve for a diesel engine is the ability to _____.	open slowly to permit a gradual reduction of crankcase pressure	open quickly against crankcase pressure to prevent a possible implosion	<b>close quickly in order to prevent an inrush of air</b>	close slowly to permit proper seating of the valve disc and neoprene sealing surfaces
122	An increase in power output of a turbocharged diesel engine operating at a constant engine speed results in _____.	higher exhaust temperature	increased turbocharger speed	higher air box pressure	<b>All of the above are correct.</b>
123	An increase in the air inlet manifold pressure of a diesel engine will result in a/an _____.	decrease in maximum cylinder pressure	increase in ignition lag	<b>decrease in fuel consumption per horsepower-hour</b>	decrease in exhaust manifold pressure
124	An increase in the load on a turbocharged diesel engine operating at constant speed will result in an increase in _____.	exhaust temperature	air box pressure	mean effective pressure	<b>all of the above</b>
125	An indication of a diesel engine air intake being partially clogged, is _____.	low firing pressure and low exhaust temperatures	<b>low firing pressure and high exhaust temperatures</b>	high firing pressure and low exhaust temperatures	high firing pressure and high exhaust temperatures
126	An indication of high salinity in the distillate discharged from a low pressure distilling plant can be the result of _____.	maintaining the proper distilling plant heat balance	carrying the brine level below normal	<b>leaks in the demister baffles</b>	venting of the saltwater heater drain pump

ID #	Question	Choice A	Choice B	Choice C	Choice D
127	An inline engine having a nine inch bore and more than eight cylinders will _____.	incorporate the use of two explosion relief valves	<b>have three explosion relief valves</b>	have at least eight explosion relief valves	not be required to have explosion relief valves
128	An operating diesel engine may gradually lose output power due to a/an _____.	<b>restricted turbocharger air intake filter</b>	pressure increase in the air manifold	dribbling injector	low fuel viscosity
129	An operating diesel engine that suddenly loses power, is due to a/an _____.	<b>restricted turbocharger air intake</b>	oil leak into the turbocharger	dribbling injector	low fuel viscosity
130	An operating turbocharged diesel engine that suddenly loses power, is due to a/an _____.	<b>restricted turbocharger air intake</b>	oil leak into the turbocharger	dribbling injector	low fuel viscosity
131	An overcorrecting and unstable engine governor operation is known as _____.	droop	dead banding	dash potting	<b>hunting</b>
132	Any increase in the exhaust back pressure of a four-stroke/cycle diesel engine will _____.	<b>reduce engine horsepower output</b>	aid in silencing the exhaust noise	increase the mean effective pressure	contribute to effective cylinder scavenging
133	As shown in the illustration, if the vessel was operating at full sea speed, the area labeled "A" would be used to _____.	<b>collect the saturated steam generated in area "1" by the engines exhaust gases</b>	superheat the steam generated by the oil fired mechanical burner	preheat the feed water to the waste heat boiler	collect stack gas
134	As shown in the illustration, if the vessel were operating at full sea speed, the area labeled "A" would be used to _____.	<b>collect the saturated steam generated in area "1" by the engines exhaust gases</b>	superheat the steam generated by the oil fired mechanical burner	preheat the feed water to the waste heat boiler	collect stack gas
135	As shown in the illustration, the area labeled as "C" would be identified as the _____.	<b>oil fired boiler furnace</b>	oil fired boiler mud drum	oil fired boiler water drum	waste heat boiler steam separator
136	As shown in the illustration, the component labeled "E" would be identified as a _____.	<b>waste heat boiler circulating pump</b>	boiler water feed pump	main condensate pump	fuel oil service pump
137	As shown in the illustration, the component labeled "F" would be identified as a _____.	waste heat boiler circulating pump	<b>boiler water feed pump</b>	main condensate pump	fuel oil service pump
138	As shown in the illustration, the component labeled "H" would be identified as a _____.	waste heat boiler circulating pump	boiler water feed pump	<b>main condensate pump</b>	fuel oil service pump
139	As shown in the illustration, the function of component "1" is to _____.	generate superheated steam to operate the turbo generator	<b>evaporate circulating boiler water into saturated steam</b>	maintain a water level in the steam drum	condense excess steam produced in the boiler
140	As shown in the illustration, the function of component "1" is to _____.	generate superheated steam to operate the turbo generator	condense steam exhausting from the turbo generator	<b>transfer engine exhaust heat to circulating boiler water to generate saturated steam</b>	condense excess saturated steam produced in the boiler

ID #	Question	Choice A	Choice B	Choice C	Choice D
141	As shown in the illustration, the function of component "3" is to _____.	<b>generate superheated steam to operate the turbo generator</b>	generate saturated steam when the vessel is underway	preheat feed water before entering the steam drum	condense excess steam produced in the boiler
142	As shown in the illustration, the function of the component labeled "G" would be to _____.	condense steam exhaust from the turbo generator	provide a source of circulating water into the waste heat boiler	provide a source of fuel for the fuel oil service system	<b>provide a reservoir of feed water for the boiler feed pump</b>
143	As shown in the illustration, the main function of the valve labeled "6" would be to _____.	raise vacuum during startup	recirculate feed water at low loads	<b>relieve excess steam pressure when the turbo generator is idling</b>	provide make-up feed water for the hot well
144	As shown in the illustration, the primary function of the valve labeled "6" would be to _____.	raise vacuum during startup of the turbo generator	recirculate feed water at low loads	<b>relieve excess steam pressure when the turbo generator is idling</b>	provide make-up feed water for the hot well
145	As shown in the illustration, what component would normally be installed at location "B"?	Boiler water level indicator	Oil fired mechanical burner	Boiler soot blower unit	<b>Flue gas pyrometer</b>
146	As shown in the illustration, what component would normally be installed at location "D" ?	Boiler water level indicator	<b>Oil fired mechanical burner</b>	Boiler soot blower unit	Flue gas smoke indicator
147	As the load is being decreased on the engine controlled by the governor shown in the illustration, the _____.	<b>right hand end of the floating lever will move up</b>	speeder rod will move down	pilot valve plunger will move down	oil pressure under the power piston will increase
148	At rated engine load and RPM, the diesel engine turbocharger is powered by _____.	belt drive	<b>exhaust gases</b>	electric motor	friction clutch
149	At the beginning of the prepurge period on an automatic auxiliary boiler equipped with a programmed control system, the unit will not restart if airflow is not sensed and _____.	<b>the damper is not sufficiently opened</b>	the damper is not fully closed	oil pressure is not sensed	water pressure is not sensed
150	At the point in time indicated by the information shown in the illustration, the #3 piston is on the _____.	<b>intake stroke</b>	exhaust stroke	compression stroke	power stroke
151	At what pressure should a cylinder relief valve of an internal combustion engine be set to relieve?	<b>The device should be set to relieve at a pressure not more than 40 percent in excess of the maximum firing pressure.</b>	The valves should be set to just stop relieving with the engine running at full speed.	Cylinder relief valves should only be adjusted by an authorized repair facility with the permission of the OCMI.	Cylinder relief valves are no longer required for large low speed engines due to advancements in combustion engineering.
152	Automatic burner shutdown in an auxiliary boiler, as a result of a component failure in the flame safeguard controls, will _____.	<b>prevent the boiler from automatically relighting</b>	eliminate the need for furnace purging	cause automatic restart after a purge period	cause an explosion in the boiler furnace
153	Automatic combustion control systems for auxiliary boilers are designed to cycle burners on and off in response to the _____.	excess air pressure	steam moisture content	furnace temperature	<b>steam pressure</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
154	Automatic combustion control systems for some auxiliary boilers are designed to cycle burners on and off in response to _____.	fuel supply pressure	fuel return pressure	<b>steam pressure</b>	furnace air pressure
155	Automatic combustion control systems for some auxiliary boilers are designed to cycle burners on in response to _____.	low fuel pressure	fuel return pressure	<b>low steam pressure</b>	furnace air pressure
156	Automatically fired auxiliary boilers use fuel oil strainer arrangements of either the simplex type or _____.	filter bag type	metal disc type	absorbent type	<b>duplex type</b>
157	Auxiliary boilers are divided into several classifications, one of which is _____.	water-tube supercritical circulation	<b>water-tube forced circulation</b>	fire-tube controlled circulation	fire-tube express circulation
158	Auxiliary boilers are divided into several classifications, one of which is _____.	fire-tube controlled circulation	fire-tube supercritical circulation	<b>water-tube natural circulation</b>	water-tube express circulation
159	Auxiliary boilers can be classified as _____.	water-tube natural circulation boilers	fire-tube boilers	water-tube forced circulation boilers	<b>all of the above</b>
160	Auxiliary diesel engines can be automatically shut down as a result of _____.	low lube oil temperature	<b>low lube oil pressure</b>	high exhaust temperature	high cooling water pressure
161	Before an auxiliary boiler is shutdown for an extended period of time, the water in the boiler should have a pH value of _____.	<b>10</b>	7	4	1
162	Before any work is done on a burner in an automatically fired auxiliary boiler, you should always _____.	block all control valves	allow the boiler to cool completely	lock all safety interlock switches closed	<b>close all manually operated fuel valves</b>
163	Before any work is to be carried out on a burner in an automatically fired auxiliary boiler, you should always _____.	allow the boiler to cool completely	<b>close all manually operated fuel valves</b>	lock all safety interlock switches closed	block all control system relays closed
164	Before any work is to be carried out on a burner in an automatically fired auxiliary boiler, you should always _____.	block all control system relays closed	allow the boiler to cool completely	<b>close all manually operated fuel valves</b>	lock all safety interlock switches closed
165	Black smoke exhausting from a diesel engine indicates _____.	proper fuel injection	water in the fuel	<b>incomplete combustion</b>	burning of lube oil
166	Black smoke exhausting from a diesel engine may be caused by _____.	excessive scavenging air pressure	high coolant temperature	insufficient fuel	<b>a clogged air cleaner</b>
167	Black smoke exhausting from an operating diesel engine can be caused by _____.	<b>fuel dribbling from leaking fuel injectors</b>	burning fuel with a high carbon content	burning fuel with a high vanadium content	burning fuel with a lower sulphur content
168	Black smoke exhausting from an operating diesel engine is an indication of poor combustion which may be caused by _____.	water in the fuel	insufficient fuel for combustion	<b>clogged air intake passages</b>	burning lubricating oil
169	Bluish smoke in the exhaust of an operating diesel engine can be caused by _____.	an overheated engine	<b>a scored cylinder liner</b>	water leaking into a cylinder	low combustion temperature

ID #	Question	Choice A	Choice B	Choice C	Choice D
170	Bottom blow valves are installed on auxiliary water-tube boilers to _____.	<b>remove suspended and precipitated solids from the boiler water</b>	completely drain the boiler in an emergency situation	prevent hardened scale deposits in the water drum	remove floating impurities from the boiler water surface
171	Bottom blow valves are installed on auxiliary water-tube boilers to _____.	completely drain the boiler in an emergency	prevent sludge from forming in the steam drum	remove floating impurities from the boiler water surface	<b>remove settled solids from the water drum</b>
172	Bouncing of the valve gear in a diesel engine can be caused by _____.	prolonged high speed operation	<b>spring surge</b>	worn valve seats	excessively tightened spring retainers
173	Broken intake valve springs on one cylinder of a diesel engine can cause the engine to _____.	overspeed	<b>fire improperly</b>	lose oil pressure	overheat rapidly
174	Burner ignition failure in an automatically fired auxiliary boiler would be caused by _____.	<b>a burned out solenoid in the oil supply valve</b>	high temperature excess air	incorrectly setting the hot well dump valve	an incorrectly positioned burner snubber relay
175	By comparing the exhaust gas temperature of each cylinder, the operator can determine if the load is balanced throughout the engine. The device most commonly used is a _____.	tachometer	<b>pyrometer</b>	dynamometer	calorimeter
176	Casing drains may be required on a waste heat boiler gas passage side to _____.	prevent an accumulation of boiler water entering gas passages as a result of a pinhole tube leak	as a means to sample stack gases for testing	release excess pressure	<b>drain off condensation</b>
177	Changing the position of the fulcrum in the compensating system of the governor shown in the illustration will _____.	force the thrust bearing down on the flyweight toes	change the speed of the rotating bushing	<b>change the amount of stroke available to the actuating compensating piston</b>	change the stroke of the load limit shutdown lever
178	Clearance volume scavenging in a turbocharged, four-stroke/cycle diesel engine is accomplished _____.	<b>during the valve overlap period</b>	with only the exhaust valve open	at a pressure below atmospheric	without cooling the cylinders or pistons
179	Clogged or partially obstructed exhaust ports on a diesel engine can cause _____.	overspeeding of the engine	failure of the engine to shut down	no effect of engine performance	<b>high exhaust temperatures</b>
180	Clutching takes place nearest the bearing shown in the illustration, located at #____.	<b>1</b>	2	3	4
181	Coast Guard Regulation (46 CFR) requires that after undergoing extensive repairs, an auxiliary boiler, with a maximum allowable working pressure of 60 psig (411.89 kPa), should be hydrostatically tested at a pressure of _____.	75 psig (514.86 kPa)	80 psig (549.18 kPa)	<b>90 psig (617.83 kPa)</b>	120 psig (823.77 kPa)

ID #	Question	Choice A	Choice B	Choice C	Choice D
182	Coast Guard Regulations (46 CFR) permit drain valves in the machinery space for removing water and impurities from diesel engine fuel systems. Those valves must be _____.	ball-check valves to prevent leakage	automatically closed by a solenoid	connected through the tank top	<b>fitted with caps or plugs to prevent leakage</b>
183	Coast Guard Regulations (46 CFR) permit the use of drain valves for removing water or impurities from diesel engine fuel systems. These valves must be _____.	self-closing gate valves	operated electrically	connected through the tank top	<b>located in the machinery space</b>
184	Coast Guard Regulations (46 CFR) permit the use of which of the following fuel oil ignition methods on automatic auxiliary boilers?	Incandescent glow plug	Friction igniter	<b>Light oil pilot</b>	Gas pilot light
185	Coast Guard Regulations (46 CFR) permit tubular type water gage glasses on auxiliary boilers, provided the maximum allowable working pressure does not exceed _____.	600 psi	450 psi	<b>250 psi</b>	125 psi
186	Coast Guard regulations (46 CFR) require a horizontal dry exhaust pipe from a diesel engine must _____.	<b>terminate above the deepest load waterline</b>	be equipped with a water-cooled muffler	have adequate insulation in any berthing space	not penetrate the engine room casing
187	Coast Guard Regulations (46 CFR) require a horizontal dry exhaust pipe from a diesel engine must _____.	be equipped with a water cooled muffler	<b>be arranged to prevent entry of boarding seas</b>	have adequate insulation in any berthing space	not penetrate the engine room casing
188	Coast Guard Regulations (46 CFR) require a horizontal dry exhaust pipe from a diesel engine to _____.	be equipped with a water-cooled muffler	have adequate insulation in any berthing space	<b>terminate above the deepest load waterline</b>	not penetrate the engine room casing
189	Coast Guard Regulations (46 CFR) require all automatically fired low pressure heating boilers to have an automatic _____.	<b>fuel cutoff as a result of low water</b>	pressure-control regulator	feed water control valve	superheat control system
190	Coast Guard Regulations (46 CFR) require electric hot water supply boilers to be provided with a/an _____.	audible high water level alarm	<b>temperature limiting device</b>	pressure relief valve set at 212°F	automatic reset pressure limiter
191	Coast Guard Regulations (46 CFR) require electric hot water supply boilers to be provided with a/an _____.	audible high water level alarm	temperature limiting device set at 212°F	<b>pressure relief valve set at the MAWP</b>	automatic reset pressure limiter
192	Coast Guard Regulations (46 CFR) require emergency diesel generator sets, with forced lubrication systems, to be provided with a _____.	low lube oil level alarm system	<b>low lube oil pressure alarm system</b>	low lube oil level cutoff system	high cooling water temperature cutout system
193	Coast Guard Regulations (46 CFR) require steel tubing connections and fittings used with diesel fuel oil systems, to be either flared or _____.	<b>of the flareless nonbite type</b>	silver soldered	have welded flanges	have seal-welded threads



ID #	Question	Choice A	Choice B	Choice C	Choice D
194	Coast Guard Regulations (46 CFR) require that small automatic auxiliary boilers shall be equipped with a prepurge programming control that will assure at least _____.	2 air changes	3 air changes	<b>4 air changes</b>	5 air changes
195	Coast Guard Regulations (46 CFR) require that the flame safeguard control system for an automatic boiler, should _____.	be designed to automatically relight the boiler fires after a low water shutdown	incorporate an open bimetallic helix pyrostat stack switch	<b>be capable of closing the fuel valves in not more than 4 seconds after a flame failure</b>	provide a trial for ignition period of not more than 90 seconds
196	Coast Guard Regulations (46 CFR) require the "trial for ignition period" on boilers must not exceed _____.	<b>15 seconds</b>	30 seconds	60 seconds	90 seconds
197	Coast Guard Regulations (46 CFR) require the controls for automatically fired auxiliary boilers, must be fitted with visible indicators to signal _____.	<b>fuel oil shutoff due to flameout</b>	low voltage in the flame scanner circuit	high boiler water level	high steam pressure
198	Coast Guard Regulations (46 CFR) require the programming control sequence for auxiliary boiler operation to include _____.	prepurge period for one complete change of air	ignition period to ignite the fuel 4 seconds after fuel delivery	<b>not to automatically increase the air flow after a safety trip</b>	all of the above
199	Coast Guard Regulations (46 CFR) specify that the fuel oil ignition system, on a small automatically fired auxiliary boiler, shall be energized _____.	<b>only before, or simultaneously with, the opening of the fuel oil valve</b>	after the fuel oil valve opens	after a prepurge of not less than 10 seconds	before the trial for ignition period
200	Coast Guard Regulations (46 CFR) state that emergency diesel generator starting systems must have sufficient capacity to provide at least _____.	3 continuous starting sequences	<b>6 consecutive cranking cycles</b>	9 repeated starts under load	12 cranking periods of 5 seconds each
201	Coast Guard Regulations regarding diesel fuel oil systems, valves for removing water or impurities are _____.	<b>permitted, provided they are fitted with caps or plugs</b>	required, if there are no separators installed on board	not required, provided there is a high and low tank suction	strictly prohibited
202	Cold weather starting of a diesel engine may be made easier by _____.	decreasing the compression ratio	using a special fuel having a high ignition temperature	increasing the starting air supply	<b>heating the jacket water</b>
203	Collapsed hydraulic valve lifters in a diesel engine will result in _____.	excessive rocker arm movement	little or no valve clearance	<b>excessive valve clearance</b>	collapsed or stacked valve springs
204	Compared to a naturally aspirated diesel engine, a supercharged diesel engine has _____.	<b>a cylinder air charge of higher pressure</b>	reduced cylinder mean effective pressure	less valve overlap	reduced blow-by
205	Comparing the exhaust gas output of each cylinder of a diesel engine is one method of determining if the engine load is balanced. This can be determined by the use of a _____.	tachometer	calorimeter	pedometer	<b>pyrometer</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
206	Compensating needle valve adjustments to a hydraulic governor should be made with the engine _____.	<b>running at normal operating temperature without load</b>	running at half speed and at normal temperature	running at maximum power and load under normal conditions	developing maximum power at normal load
207	Concerning diesel propelled vessels, the astern power is to provide for continuous operation astern _____.	equal to that available for ahead operation	<b>at 70 percent of the ahead rpm at rated speed</b>	while underway and under all normal conditions	at 70 percent of the ahead rpm of average continuous sea speed
208	Constant capacity pressure atomizing fuel oil burners installed on automatically fired auxiliary boilers, respond to variations in load demand by _____.	automatically increasing the fuel/air ratio	<b>automatically cycling the burner on and off</b>	responding to the boiler high and low water level limit switches	regulating the fuel oil service pump discharge pressure
209	Constant capacity, pressure atomizing, fuel burners designed to meet a wide variation in steaming loads on an auxiliary boiler, are _____.	automatically supplied with warmer air on demand	automatically supplied with more fuel on demand	equipped with standard variable capacity atomizers	<b>cycled on and off in response to steam demand</b>
210	Control of the fuel oil metering valve in an automatically fired auxiliary boiler is accomplished by a _____.	pressure magnifying device in the steam coil outlet	<b>steam pressure sensing device with linkage to the damper air vanes</b>	metering device in the air supply line	signal from the feed water electrode
211	Control of the main propulsion diesel engines can be shifted from the engine room to the wheelhouse from the _____.	wheelhouse control station	<b>engine room control station</b>	captain's office	chief engineer's office
212	Cooling the intake air supplied to a diesel engine will _____.	reduce mean effective pressure	decrease average compression ratio	decrease air charge density	<b>increase peak power output</b>
213	Corrosion and grooving on the blading of an exhaust driven turbocharger is caused by certain components of residual fuel oils. These components are vanadium, sodium, and _____.	copper	carbon	hydrogen	<b>sulfur</b>
214	Crankcase explosion relief valves should be of the _____.	<b>return seating type</b>	spring centered type	spring opened type	duplex double acting type
215	Cylinder scavenging in a turbocharged, four-stroke/cycle, single acting, diesel engine is accomplished _____.	without cooling the pistons or cylinders	at a pressure below atmospheric	<b>during the valve overlap period</b>	with only the exhaust valve open
216	Cylinders diameters greater than 230 mm require additional safety devices when the scavenging spaces are openly connected to the cylinders. Which of the following devices will be used to protect such spaces?	Tri-knock fittings	<b>Explosion relief valves</b>	Quick release expansion joints	Stacked plate type inlet check valves
217	Decreasing the exhaust valve clearance of a diesel engine will cause the exhaust valve to open _____.	earlier and have less lift	<b>earlier and remain open longer</b>	later and have greater lift	later and have less duration

ID #	Question	Choice A	Choice B	Choice C	Choice D
218	Diesel engine automated control systems may utilize sensing devices of dual function, with sensing ranges providing both alarm and engine shut down capability. Which of the key points listed would only require an alarm sensor?	Lube oil pressure and temperature	Jacket water pressure and temperature	Engine overspeed	<b>Lube oil sump level</b>
219	Diesel engine control can be obtained by the bridge _____.	at any time	<b>only after the engine room control station is switched to 'bridge control'</b>	whenever the secondary station is switched to 'bridge control'	with the approval of the chief engineer only
220	Diesel engine exhaust gas temperatures can be used to determine individual cylinder _____.	<b>performance</b>	horsepower output	fuel consumption	scavenge effect
221	Diesel engine exhaust noise can be reduced in an exhaust muffler by _____.	<b>changing the direction of exhaust gas flow</b>	increasing the exhaust gas velocity	changing the exhaust gas weight	increasing the exhaust gas static pressure
222	Diesel engine exhaust temperatures may be used to indicate _____.	leaking exhaust valves	an overloaded cylinder	a clogged injector nozzle	<b>all of the above</b>
223	Diesel engine exhaust valve springs are under compression when the valves are _____.	wide open only	partially open only	closed only	<b>in any position</b>
224	Diesel engine mufflers accomplish noise reduction by _____.	<b>reducing exhaust gas velocity</b>	increasing the frequency of gas vibration	the use of long head pipes	the use of zinc electrodes
225	Diesel engine mufflers or silencers reduce the engine exhaust noise by _____.	passing the exhaust through long head pipes	diffusing exhaust vibrations through activated carbon baffles	increasing the exhaust gas velocity	<b>reducing the exhaust gas velocity</b>
226	Diesel engine mufflers reduce noise by _____.	packing muffler chambers	the use of long head pipes	the use of zinc electrodes	<b>changing exhaust gas direction</b>
227	Diesel engine operating conditions are indicated by the color of the exhaust smoke. Blue smoke can indicate _____.	low compression pressure and high exhaust temperature	an overloaded engine	<b>clogged drain holes in the oil control rings</b>	complete combustion
228	Diesel engines driving alternators operating in parallel must maintain a set frequency regardless of load changes. The governor characteristic used to accomplish this is known as _____.	actuation	sensitivity	<b>compensation</b>	promptness
229	Direct reversible main propulsion diesel engines would normally be fitted with a/an _____.	constant speed governor	<b>variable speed governor</b>	isochronous hunting governor	nutating disk governor
230	Downcomers installed on auxiliary package boilers are protected from direct contact with hot gases by _____.	<b>refractory and insulation</b>	several rows of screen tubes	steel baffles	water wall tubes

ID #	Question	Choice A	Choice B	Choice C	Choice D
231	During a routine round of a diesel engine generator, you observe a low oil level in the governor sump. If there is no visible sign of external leakage, you should suspect the cause to be a/an _____.	<b>leakage through the governor drive shaft oil seal</b>	leakage through the power piston oil seal	uncovered sight glass ventilation orifice	defect in the sight glass gasket
232	During diesel engine warm-up, which type of valve lash adjuster automatically compensates for the thermal expansion of the exhaust valve stem?	Mechanical	<b>Hydraulic</b>	Pneumatic	Electrical
233	During diesel engine warm-up, which type of valve lash adjuster compensates for the change in length of the exhaust valve stem?	Mechanical	<b>Hydraulic</b>	Pneumatic	Electrical
234	During maintenance inspections of a fire tube auxiliary boiler, you should check for _____.	metal deterioration of the tubes at the tube sheet	burning of tube ends	fireside corrosion	<b>all of the above</b>
235	During the process of cylinder scavenging, the size of the exhaust valve opening is _____.	most critical in a four-stroke/cycle diesel engine	<b>most critical in a two-stroke/cycle diesel engine</b>	most critical in a four-stroke/cycle diesel engine if it is turbocharged	of equal importance in a two-stroke/cycle diesel engine as in a four-stroke/cycle diesel engine
236	During the valve overlap period, the exhaust pressure of a turbocharged, four-stroke/cycle diesel engine must be less than the intake manifold pressure to ensure _____.	<b>effective cylinder scavenging and cooling</b>	constant pressure from the turbochargers	cooler operation of the exhaust system	effective constant pressure for turbocharger operation
237	During unsafe firing conditions in a large automatic auxiliary boiler, various control actuators are interlocked with the burner circuit to prevent start-up, in addition to safety shutdown. These controls are referred to as _____.	<b>limit controls</b>	flame safeguard controls	combustion controls	programming controls
238	Each receiver in a starting air system which can be isolated from a relief valve _____.	<b>is to be provided with a suitable fusible plug to relieve the pressure in case of fire</b>	will incorporate the use of an automatic unloading device	will not be approved for classification purposes	and satisfy U.S.C.G. regulations shall be approved
239	Effective hydraulic coupling operation depends upon a certain amount of _____.	<b>slip</b>	mechanical friction	fluid overheating	torsional vibration
240	Effective operation of a hydraulic coupling depends upon a specified amount of _____.	<b>slip</b>	mechanical friction	fluid overheating	torsional vibration
241	Engine operating conditions may be indicated by the color of the exhaust smoke. Black smoke could indicate _____.	an insufficient speed droop setting	<b>an overloaded engine</b>	clogged drain holes in the oil control rings	complete combustion

ID #	Question	Choice A	Choice B	Choice C	Choice D
242	Engines having a bore exceeding 250 mm, but not exceeding 300 mm are to have at least _____.	three compression rings per piston and the minimum of two oil scraper rings	one intake and one exhaust valve per cylinder provided no other means of scavenging is used	<b>one explosion relief valve in way of each alternate crank throw, with a minimum of two valves</b>	one crankshaft except in cases where an opposed piston design is required
243	Excessive alkalinity of the water in an auxiliary boiler can cause _____.	<b>caustic embrittlement of the boiler metal</b>	acidic corrosion of the boiler metal	hard scale deposits on the boiler tubes	etching of the heat exchange surfaces
244	Excessive diesel engine back pressure may be an indication of _____.	<b>carbon buildup in the exhaust manifold</b>	overcooling of the exhaust manifold	eroded muffler baffle plates	high injection pressure
245	Excessive diesel engine cylinder exhaust back pressure will be caused by _____.	slight timing discrepancies	heavy fuel injection	<b>an obstruction in the exhaust silencer</b>	a fouled intake manifold
246	Excessive exhaust temperatures in a two-stroke/cycle diesel engine can be caused by a/an _____.	high injection pressure	high firing pressure	overheated air starting line	<b>carbon build up in the exhaust ports</b>
247	Excessive mechanical and pulsating vibrations developed in a main propulsion diesel engine may be more likely to cause damage to an attached _____.	scavenged air pump because it is designed for steady state operation rather than pulsating gas load	reciprocating scavenge pump because of its direct linkage to the crankshaft	centrifugal cooling water pump because of the close tolerances required between the impeller rim and the volute	<b>gas driven turbocharger because it has a wide speed range, high operating temperatures and close tolerances.</b>
248	Excessive return oil pressure from a variable capacity return flow fuel oil burner system on an automatic auxiliary boiler, will cause _____.	flame failure	<b>burner smoking</b>	ignition failure	burner failure
249	Excessive valve clearance will cause a valve to open _____.	early and close early	early and close late	<b>late and close early</b>	late and close late
250	Excessive valve lash in an auxiliary diesel engine will cause the valves to open _____.	<b>later and close sooner</b>	sooner and close later	sooner and close sooner	later and close later
251	Excessive vibration from an auxiliary boiler could be caused by _____.	combustion pulses	insufficient air to the burner	loose hold-down bolts	<b>all of the above</b>
252	Excessive vibration in an operating diesel generator may be caused by _____.	electrical overload	surging at governed RPM	<b>loose engine mounting bolts</b>	coolant leaking into the cylinder
253	Excessive vibration of an automatically fired auxiliary boiler can be caused by _____.	air or water in the furnace	<b>combustion pulses</b>	fuel oil pump failure	flame failure
254	Excessive wear at part #11, shown in the illustration would result in _____.	improper timing	<b>increased oil consumption</b>	lost compression	low oil pressure
255	Excessively worn, or polished ends on a diesel engine valve spring, indicate _____.	burned exhaust valves	excessive spring compression	<b>spring surge</b>	worn valve seats

ID #	Question	Choice A	Choice B	Choice C	Choice D
256	Exhaust gas pyrometers are useful for _____.	<b>detecting faulty combustion in individual cylinders</b>	calculating engine cylinder torque	adjusting the load limit setting of the governor at idle conditions	calculating total engine output horsepower
257	Exhaust gases are generally removed from the cylinders of a two-stroke/cycle diesel engine by _____.	natural aspiration	masked intake valves	air cells	<b>scavenging air</b>
258	Exhaust gases are generally removed from the cylinders of a two-stroke/cycle diesel engine by _____.	natural aspiration	masked intake valves	air cells	<b>scavenging air pressure</b>
259	Exhaust gases in a two-stroke/cycle diesel engine are discharged through _____.	the air valves	a roots-type blower	<b>exhaust ports or valves</b>	the after cooler and directed to the stack
260	Exhaust pipes for separate main propulsion diesel engines can be combined only when _____.	space limitations prevent separately run pipes	the engines are small auxiliary units	<b>they are arranged to prevent gas backflow to each engine</b>	a waste heat boiler is installed
261	Exhaust pipes of multiple engine installations are not to be interconnected, but are to be run separately to the atmosphere _____.	<b>unless arranged to prevent the return of gases to an idle engine</b>	to a point not lower than the highest load line	at a location segregated from other ventilation systems	and shall be protected by a rain guard or similar device
262	Exhaust pyrometer readings provide an indication of the _____.	effectiveness of water-cooled exhaust elbows	<b>distribution of the load between engine cylinders</b>	amount of fuel penetration into the engine cylinders	indicated horsepower of the engine cylinders
263	Exhaust valve openings in a two-cycle diesel engine cylinder head are made as large as practical to _____.	increase back pressure during the exhaust process	facilitate periodic replacement of the valves	<b>reduce the pumping loss associated with scavenging</b>	reduce tension on valve springs
264	Exhaust valve timing for the engine, shown in the illustration, is to be set at 106° after top dead center. To what position should the flywheel be rotated to set the exhaust valve timing on the #11 cylinder?	<b>61°</b>	209°	315°	360°
265	Explosion relief valves on diesel engine crankcases should relieve the pressure at not more than _____.	0.1 bar	<b>0.2 bar</b>	1.0 bar	2.0 bar
266	Failure of the burner flame in an automatic auxiliary boiler would probably be a result of _____.	<b>water in the fuel oil</b>	broken high tension leads	incorrect electrode setting	full fuel pressure at the nozzle
267	Failure of the feed pump to deliver feed water to an auxiliary boiler could be caused by _____.	a low pump suction lift	abnormally low water temperature	<b>grounded probes in the water level control</b>	a high pump suction head
268	Failure of the speeder spring in a mechanical governor will _____.	result in an increase in engine speed	<b>result in a decrease in engine speed</b>	not affect the engine speed	cause the governor to hunt
269	Fins are installed on the fireside of the water-tubes used in waste heat boilers to _____.	decrease the velocity of gases flowing past the tubes	<b>increase the rate of heat transfer</b>	reduce accumulations of carbon deposits	direct the flow of gases

ID #	Question	Choice A	Choice B	Choice C	Choice D
270	Fins are installed on the fireside of the water-tubes, used in waste heat boilers, to _____.	decrease the velocity of gases flowing past the tubes	reduce the accumulation of soot deposits on the tubes	create turbulence	<b>increase the heat transfer surface area</b>
271	Fins are installed on the generating tube surfaces in waste heat boilers to _____.	prevent soot fires in the exhaust system	prevent exhaust gas erosion of the tubes	increase the velocity of exhaust gas flow	<b>increase the rate of heat transfer</b>
272	Flame failure in an automatically fired auxiliary boiler can result from a/an _____.	incorrect electrode setting	incorrect nozzle position	<b>clogged fuel nozzle</b>	broken high tension lead
273	Flame failure in an operating automatically fired auxiliary boiler can result from a _____.	broken electrode insulator	faulty steam pressure signal to the trial for ignition circuit	broken 2000 volt supply lead	<b>clogged fuel nozzle</b>
274	Fluid forces that are generated inside the coupling shown in the illustration, tend to separate the runner and impeller during operation when the _____.	ring valves are in the open position	fluid is entrained with air	fluid viscosity decreases	<b>coupling is filled with fluid</b>
275	Following the failure of one turbocharger on a large, crosshead, main propulsion diesel engine, fitted with multiple turbochargers, which of the following actions should be taken prior to further operation of the engine?	Blank off the exhaust gas inlet to the damaged turbocharger.	Secure cooling and lubrication to the damaged turbocharger.	Lock the rotor of the damaged turbocharger.	<b>All of the above.</b>
276	For a diesel engine, individual cylinder performance is commonly determined by exhaust gas _____.	chemical analysis	back pressure readings	<b>pyrometer readings</b>	infrared analysis
277	For proper operation, auxiliary boiler feed water must have which of the following characteristics?	High oxygen concentration	Low pH	<b>Proper alkalinity</b>	All of the above
278	Forcing the exhaust gases from the cylinder of an operating two cycle diesel engine with the aid of a blower is known as _____.	<b>scavenging</b>	forced draft	turbocharging	aspiration
279	Friction developing between the moving parts of a governor, governor linkage and control valve will cause the governor to _____.	react with insufficient speed droop	<b>fail to react to small speed changes</b>	have excessive sensitivity to small speed changes	remain in the neutral position
280	From the engine data given in the illustration, what is the full load air manifold pressure?	7.66 psi	<b>15.22 psi</b>	45.70 psi	50.00 psi
281	Fuel oil transfer systems used onboard diesel propelled vessels are required to have _____.	<b>two fuel oil transfer pumps provided where one is to be independent of the main engine</b>	two fuel oil transfer pumps, with a combined capacity exceeding the maximum consumption of the main engine	engine driven transfer pumps and only used in constant speed applications	the capacity of the engine driven pump exceed the consumption rate of the engine to which it is attached
282	Fusible plugs are installed in fire-tube boilers to _____.	provide a means of draining the boiler	<b>warn the engineer of low water level</b>	cool the crown sheet at high firing rates	open the burners' electrical firing circuits

ID #	Question	Choice A	Choice B	Choice C	Choice D
283	Gear "D" hobbled with 42 teeth and rotates at a speed of 700 RPM. If gears "A", "B", and "C" have 42, 60, and 32 teeth respectively, the RPM of "A" in the gear train illustration is _____.	<b>373.33 RPM</b>	199.11 RPM	512.20 RPM	145.69 RPM
284	Gear-type flexible couplings are often used in diesel engine drive trains because they _____.	require no lubrication under normal operating conditions	compensate for gross misalignment in the drive train	<b>are able to transmit high torque, even where slight misalignment exists</b>	will rapidly disconnect the engine from the line shaft
285	Generating tubes in waste heat boilers are finned to _____.	reduce gas flow turbulence	prevent exhaust gas corrosion	increase the rate of combustion	<b>increase the rate of heat transfer</b>
286	Governor hunting is caused by _____.	governor under-control	excessive speed droop	insufficient speed droop	<b>governor over-control</b>
287	Governors used on diesel engines to limit the load must be equipped with _____.	a fixed maximum fuel stop	<b>a variable maximum fuel stop</b>	pivotless centrifugal fly balls	a proportional action compensation mechanism
288	Grey smoke exhausting from a running diesel engine can be caused by _____.	<b>late ignition</b>	water in the fuel	high compression temperature	starting valve stuck open
289	Heavy fuel oils generally have an upper average ash content of 0.1% by weight. Which of the following conditions could be expected if the ash content increases above this amount?	Glazing of the cylinder liners	<b>Increased exhaust valve wear</b>	Excessive bearing wear	Increased MEP
290	Heavy soot accumulations in an auxiliary boiler could be caused by _____.	water in the fuel oil	excessive cycling	high fuel oil pressure	<b>improper burner maintenance</b>
291	Helical reduction gears, as used with main propulsion drive trains, are constructed so that several teeth are meshed at the same time to _____.	eliminate propeller shaft end thrust	translate heavy load into high speed output	<b>provide smooth continuous power transmission</b>	allow construction with fewer gear teeth
292	High exhaust back pressure will result in an increase in _____.	turbocharger efficiency	engine power output	<b>carbon deposits on fuel injectors</b>	cylinder scavenging
293	High exhaust temperature and black smoke exhausting from an auxiliary diesel engine can be caused by _____.	<b>engine overload</b>	low combustion temperature	plugged fuel nozzle holes	excessive compression pressure
294	High exhaust temperatures from all of the cylinders of a turbocharged, four-stroke/cycle diesel engine can be caused by an _____.	<b>inoperative turbocharger</b>	inadequate fuel supply	overload on one cylinder	unequal load distribution
295	High firing pressures and a low exhaust temperature in a diesel engine may result from _____.	early exhaust valve opening	increased exhaust system back pressure	<b>early fuel injection timing</b>	low scavenge air temperature
296	High firing pressures and a low exhaust temperature in a diesel engine may result from _____.	early exhaust valve opening	increased exhaust system back pressure	excessive cylinder air turbulence	<b>early fuel injection timing</b>



ID #	Question	Choice A	Choice B	Choice C	Choice D
297	High stack temperature occurring in an auxiliary boiler could be a result of _____.	insufficient air for combustion	complete combustion in the furnace	<b>secondary combustion in the uptake</b>	high fuel oil temperature
298	Higher than normal temperature air passing through the intake of a diesel engine will result in _____.	greater overall efficiency	greater fuel economy	<b>lower peak horsepower</b>	lower compression ratio
299	How are hydraulic valve lash adjusters on diesel engine rocker arm assemblies lubricated?	Cup-fed grease	Sealed self-lubricators	Metered hydraulic oil supply	<b>Forced lube oil supply</b>
300	How is the concentration of dissolved oxygen in the feed water of an auxiliary boiler maintained at acceptable limits?	Feed water is cycled through a DC heater.	Feed water is treated with phosphates.	Oxygen is liberated in the three-stages of feed water preheating.	<b>Oxygen is liberated by maintaining the highest practical feed water temperature.</b>
301	How is the diesel engine operating RPM affected when a 'ZERO DROOP' setting is selected on the governor?	The RPM will drop to low idle when load is applied.	The RPM must be manually controlled by the load limit knob.	The governor has no control over RPM in this mode.	<b>The RPM will remain the same with or without load.</b>
302	How many crankcase relief valves are required for a 13 inch bore, eight cylinder in-line engine?	2	4	6	<b>8</b>
303	Hydraulic couplings will transmit torque equal to the input torque by means of energy changes in a rotating vortex of liquid. For the vortices to form, there must be _____.	<b>slip between the impeller and runner</b>	less than 2 per cent slip between the impeller and runner	axial thrust generated by the runner pinion shaft	momentary torsional vibration transmitted by the driving impeller
304	If a clicking sound is being produced from within the valve compartment of a diesel engine, the cause may be _____.	a loose valve stem and guide	excessive valve clearances	a stuck valve	<b>all of the above</b>
305	If a diesel engine continues to run after attempting to shut it down, the probable cause is _____.	incandescent carbon particles	air remaining in the cylinders	<b>lube oil leakage into the air intake system</b>	a broken turbocharger valve
306	If a diesel engine starts firing, but is unable to come up to normal speed, the cause may be _____.	insufficient fuel supply	faulty governor	high exhaust back pressure	<b>all of the above</b>
307	If a diesel engine's exhaust temperature is abnormally high, the cause could be _____.	too light of a load	injection timing is too early	<b>overloading of the engine</b>	too low of a compression ratio
308	If a higher than normal water level is observed through the inspection port of a low pressure distilling plant, you should suspect _____.	a leak in the feed water heater	improper vacuum	<b>a malfunctioning brine pump</b>	a clogged desuperheater water strainer
309	If a hydraulic governor has been refilled with oil, the engine should be operated until it reaches normal temperature, then the air should be purged, and the _____.	rack position should be adjusted	compensating needle valve should be opened fully	<b>compensating needle valve should be adjusted to stabilize operation</b>	speed limiting device should be adjusted

ID #	Question	Choice A	Choice B	Choice C	Choice D
310	If a main propulsion diesel engine hunts excessively at idle speed, you should _____.	adjust the idle speed control	drain and flush the governor and replace the oil	<b>adjust the compensating needle valve</b>	adjust the load limit
311	If a tube ruptures in a water-tube auxiliary boiler due to low water, you should _____.	secure the fires and maintain feed water to boiler to keep up the water level	not secure the fires until water level falls out of sight in the gage glass	<b>secure both the fires and the feed inlet valve</b>	secure the fires when the pressure drops to 50% of the maximum allowable working pressure
312	If a two-stroke/cycle diesel engine is overspeeding due to leakage of lube oil into the cylinders, what should you do to stop the engine?	Move the fuel control mechanism to the no fuel position.	Block the fuel supply by closing the master fuel valve.	<b>Shut off the fuel supply and block the flow of intake air.</b>	Relieve all pressure in the fuel system.
313	If a valve seat insert, similar to that shown in the illustration is cracked, this may be indicated by _____.	<b>white vapor in the exhaust gas</b>	high exhaust pyrometer readings on that particular cylinder	continuous spring surge	a jammed indicator cock
314	If an engine operates at 900 RPM at no load, and at 870 RPM at full load, the speed droop is _____.	3.1%	<b>3.4%</b>	3.7%	4.0%
315	If an operating auxiliary boiler has a water pH reading of 7, you should _____.	bottom blow the boiler	<b>treat the water with caustic soda</b>	treat the water with chemical scavengers	reduce the water alkalinity to recommended readings
316	If carbon accumulates on a pyrometer thermocouple, it will cause _____.	the pyrometer to overheat and burn	<b>the pyrometer to read low</b>	the exhaust passage to become clogged	failure of the hot junction
317	If control air systems are supplied from starting air receivers, the capacity of the receivers should be sufficient _____.	to provide for intermittent starting procedures	<b>for continued operation of these systems after capacity for the required number of consecutive starts has been used</b>	to provide a nonreversible engine a minimum of twelve consecutive starts	to enable six consecutive starts of a reversible engine
318	If cooling water flow through the after cooler is interrupted, the power output of a turbocharged diesel engine will drop because the _____.	turbocharger will stall	<b>density of the air charge will decrease</b>	scavenge effect will increase	exhaust pressure will increase
319	If governor Item #10 in the illustration were to break on a main propulsion diesel engine operating under full load, the engine RPM will _____.	remain the same until the over speed trip actuated	<b>decrease to a slightly lower value</b>	hunt until stabilized by droop rod	increase until the overspeed trip actuated
320	If governor Item #19 in the illustration were to break on a main propulsion diesel engine operating under full load, the engine RPM will _____.	increase until the overspeed trip actuated	hunt until stabilized by droop rod	<b>decrease to a slightly lower value</b>	remain the same until manually changed

ID #	Question	Choice A	Choice B	Choice C	Choice D
321	If governor Item #19 were to break on a main propulsion diesel engine operating under full load, the engine RPM will _____.	remain the same until manually changed	<b>decrease to a slightly lower value</b>	hunt until stabilized by the droop rod	increase until the overspeed trip actuates
322	If oil is dripping from the burner of a coil-type auxiliary steam generator, the cause may be _____.	the oil valve not seating properly	a loose burner nozzle	carbon on the burner nozzle causing deflection of oil spray	<b>all of the above</b>
323	If over a period of weeks the air-box pressure of a turbocharged, diesel engine, operating at full load, appears to be dropping off, the cause can be _____.	open air-box drains	loss of cooling water to the diffuser	<b>gradual fouling of the air filters</b>	improperly timed exhaust valves
324	If poor combustion occurs in an auxiliary boiler due to an air damper linkage being out of adjustment, you would adjust the linkage and then _____.	reset the pressure limit controls	test the high and low fire solenoids	<b>check the photocell window for carbon deposits</b>	check the burner ignition electrode gap
325	If the a main propulsion diesel engine governor works irregularly with a jerking motion, a possible cause can be _____.	<b>a sticking fuel control linkage</b>	a malfunctioning overload cam	an unlocked overspeed trip	floating valves
326	If the auxiliary diesel engine will not shut down, the trouble could be _____.	high lube oil pressure	high firing pressure	<b>lube oil leakage into the blower</b>	high fuel oil pressure
327	If the chemical analysis of a lube oil sample taken from a diesel engine indicates an increased neutralization number the _____.	<b>acidity has increased</b>	viscosity has decreased	demulsibility has improved	foaming is guaranteed to occur
328	If the combustion control system of an automatically fired auxiliary boiler fails to relight the burner after a normal shutdown, you should check for a/an _____.	low steam pressure	high voltage on the ignition electrode	open air damper	<b>faulty photocell detector</b>
329	If the combustion control system of an automatically fired auxiliary boiler fails to restart from the normal shutdown mode, you should check for _____.	broken or grounded high tension leads	a faulty ignition cable connector	an incorrect electrode setting	<b>all of the above</b>
330	If the combustion control system of an automatically fired auxiliary boiler fails to sustain burner ignition after a normal shutdown, you should check for a/an _____.	<b>faulty photocell detector</b>	low steam pressure	high voltage on the ignition electrode	open air damper
331	If the compensating needle valve of a hydraulic governor is opened more than necessary the governor will _____.	have a larger than normal dead band	<b>produce excessive speed response to a load change</b>	respond slowly to any change in engine load	stabilize engine speed at the new governor setting
332	If the feed pump for an auxiliary boiler fails to deliver the feed water to the boiler, the cause may be _____.	high steam pressure in the boiler	<b>abnormally high feed water temperature</b>	abnormally high boiler water temperature	steam demand exceeding feed pump capacity
333	If the fire goes out in an automatically fired auxiliary boiler and the burner continues to supply fuel, there is a potential danger of _____.	overpressure and dry firing	<b>a severe furnace explosion</b>	spalling damage to the brickwork	heat damage to the atomizer

ID #	Question	Choice A	Choice B	Choice C	Choice D
334	If the flame of an automatically fired auxiliary boiler tends to move away from the burner tip when the firing rate is changed from low to high, you should _____.	decrease the fuel pressure	<b>adjust damper linkage to slow the opening rate of the dampers</b>	adjust damper linkage to lengthen the purge period	adjust the photocell to observe the new flame position
335	If the fuel/air ratio in an automatically fired auxiliary boiler is insufficient, the result could lead to _____.	inefficient combustion	dark smoke	automatic shutdown	<b>all of the above</b>
336	If the input signal rises above the set point of '17A', shown in the illustration, but remains below the set point of '17B', the output from '22A' will _____.	be the same as the set point of '17B'	<b>indicate a pressure on '67B' equal to the set point of '17A'</b>	indicate a pressure on '67A' equal to the input of '17A'	improve to a steady state when moisture is removed from the system
337	If the instrument sensing element, shown in the illustration, became coated with foreign matter, which of the listed conditions would be likely to occur?	Immediate damage to the porcelain insulator.	High temperatures developing in the exhaust.	Damage to the pyrometer.	<b>Inaccurate temperature readings.</b>
338	If the intake, or exhaust valve stem clearance is found to be excessive, in addition to too little movement of the rocker arms, you should check for _____.	<b>collapsed hydraulic valve lifters</b>	loose valve spring locks	worn valve seats	broken valve springs
339	If the load on a diesel engine equipped with an isochronous hydraulic governor is increased, after compensation is performed by the governor, the engine speed will _____.	<b>remain the same</b>	increase	decrease	fluctuate
340	If the operating speed of a diesel engine increases without an apparent change in the engine control settings, you may suspect a _____.	clogged intake air intercooler	control air leak	leaking air starting valve	<b>malfunctioning governor</b>
341	If the peak to peak pressure pulsation in the diesel engine fuel injection return piping exceeds 285 psi what special provision is to be provided?	<b>The piping shall be shielded and secured to prevent fuel or fuel mist from reaching a source of ignition on the engine or its surroundings.</b>	The piping shall be directed to the fuel oil day tank, in addition it shall enter below the normal operating level of the tank.	Most diesel injection systems do not develop high pressures in their return lines due to regulations prohibiting installation of valves in these lines.	Return piping is required to be protected by relief valves which relieve to the diesel oil settling tank.
342	If the rated distillate production of a submerged tube type evaporator cannot be maintained with the maximum jacket water flow rate, the evaporator _____.	chemical feed must be increased	has a serious brine leak	temperature switch is defective	<b>heating surfaces are scaled</b>
343	If the speed of a turbocharged diesel engine is maintained constant as the load on the engine is increased, the speed of the turbocharger will _____.	decrease until the engine speed increases	<b>increase</b>	decrease	remain unchanged

ID #	Question	Choice A	Choice B	Choice C	Choice D
344	If the speed of a turbocharged diesel engine is maintained constant the turbocharger speed will _____.	decrease until the engine speed increases	<b>increase as the load increases</b>	decrease as the load increases	remain unchanged as the load decreases
345	If the speeder spring of a main propulsion diesel engine governor breaks while operating at full load, the engine RPM will _____.	increase until the overspeed trip actuated	hunt until stabilized by the droop rod	<b>decrease to a slightly lower value</b>	remain the same until manually changed
346	If the turbocharger failed on an auxiliary four cycle diesel engine, which of the following conditions would probably occur?	Full power cannot be developed.	The exhaust will contain black smoke at full load.	Complete combustion will be impossible at full load.	<b>All of the above.</b>
347	If the turbocharger of a four-stroke/cycle diesel engine fails to operate properly, which of the following statements best describes the probable effect?	Intake manifold pressure will be high.	Intake manifold pressure will be unaffected.	<b>Exhaust temperatures will be high.</b>	Exhaust temperatures will be low.
348	If the valve lash on a diesel engine is set improperly, which of the following statements represents the most serious problem that can develop?	Too little lash will cause noisy operation and excessive wear.	Too much lash will cause the valve to open early and close late.	<b>Too little lash may prevent the valves from seating properly.</b>	Too much lash may prevent combustion through loss of compression.
349	If the valve tappets in a diesel engine are set at greater clearances than those specified by the engine manufacturer, those valves will _____.	<b>open late and close early</b>	open late and close late	fail to open when the engine is cold	fail to open at normal operating temperature
350	If there is a 'clicking' sound in the valve compartment of a diesel engine, the cause may be _____.	a worn wrist pin	<b>excessive valve lash</b>	worn connecting rod bearings	all of the above
351	If you hear a 'crackling' noise while standing watch in the engine room coming from a centrifugal pump within a general service system, the most probable cause of the problem would be _____.	insufficient speed	<b>cavitation</b>	excess discharge pressure	excessive net positive suction head
352	If you hear a 'crackling' sound while standing watch in the engine room coming from a centrifugal pump casing within a general service system, the most probable cause of the noise would be _____.	insufficient packing	an oversized lantern ring	<b>excessive suction lift</b>	reversed pump rotation
353	If you hear a 'crackling' sound while standing watch in the engine room occurring within a general service system centrifugal pump, the most probable location of the noise would be the _____.	shaft sleeves	shaft packing gland	wearing rings	<b>pump suction</b>
354	If you hear a 'crackling' sound while standing watch in the engine room occurring within a general service system centrifugal pump, the most probable location of the noise would be the _____.	shaft sleeves	discharge volutes	wearing rings	<b>pump suction</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
355	If you increase the clearance between a valve stem and rocker arm, which of the listed conditions will occur?	<b>Valve will open later.</b>	Valve will close later.	Amount of fuel injected will be increased.	Amount of fuel injected will be decreased.
356	If you observe smoke coming from the turbocharger of an auxiliary diesel engine, you should _____.	check the air filter for obstruction	check for an exhaust leak	check the exhaust temperature	<b>secure the engine</b>
357	If you were inspecting the valve springs on an auxiliary diesel engine, your best indication of impending spring failure would be _____.	a glazed surface on the spring	nicks in the protective coating	a buildup of sludge deposits	<b>cracks in the surface of the spring</b>
358	Ignition failure in an automatically controlled auxiliary boiler can be caused by _____.	<b>carbon deposits on the electrode</b>	excessive fuel oil temperature	excessive return oil pressure	brickwork failure
359	Ignition failure in an automatically controlled auxiliary boiler could be caused by _____.	<b>carbon deposits on the flame scanner</b>	high fuel oil temperature	low fuel oil viscosity	high steam pressure
360	Ignition failure in an auxiliary boiler can be caused by _____.	<b>carbon deposits on electrodes</b>	a jammed open oil solenoid	excess fuel pressure at the nozzle	an excessively long purge cycle
361	Improper maintenance of an automatic auxiliary boiler oil burner could result in _____.	fuel pump failure	fan motor failure	increased feed water consumption	<b>decreased boiler efficiency</b>
362	Improper maintenance of the fuel oil burners in an automatically fired auxiliary boiler, could result in _____.	<b>increased fuel consumption</b>	increased feed water consumption	fuel pump failure	combustion control system failure
363	In a coil-type auxiliary water-tube circulation boiler _____.	<b>unevaporated feed water collects in the bottom of the flash chamber</b>	all generated steam is recirculated through heating coils in the boiler	heated water flashes to steam in the boiler heating coils	response to steam demand is slower than in a fire-tube boiler
364	In a coil-type forced circulation auxiliary water-tube boiler _____.	steam is recirculated through heating coils in the boiler	<b>hot water flashes to steam in the flash chamber</b>	unevaporated feed water is lost through the atmospheric vent	response to steam demand is slower than in a fire-tube boiler
365	In a coil-type forced circulation auxiliary water-tube boiler, _____.	<b>steam demand response is comparatively rapid</b>	steam is recirculated through heating coils in the boiler	unevaporated feed water is discharged through the skim tube	steam demand response is slow
366	In a diesel engine exhaust system, the cooling of the exhaust gases below their dew point, will result in _____.	increased engine back pressure	<b>sulfuric acid corrosion</b>	surface pitting of the turbocharger compressor blades	moisture impingement on the turbocharger compressor blading
367	In a diesel engine, a leaking exhaust valve can cause _____.	<b>misfiring</b>	preignition	interrupted scavenging	reduced scavenging
368	In a diesel engine, exhaust valves open before the intake ports are uncovered to _____. I. reduce pumping losses II. reduce back pressure	I only	II only	<b>both I and II</b>	neither I nor II

ID #	Question	Choice A	Choice B	Choice C	Choice D
369	In a diesel engine, late fuel injection is indicated by black or gray exhaust smoke with _____.	<b>low firing pressure</b>	low exhaust temperature	mechanical knock in each cylinder	fuel knock in each cylinder
370	In a fire-tube auxiliary boiler, you should expect to find the thickest scale on the waterside of the _____.	<b>crown sheet</b>	through stays	hydrokineter	belly plug
371	In a forced circulation auxiliary boiler, steam is formed in the _____.	heating coils	<b>steam accumulator (flash chamber)</b>	hot well	thermostat tube
372	In a four-stroke/cycle diesel engine, badly worn intake valve guides can cause excessive _____.	exhaust pressure	exhaust temperatures	cooling water temperatures	<b>lube oil consumption</b>
373	In a four-stroke/cycle diesel engine, the intake valves open _____.	<b>before TDC and close after BDC</b>	after TDC and close after BDC	before TDC and close before BDC	after TDC and close before BDC
374	In a Kingsbury thrust bearing, the thrust shoes are _____.	<b>pivoted, and the thrust collar turns with the shaft</b>	turned by the shaft, and the thrust collar is stationary	lubricated by a ring oiler	hard chrome-faced to withstand wear
375	In a main propulsion turbocharged diesel engine, the speed of the turbocharger varies according to the _____.	governor droop	speeder spring tension	fuel rack lag	<b>load on the engine</b>
376	In a multi-cylinder, constant pressure, turbocharged diesel engine, the combined exhaust temperature at the turbocharger inlet reads higher than the individual cylinder exhausts. This means the _____.	combined exhaust pyrometer is defective	<b>combined exhaust pyrometer is reading normally</b>	turbine blades are coated with carbon	turbine is overheating
377	In a naturally aspirated diesel engine, the volume of air intake is directly affected by engine _____.	compression ratio	fuel pressure	<b>speed</b>	cylinder clearance volume
378	In a naturally aspirated diesel engine, the volume of air intake is directly associated with engine _____.	compression ratio	<b>displacement</b>	fuel pressure	cylinder clearance volume
379	In a naturally aspirated diesel engine, the volumetric efficiency of the intake air charge is mainly influenced by the _____.	compression ratio	<b>valve size</b>	fuel injection pressure	cylinder mean effective pressure
380	In a Roots-type rotary blower, the volume of air delivered is directly proportional to _____.	<b>engine speed</b>	engine load	brake horsepower	brake specific fuel consumption
381	In a simple hydraulic governor with speed droop, oil under pressure is maintained ready for use in the _____.	power piston	governor sump	<b>spring-loaded piston accumulator</b>	pressure pilot valve assembly
382	In a simple mechanical governor, the _____.	centrifugal force rotates the ball-head	<b>flyweight centrifugal force is balanced by spring force</b>	flyweight centrifugal force is balanced by hydraulic pressure	speeder spring alone actuates the fuel control rod

ID #	Question	Choice A	Choice B	Choice C	Choice D
383	In a turbocharged four-stroke/cycle diesel engine, the exhaust valve remains open until after top dead center and the intake valve opens before top dead center to _____.	<b>produce a scavenging effect in the combustion space</b>	equalize cylinder and exhaust manifold pressures	alleviate the difference in valve size between the intake and exhaust	flush out condensate that collects after each compression stroke
384	In a turbocharger, inlet air velocity is increased in the _____.	inlet nozzle ring	stationary diffuser passages	compressor outlet volute	<b>rotating impeller vanes</b>
385	In a two cycle diesel engine, a Roots type blower is usually _____.	<b>gear driven by the engine</b>	driven by an exhaust gas turbine	actuated by the intake valves	driven by separate motor
386	In a two-stroke/cycle diesel engine, the exhaust gases are expelled from the cylinder by the _____.	exhaust manifold	valve bridge	<b>pressure of the fresh air charge</b>	valve adjusting gear
387	In a two-stroke/cycle diesel engine, the process of scavenging begins as the _____.	piston nears and passes TDC	<b>latter part of the downstroke</b>	piston passes BDC	early part of the downstroke
388	In accordance with Coast Guard Regulations (46 CFR) regarding internal combustion engine exhaust manifold installations, which of the following statements is true?	They must be fitted with a backfire flame arrester constructed in accordance with the specification regulations.	They cannot be located any closer than six inches from flammable materials such as woodwork, etc.	<b>They may be water-jacketed and cooled by the discharge from a pump which operates only when the engine is running.</b>	They must be fitted with one inch thick asbestos board and covered with #26 USCG galvanized sheet iron.
389	In accordance with Coast Guard Regulations (46 CFR), water level controls utilized in a small automatically fired auxiliary heating boiler, shall be tested _____.	by simulation only to prevent possible boiler damage due to a low water condition	every time the boiler is being secured for an extended lay up period	with a stop watch to verify shutdown times	<b>by slowly lowering the boiler water level</b>
390	In accordance with Coast Guard Regulations (46 CFR), which of the listed starting aids is acceptable for use with the emergency diesel generator?	Injection of ether into the air intake.	<b>Thermostatically controlled electric water jacket heater.</b>	Thermostatically controlled electric oil sump heater.	Heating the starting battery.
391	In addition to the normal governor, each main engine having a maximum continuous output of 300 hp and over, which can be declutched or which drives a controllable pitch propeller, _____.	is not required to have any additional overspeed protection provided a hydraulic governor is used	and is a direct reversible engine, is required to have an overspeed trip set to secure the fuel to the engine when its rated speed is exceeded by more than 15 percent	<b>is to be fitted with a separate overspeed device so adjusted that the speed cannot exceed the maximum rated speed by more than 20 percent</b>	will not require any additional overspeed protection provided a mechanical type governor is used
392	In an automatically fired auxiliary boiler, restarting from the normal shutdown cycle in response to steam demand, is initiated by a/an _____.	modulating pressuretrol, sensing both steam pressure and temperature	pyrostat measuring decreased steam temperature	<b>pressuretrol measuring only the steam pressure</b>	electrode sensing water level
393	In an auxiliary boiler steam and water system, the highest pressure will be in the _____.	steam stop valve	dry pipe	<b>feed water system</b>	generating tubes



ID #	Question	Choice A	Choice B	Choice C	Choice D
394	In an electromagnetic coupling, torque to the driven shaft is limited by the _____.	overload trip	<b>coupling pullout value</b>	staybolt strength	shear-off coupling
395	In an electromagnetic slip coupling, the slip _____.	reduces magnetic pull caused by non-concentric electromagnets	reduces resonance and accentuates the turning moment irregularities	transmits electromagnetic flux through the primary circuit	<b>generates the low frequency current which excites the secondary electromagnet</b>
396	In comparison to exhaust valves, intake valves of diesel engines may be fabricated from low-alloy mild steels because _____.	the beveled edges of the intake valves provide for self-centering during seating	intake valves utilize stellite-coated valve seat inserts which reduce wear	the effective volume of air passing through intake valves is less than the effective volume of air passing through exhaust valves	<b>intake valves operate at lower temperatures due to the cooling effect of the intake air flow across the valve</b>
397	In comparison to exhaust valves, intake valves of diesel engines may be fabricated from low-alloy steels because _____.	the beveled edges of the intake valves provide for self-centering during seating	intake valves utilize stellite-coated valve seat inserts which reduce wear	the effective volume of air passing through intake valves is less than the effective volume of air passing through exhaust valves	<b>intake valves are less affected by the corrosive action of exhaust gases</b>
398	In comparison to exhaust valves, intake valves of diesel engines may be fabricated from low-alloy steels because _____.	the beveled edges of the intake valves provide for self-centering during seating	intake valves utilize stellite-coated valve seat inserts which reduce wear	the effective volume of air passing through intake valves is less than the effective volume of air passing through exhaust valves	<b>intake valves operate at much lower temperatures and are less affected by the corrosive action of exhaust gases</b>
399	In comparison to straight flow mechanical atomizers, return flow atomizers provide relatively uniform atomization over a wide firing range due to the _____.	back pressure regulation resulting in more complete combustion at high firing rates	<b>oil supply pressure not having to be reduced at low loads to the point where poor atomization occurs</b>	return flow atomizer being designed for best combustion at low firing rates	rotational motion imparted by the tangential slots being greater in the return flow atomizer
400	In general, diesel engine waste heat boiler construction is usually of the _____.	cyclone furnace boiler type	dry back boiler type	<b>water-tube type</b>	critical circulation boiler type
401	In most marine single reduction gear units, the bull gear is driven by the _____.	quill shaft	helical gear	<b>pinion gear</b>	differential gear
402	In order for the governor shown in the illustration to correct for the increase in load placed on the governed engine, the _____.	pilot valve initially moves up	<b>pilot valve initially moves down</b>	accumulator pressure is applied to the full exposed surface area of the power piston	actuating compensating piston rotates the terminal shaft in the increase fuel direction

ID #	Question	Choice A	Choice B	Choice C	Choice D
403	In readying an auxiliary water-tube boiler for a routine hydrostatic test, which of the following procedures should be undertaken prior to filling the boiler with fresh water?	The safety valve escape piping should be disconnected from the valve body and a blank inserted.	<b>The boiler vent valves should be opened.</b>	All handhole/manhole covers should be tightened up as much as possible to preclude any leaks.	All of the above.
404	In reducing engine speed to an efficient propeller speed by the use of reduction gears, _____.	speed and torque are both reduced	speed is reduced and torque remains unchanged	<b>speed is reduced and torque is increased</b>	speed is sometimes unchanged while torque is increased
405	In the cylinder head of a two-stroke/cycle diesel engine, valves are used for _____.	air intake	a fuel outlet	cooling water inlets	<b>exhausting combustion gas</b>
406	In the diesel engine shown in the illustration, the purpose of the part labeled "P" is to _____.	cool the scavenge air	<b>ensure one way air flow into the air header</b>	boost the scavenge air pressure	provide turbulence in the scavenge air
407	In the event of a flame failure in an auxiliary water-tube boiler, you must _____.	relight the boiler immediately to prevent loss of steam pressure	relight the fire off the brickwork as long as the bricks are cherry red	<b>purge the furnace of any combustible gases before attempting to relight the fire</b>	speed up the feed pump to prevent dry firing when the burner flame is reestablished
408	In the illustrated auxiliary diesel engine governor, decreasing the distance between piece #6 and piece #10 will affect the engine by _____.	decreasing the speed	<b>increasing the speed</b>	increasing the speed droop setting	decreasing the overspeed trip setting
409	In the illustration, If gear A has 72 teeth, gear B has 64 teeth, gear C has 24 teeth and gear D has 36 teeth, what is the RPM of the gear D if gear A is turning at 100 RPM?	275.88 RPM	400.63 RPM	<b>533.33 RPM</b>	673.51 RPM
410	In the large, slow-speed, loop-scavenged main propulsion diesel engine shown in the illustration, the upward motion of the piston draws in scavenging air into the piston undersides through _____.	venturi tubes	<b>non-return scavenging air valves labeled "P"</b>	cylinder ports "T"	the component labeled "U"
411	In the large, slow-speed, main propulsion diesel engine shown in the illustration, the upward motion of the piston draws scavenging air through _____.	venturi tubes	<b>non-return valves</b>	an auxiliary cold start heater core	the component labeled "U"
412	In the operating cycle of a four-stroke/cycle diesel engine, blow down to exhaust manifold pressure must occur before the piston begins the exhaust stroke to minimize _____.	pressure losses	exhaust pulsations	excessive scavenging	<b>pumping losses</b>
413	In the positive displacement rotary supercharging blower illustrated, where does the air become compressed?	Between the rotating blower lobes.	Between the casing and blower lobes.	After the engine reaches operating speed.	<b>As air moves into the discharge passage.</b>
414	In the reduction gear set shown, the output shaft is identified as number _____.	1	<b>2</b>	3	4

ID #	Question	Choice A	Choice B	Choice C	Choice D
415	In the reversing reduction gear shown in the illustration, the forward and reverse main pinions are in constant mesh with the main gear. This means the _____.	set that is clutched in will rotate as idlers driven from the main gear	<b>idling gears rotate in a direction opposite to their rotation when carrying load</b>	synchronesh coupling will maintain transition torque control	clutches are engaged by a reduction in control air pressure
416	In the rotary blower shown in the illustration, which direction of rotation do the rotors turn?	Both turn clockwise	<b>"A" turns clockwise; "B" turns counterclockwise</b>	"A" turns counterclockwise; "B" turns clockwise	Both turn counterclockwise
417	In the schematic diagram of the isochronous hydraulic governor shown in the illustration, piece #22 is the _____.	pilot plunger	proportioner piston	<b>balance piston</b>	differential servo piston
418	In the set of reduction gears shown in the illustration, what type of bearing is used?	Ball	Babbitt	Sleeved	<b>Tapered roller</b>
419	In the turbocharger shown in the illustration, the engine exhaust line would be connected to the part labeled _____.	B	<b>C</b>	H	E
420	In the water level electrode assembly, shown in the illustration, the feed pump should restart when the level of the water reaches the position indicated by arrow '_____'. _____.	E	B	<b>C</b>	D
421	In the water level electrode assembly, shown in the illustration, the leads indicated by letter "F" would be wired to the _____.	modulating pressuretrol	feed pump controller and pyrostat	<b>feed pump controller and burner circuit</b>	burner circuit and feed water regulator
422	In using reduction gears to obtain efficient propeller speeds, _____.	they must be located at the after end of the engine	they can only be used with one engine at a time	they eliminate the need for controllable pitch propellers	<b>they are connected to the engine with a flexible coupling to compensate for misalignment</b>
423	In which of the following areas of a crosshead engine is a permanently connected fire extinguishing system required?	Exhaust manifolds in excess of eight inches in diameter.	Crankcases having a gross volume in excess of 21 cubic feet.	Turbocharger inlet piping in excess of twelve inches in diameter.	<b>Scavenging spaces in open connection to the cylinders.</b>
424	Increasing the exhaust valve tappet clearance of a diesel engine will result in the exhaust valve opening _____.	<b>later and closing earlier</b>	later and closing later	earlier and closing earlier	earlier and closing later
425	Increasing the load on an engine equipped with a constant speed mechanical governor, will cause the engine speed to initially _____.	increase	<b>decrease</b>	fluctuate	remain constant
426	Increasing the oil pressure acting on the power piston of the hydraulic governor shown in the illustration will _____.	require the overspeed trip setting to be adjusted	<b>increase the governor output power</b>	increase the speed droop	decrease the speed droop

ID #	Question	Choice A	Choice B	Choice C	Choice D
427	Increasing the valve clearance between a valve stem and rocker arm, will result in the valve _____.	closing later	opening sooner	<b>staying open for a shorter period of time</b>	staying open for a longer period of time
428	Individual cylinder performance in a diesel engine is routinely determined by exhaust gas _____.	chemical analysis	pressure readings	<b>pyrometer readings</b>	infrared analysis
429	Intake air flow from a diesel engine turbocharger is directly proportional to engine _____.	exhaust gas pressure	exhaust gas temperature	speed	<b>load</b>
430	Internal combustion engine crankcase vent outlets must be equipped with _____.	hinged rain guards	<b>corrosion resistant flame screens</b>	dipsticks for measuring oil levels	crankcase ventilation fans
431	Internal combustion engines are to be fitted with governors to prevent the engines from exceeding the rated speed by more than _____.	10 percent	<b>15 percent</b>	20 percent	25 percent
432	Irregular feeding or surging of the feed water supply to a low pressure distilling plant may be attributed to _____.	erratic water flow through the air eductor	a clogged vent line from the air eductor condenser	excessive pressure in the seawater feed heater	<b>a dirty strainer in the saltwater feed pump suction line</b>
433	It is desirable for an auxiliary boiler safety valve to pop open and reseal firmly to _____.	give warning that excessive boiler pressure has been reached	<b>prevent wire drawing of the disc and seat</b>	prevent valve pounding	provide sufficient blow down
434	Item "A" in the illustration is a/an _____.	indent operated, four position, four-way valve	lever operated, infinite position, four-way valve	<b>manually operated, detented, four position, four-way valve</b>	pneumatically operated, infinite position, reducing valve
435	Item "F" shown in the illustration is called a _____.	flow limiting device	<b>relief valve</b>	pressure reducer	sequencing valve
436	Kingsbury thrust bearings are lubricated by _____.	<b>flooding the thrust bearing assembly with oil</b>	submerging oil wiper rings in an oil bath	pressure lubricating through internal passages	spraying oil directly on the thrust collar and shoes
437	Large steam drums are not required in the design of a coil-type auxiliary water-tube boiler because _____.	<b>steam and water are separated in the accumulator (flash chamber)</b>	the heat of combustion is sufficient to remove all moisture from the steam	the volume of steam is small at low pressures	automatic burner cycling controls steam volume and quality
438	Large, two-stroke/cycle, main propulsion, diesel engine cylinders can be successfully pressure charged during normal operation, by using the _____.	exhaust gas temperature system	exhaust load system	<b>constant or pulse pressure system</b>	constant volume system
439	Late fuel injection in a diesel engine is indicated by black or gray exhaust smoke with a _____.	<b>low firing pressure</b>	low exhaust temperature	mechanical knock in each cylinder	low compression pressure
440	Late fuel injection in a diesel engine is indicated by low firing pressure with _____.	<b>high exhaust temperature</b>	low exhaust temperature	fuel knock in each cylinder	mechanical knock in each cylinder

ID #	Question	Choice A	Choice B	Choice C	Choice D
441	Late fuel injection in a diesel engine is indicated by low firing pressure with _____.	low exhaust temperature	low exhaust pressure	mechanical knock in each cylinder	<b>black or gray exhaust smoke</b>
442	Leaking oil seals on a diesel engine turbocharger can cause _____.	the engine to run after the fuel has been secured	the engine to overspeed	a fire	<b>all of the above</b>
443	'Loop,' 'uniflow,' 'crossflow,' and 'return-flow' are terms used to describe various types of _____.	control air circuits	supercharging	turbochargers	<b>scavenging</b>
444	Main propulsion diesel engines having a bore exceeding 300 mm are to have at least _____.	two independent means of starting the engine	five air starting valves to permit the admission of starting air at any crank angle	<b>one (explosion relief) valve at the position of each main crank throw</b>	two engine driven lube oil pumps capable of parallel operation
445	Maintaining the lowest possible scavenging air temperature at all times is not recommended due to the possibility of the _____.	air charge density becoming too high	piston crown surfaces becoming too cold	<b>formation of excessive quantities of condensate</b>	compression pressure being greatly reduced
446	Many diesel engine exhaust valves are being constructed with hollow stems filled with sodium in order to _____.	provide added wear protection against today's corrosive quality of fuel	increase overall valve strength due to the high gas pressures	<b>assist in dissipating heat due to the extreme operating temperatures</b>	reduce the overall weight of the valve thus helping eliminate valve spring surge and hammering
447	Marine diesel engine dry-type mufflers reduce noise by _____.	using phase adjusters	decreasing back pressure at the exhaust manifold	<b>allowing gases to expand and change direction of flow</b>	constant pulse charging at the exhaust manifold
448	Misalignment of the drive shaft and propeller shaft flanges can be detected by using a dial indicator or _____.	inside micrometer	<b>feeler gage</b>	adjustable trammel	sighting device
449	Misalignment of the drive shaft and propeller shaft flanges can be detected by using a dial indicator or _____.	inside micrometer	<b>feeler gage and straight edge</b>	adjustable trammel	sighting device
450	Most Roots-type blowers have two rotors which _____.	are extremely quiet at high speed	rotate in the same direction	<b>rotate in opposite directions</b>	decrease objectionable turbulence in the cylinders
451	Multiple concentric valve springs are often used with diesel engine valves to _____.	enable research and development of cam contour to be simplified	<b>operate the valve gear where a larger force is normally required, but space limitations restrict the use of a single large spring</b>	allow for easier valve replacement	enable a total smaller valve spring force to keep the valve tight on its seat

ID #	Question	Choice A	Choice B	Choice C	Choice D
452	Oil accumulating in the exhaust piping or manifold of a diesel engine can be caused by _____.	collapsed hydraulic valve lifters	<b>worn valve guides</b>	excessive crankcase vacuum	excessive lube oil pressure
453	On a diesel engine equipped with a hydraulic speed control governor, hunting in many cases can be corrected by adjusting the _____.	accumulator spring compression	balance piston	<b>compensating needle valve</b>	proportional piston
454	On a diesel engine equipped with a Roots-type blower, _____.	the turbine speed depends on engine load	the air is compressed in the air cleaner	<b>the blower speed is proportional to the engine speed</b>	the blower lobes are lubricated by the engine lube oil
455	On a diesel engine equipped with an isochronous governor, if the 'speed droop' control is reduced to the 'zero' setting, the engine _____.	speed will drop drastically with any increase in load	will stop due to zero fuel supply	will stall upon application of load	<b>speed will remain fairly constant despite load changes</b>
456	On a four-cycle diesel engine, the valve subjected to the most severe conditions during normal service is the _____.	<b>cylinder exhaust valve</b>	air starting valve	air inlet valve	cylinder relief valve
457	On a large diesel engine installation, crankshaft axial alignment is maintained by the _____.	piston rod guides	<b>engine thrust bearing</b>	crosshead bearing	main shaft flexible coupling
458	On a turbocharged, medium-speed, diesel engine, which of the following problems is an indication of a restricted air intake passage?	<b>engine is hard to start</b>	engine misses	surges at governed RPM	coolant temperature is too low
459	On an automatically fired auxiliary boiler, the steam pressure limit switch is wired into the burner electric circuit to _____.	sound an alarm when the burner is shut off	energized the flame scanner circuit when high boiler pressure is reached	<b>shut off the burner when the cutoff pressure is reached</b>	prevent burner operation in the event of low boiler water level
460	On most diesel engines, the governor controls the output speed by _____.	<b>controlling the amount of fuel injected into the cylinders</b>	varying the speed of the turbocharger	adjusting the compression ratio	changing the timing of the fuel injection camshaft
461	One advantage of electromagnetic slip couplings is _____.	<b>torsional vibrations are reduced</b>	torque increases with a decrease in excitation current	the coupling rapidly responds to sudden changes of load	excitation and induction power losses appear as a change in torque instead of rotational speed between the primary and secondary elements
462	One advantage of hydraulic clutches over mechanical clutches in diesel engine installations is _____.	the power is transmitted at a very high efficiency of 60%	the torsional vibrations are transmitted directly to the reduction gears	each clutch has a separate oil gland for reverse operation	<b>no mechanical connection exists between the driving and driven elements</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
463	One characteristic of a pulse type turbo charging system is _____.	high average exhaust manifold pressure	greatly fluctuating inlet manifold pressure	constant exhaust manifold pressure	<b>multiple exhaust pipes to the turbocharger</b>
464	One of the factors limiting the amount of load which can be put on a modern marine diesel engine is the _____.	governor sensitivity	<b>exhaust temperature</b>	fuel injection pressure	speed of the cam shaft
465	One of the most common causes of reduction gear failure is gear wear caused by scoring as a result of _____.	surface fatigue of the gears	<b>an inadequate lube oil film</b>	plastic flow of the gears	fretting corrosion from water contamination
466	One of the purposes for water cooling the exhaust manifold in marine diesel engine is to _____.	reduce lube oil temperature	raise exhaust temperature	<b>reduce excessive heating of engine room</b>	reduce load on cooling water pump
467	One operating characteristic of the reversing reduction gear unit, shown in the illustration, is that once a clutch is engaged, the _____.	<b>engine torque is normally transmitted to the propeller shaft without slip</b>	slip is produced by backlash in the thrust bearings	second clutch may be engaged for additional torque	idle clutch is fully expanded to hold its gear train stationary
468	One remedy for a high firing pressure, in addition to a high exhaust temperature in one cylinder of a diesel engine, is to _____.	increase scavenge air pressure	reduce fuel booster pump pressure	<b>adjust the fuel rack</b>	retard fuel injector timing
469	Operating a diesel engine under light loads and at low temperatures for an extended period can result in _____.	<b>formation of carbon on the intake and exhaust ports</b>	high water jacket temperatures	overheated pistons and cylinders	an increase in lube oil viscosity due to fuel dilution
470	Operating a low speed propulsion diesel engine at less than 30% of designed normal load for prolonged periods will result in _____.	decreased fuel consumption per brake horsepower	more complete cylinder scavenging	extended valve life	<b>excessive carbon formation in the combustion chamber</b>
471	Overfiring of a hot water boiler may be caused by _____.	dirty atomizers	<b>faulty limit controls</b>	high water level	flame failure
472	Oxygen corrosion in auxiliary boilers is prevented by treating the boiler feed tank with _____.	<b>sodium sulfite or hydrazine</b>	hygroscopic sulfite	bromine	hygroscopic bromide
473	Partially obstructed exhaust ports on a diesel engine can cause _____.	overheating of the engine	high exhaust temperatures	sluggish engine operation	<b>all of the above</b>
474	Performance of a turbocharged engine can be improved by _____.	decreasing the amount of valve overlap	preheating the air intake	<b>aftercooling the intake air</b>	preheating light fuels
475	Piping from booster pumps to injection systems are to be at least _____.	schedule 60	schedule 80	<b>standard seamless steel</b>	none of the above
476	Pitted reduction gear teeth having a deep blue color with evidence of overheating have been operated with _____.	excessive speed	improper warm-up	extreme misalignment	<b>inadequate lubrication</b>
477	Pitting in the area close to the pitch line and on the same end of each gear tooth of a reduction gear unit would be caused by _____.	corrosion on the gears	excessive gear speed	dirt in the oil	<b>misalignment of the gears</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
478	Prior to lighting off a cold automatically fired auxiliary boiler, you should _____.	<b>check and regulate the water level</b>	close the air cock once fires are lit	preheat the diesel oil to assist atomization	tighten the steam stop to prevent steam leakage
479	Propeller shaft Kingsbury thrust bearings are normally lubricated by _____. I. a totally flooded housing II. oil spray on collar and shoes	<b>I only</b>	II only	either I or II	neither I nor II
480	Proper operation of the main engine reduction gear set requires the operator to monitor _____.	the sump oil level	oil flow sight glasses	bearing temperatures	<b>all of the above</b>
481	Provision is to be made for ventilation of an enclosed diesel engine crankcase by means of a small _____.	aperture not exceeding 1" in diameter	fan to develop a slight suction not exceeding 1" of water	vent line attached to the upper most area of the crankcase near the center of the engine	<b>breather or by means of a slight suction not exceeding 1" of water</b>
482	Pyrometers commonly found on diesel engine exhaust systems, consist of _____.	pyrostats and a voltmeter	a gas-filled bellows, a tube and a pressure gauge	<b>thermocouples and a voltmeter</b>	ammeters and thermocouples
483	Reducing the clearance between a valve stem and rocker arm will result in the valve _____.	having a shorter duration of opening	<b>having a longer duration of opening</b>	closing sooner	opening later
484	Reduction gear casings are vented in order to _____.	allow windage to exist for cooling the gears	<b>avoid a buildup of pressure within the gear case</b>	minimize lube oil foaming within the case	allow for axial clearance between the gears
485	Reduction gear lube oil temperatures for keel cooler installations are generally _____.	lower than raw water cooled installations	<b>higher than raw water cooled installations</b>	identical to raw water cooled installations	lower than raw water cooled installations, but the pressure will be higher
486	Regarding a diesel engine crankcase, the general arrangement and installation should preclude the possibility of _____.	<b>free entry of air to the crankcase</b>	water entering the crankcase while engine wash downs are being performed	excessive oil leakage during periods of increased blow by	subcooling internal components
487	Regarding the positive displacement rotary blower shown in the illustration, air compression takes place _____.	between the rotating blower lobes	between the casing and blower lobes	after the engine reaches operating speed	<b>as air moves into the discharge passage</b>
488	Regarding the turbocharger shown in the illustration, the piece labeled "F" is a _____.	variable inlet guide vane	<b>fixed blade</b>	moving blade	silencer
489	Regarding the turbocharger shown in the illustration, the diffuser ring of the blower is indicated by the letter _____.	<b>D</b>	F	H	N
490	Regarding the turbocharger shown in the illustration, the part labeled "B" would be attached to the _____.	exhaust manifold	silencer outlet	<b>after cooler inlet</b>	nozzle ring



ID #	Question	Choice A	Choice B	Choice C	Choice D
491	Regarding the water level electrode assembly shown in the illustration, arrow "C" indicates the point at which the _____.	<b>feed pump starts</b>	feed pump stops	fuel oil solenoid is de-energized	normal water level is established
492	Regarding the water level electrode assembly shown in the illustration, normal water level would be indicated _____.	<b>midway between arrows "B" and "C"</b>	at arrow "B"	at arrow "C"	at arrow "D"
493	Regarding the water level electrode assembly shown in the illustration, the normal water level will ordinarily rise and fall between _____.	<b>"B" and "C"</b>	"C" and "E"	"B" and "E"	"B" and "D"
494	Regulator '17B' shown in the illustration, is set for a constant output of 1.2 bar and the input signal to "1" is currently 0.42 bar. If the output from '17A' can not exceed 0.85 bar, then the current output from "2" should be _____.	0.35 bar	<b>0.42 bar</b>	0.85 bar	2.05 bar
495	Routine monitoring of a diesel engine should include _____.	checking for leaks	checking temperatures and pressures	listening for abnormal noises	<b>all of the above</b>
496	Salinity cells are strategically installed in distilling units to indicate the _____.	quantity of the distillate produced	<b>quality of the distillate produced</b>	presence of saltwater leaks into the flash chamber	all of the above
497	Scavenging in a four-stroke/cycle diesel engine occurs during the _____.	<b>last part of the exhaust stroke, and the first part of the intake stroke</b>	last part of the intake stroke only	early part of the injection stroke only	early part of the power stroke
498	Scavenging in a turbocharged, four-stroke/cycle diesel engine is accomplished _____.	<b>during the valve overlap period</b>	with only the exhaust valve open	at a pressure below atmospheric	without cooling the cylinders or pistons
499	Sensitivity for a diesel engine governor is described as the _____.	governor's speed droop response to variations in engine load	ability to maintain desired engine speed without speed fluctuation	<b>percent of speed change necessary for corrective action by the fuel control</b>	ability to maintain constant speed regardless of engine load
500	Slippage of an air-operated friction clutch can result from _____.	<b>an overloaded engine</b>	prolonged slow speed operation	weak disc springs	newly installed friction blocks
501	Some automatically fired auxiliary boilers are equipped with the water level electrode assembly shown in the illustration. In this type of water level control, the burner circuit is completed through the _____.	third leg of the water level electrode assembly	ungrounded neutral leg of the control circuit	<b>water in the boiler drum and electrode assembly</b>	magnetic field surrounding the water level electrode assembly
502	Some diesel engines are equipped with a Roots-type blower to provide _____.	<b>more air to combine with the fuel</b>	more amps per kilowatt hour	higher no-load RPMs	higher voltage output
503	Some diesel engines are supercharged with a _____.	slam charger	<b>turbocharger</b>	fuel atomizer	fuel injector
504	Some medium and high-speed diesel engines require reduction gear units to provide a useful propeller speed. In most reduction gears, the bull gear _____.	must be partially submerged in the lube oil sump for proper lubrication	<b>is connected to the propeller shaft</b>	is driven at the highest RPM	compensates for alignment variations between the engine and pinion gear

ID #	Question	Choice A	Choice B	Choice C	Choice D
505	Spring surge in diesel engine valve springs can result in _____.	increasing effective spring force	<b>bouncing of the valve gear</b>	splitting of the valve keeper collars	failure of the valve to open
506	Subtracting the return flow meter reading from the supply flow meter reading on a boiler equipped with a return flow fuel oil system, determines the amount of oil _____.	circulated by the system	<b>burner throughput</b>	returned to the settler	discharged from the pump
507	The 7 bar control air supply shown in the illustration has failed. Which of the following statements represents the automatic action that will occur?	The pressure switch, labeled as "C", will energize the automatic shutdown circuitry, preventing any additional operating casualty.	Valve "D" will shift to the position shown, with the signal generated from line 'ff' determining the speed of the engine, as the signal is modified by device "A".	By regulating the reduction of the 30 bar air pressure at device "B", the engine speed may be varied proportionally, operating independently of any other control.	<b>Valve "D" will shift, no longer venting line 'cc', 30 bar air pressure is reduced by "B", and is supplied to "A" for speed control, and other functions of lines 'cc' and 'ff'.</b>
508	The ability of the governor to prevent fluctuations in engine speed is termed _____.	sensitivity	<b>stability</b>	promptness	speed droop
509	The ability of the governor to prevent fluctuations in engine speed is termed _____.	load limit	<b>stability</b>	promptness	speed droop
510	The air bladder clutch used with some reversing reduction drive gears, consists of _____.	twin-disk clutch plates	jaw-type clutch plates	multi-plate friction plates with sliding collars	<b>two independent clutches</b>
511	The air supplied to the cylinders by a turbocharger is often reduced in volume by a/an _____.	air compressor	diffuser	<b>after cooler</b>	venturi
512	The amount of chloride content in the water of an auxiliary boiler can be reduced by _____.	adding hydrazine	<b>blowing down the boiler</b>	adding phenolphthalein	adding a sulfite chloride scavenger
513	The amount of fuel oil atomized by a return flow oil burner is directly controlled by the _____.	header supply valve	burner root valve	oil micrometer valve	<b>fuel oil back pressure</b>
514	The amount of oil atomized by the return flow variable capacity atomizer, used with some automatically fired boilers, is controlled by the _____.	amount of air admitted to the atomizer	<b>oil pressure in the oil return line</b>	quantity of oil delivered by the service pump	proportioning device in the atomizer fuel valve
515	The amount of oil consumed by a return flow-type fuel atomization system, fitted with both supply and return meters, can be determined by the _____.	supply meter reading only	return meter reading only	sum of the supply and return meter readings	<b>difference between the supply and return meter readings</b>
516	The auxiliary boiler feed water level control shown in the illustration, utilizes _____.	<b>two position differential gap action</b>	proportional action	proportional plus reset action	proportional plus reset plus rate action

ID #	Question	Choice A	Choice B	Choice C	Choice D
517	The average exhaust temperature of a two-stroke/cycle diesel engine with a turbine-driven supercharger is lower than a similar four-stroke/cycle diesel engine at equal loads because _____.	two-stroke/cycle diesel engines have a higher M.E.P. than four-stroke/cycle diesel engines	<b>two-stroke/cycle diesel engine exhaust is cooled by the scavenging air charge</b>	four-stroke/cycle diesel engines have a higher RPM than two-stroke/cycle diesel engines	the opening of the two-stroke/cycle diesel exhaust ports or valves occurs much later than in four-stroke/cycle diesel engines
518	The average exhaust temperature of a two-stroke/cycle diesel engine with a turbine-driven supercharger is lower than a similar four-stroke/cycle diesel engine at equal loads because _____.	two-stroke/cycle diesel engines have a higher M.E.P. than four-stroke/cycle diesel engines	four-stroke/cycle diesel engine exhaust is cooled by scavenging air	<b>two-stroke/cycle diesel engines have a lower M.E.P. than four-stroke/cycle diesel engines</b>	the opening of the two-stroke/cycle diesel exhaust ports or valves occurs much later than in four-stroke/cycle diesel engines
519	The axial thrust of the coupling shown in the illustration, tends to draw the runner and impeller together when the _____.	<b>coupling is partially filled with fluid</b>	clutch is operating continuously	rotor housing is full of fluid	fluid is extremely viscous
520	The bearing shown in the illustration is designed to carry thrust when applied _____.	left to right only	<b>right to left only</b>	in either direction	the bearing pictured is not designed to carry thrust
521	The best method for determining the amount of eccentricity or offset misalignment between the disconnected propeller shaft coupling flange and the reduction gear output flange is by using a _____.	straight edge laid across the flange edges	thickness gauge between the separated flange faces	bridge gauge to check the position of each flange in relation to the other	<b>dial indicator mounted on one flange indicating any misalignment of the other flange</b>
522	The boiler shown in the illustration would be classed as _____.	two-pass, scotch marine	<b>single-pass, fire-tube, scotch marine</b>	two-pass, water-tube	forced circulation, coil-type
523	The boiler water alkalinity in a coil-type auxiliary boiler should be maintained at the pH recommended by the boiler manufacturer to _____.	precipitate silica from solution	<b>reduce corrosion in the heating coil</b>	prevent clogging and erosion in the coil	maintain zero water hardness
524	The burner assembly on an automatically fired auxiliary boiler fitted with variable capacity, pressure atomizing burners, maintains steam pressure by _____.	cycling on and off	<b>changing fuel oil return pressure</b>	changing the speed of a rotary cup	varying air pressure supplied to the nozzle
525	The circuit shown in the illustration represents a/an _____.	pneumatic actuated, multiple position, control unit	hydraulic actuated, multi-position control unit	infinitely positioned pneumatic control	<b>detented, control air pressure, reducing and filtering unit</b>
526	The closing of the exhaust valves used on a modern, large, low-speed, main propulsion diesel engine may be directly provided by _____.	mechanical push rods	<b>compressed air pressure</b>	hydraulic pressure	exhaust gas pressure
527	The clutch glands of the gear unit, shown in the illustration, rotate at _____.	<b>engine speed</b>	propeller shaft speed	an intermediate speed	a fixed speed

ID #	Question	Choice A	Choice B	Choice C	Choice D
528	The color of the engine exhaust from a diesel propelled ship should be _____.	clear	hazy light brown	hazy light blue	hazy light gray
529	The color of the exhaust from a diesel engine should be _____.	clear	hazy light brown	hazy light blue	hazy light grey
530	The color of the exhaust gas from a diesel engine under normal load should be _____.	clear	hazy light brown	hazy light blue	hazy light grey
531	The compression of air in a positive displacement rotary supercharging blower, occurs only _____.	between the rotating blower lobes	between the casing and blower lobes	after the engine reaches operating speed	<b>as air moves into the discharge passage</b>
532	The concentration of dissolved solids in the boiler water of an auxiliary boiler could increase as a result of _____.	phosphate treatment	zero water hardness	dissolved oxygen deaeration	frequent bottom blows
533	The concentration of total dissolved solids in the water of an auxiliary boiler can increase as a result of _____.	seawater contamination	frequent surface blows	dissolved oxygen deaeration	frequent bottom blows
534	The constant capacity, pressure atomizing, fuel oil burners designed to meet a wide variation in the steaming loads of an auxiliary boiler, are _____.	automatically cycled on and off in response to demand	automatically supplied with more fuel on demand	equipped with standard variable capacity atomizers	equipped with fuel nozzles having variable orifices
535	The control system for a controllable pitch propeller can be programmed _____.  I. to produce a maximum combined propeller and engine efficiency between pitch and a given engine speed II. for continuous operation of the engine at pre-set conditions	I only is correct	II only is correct	<b>both I and II are correct</b>	neither I or II are correct
536	The correct procedure for giving an auxiliary boiler a bottom blow, is to begin _____.	<b>when the boiler has been secured long enough for most solids to settle</b>	when the boiler has been cooled to ambient temperature	only after raising the water level to within 1/2 inch of the high water cutout	only after bypassing the low pressure pressuretrol
537	The daily inspection of an operating auxiliary boiler should include _____.	lifting of all safety valves	an examination of the boiler firesides	<b>checking for external fuel and water leaks</b>	measuring steam quality
538	The device most commonly used to measure the exhaust gas temperature of a diesel engine cylinder is called a _____.	pyrometer	calorimeter	dynamometer	tachometer
539	The device represented by the symbol "B" in the illustration is used to _____.	remove all moisture from the system	lubricate the air supply	reduce the temperature of the air supply as a result of the heat of compression	<b>remove most contaminants present in the air supply</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
540	The device shown has been removed from an exhaust valve bridge assembly. The function of the illustrated device is to _____.	<b>maintain valve lash adjustment</b>	provide metered bypassing of lube oil in a bypass type lube oil system	act as a multi-pressure relief valve	quickly shut off fuel flow at the end of fuel injection
541	The device shown in the illustration is a _____.	three-way spring valve	<b>hydraulic lash adjuster</b>	multi-directional relief valve	valve stem spring cap
542	The device shown in the illustration is commonly used to _____.	provide cooling water circulation through the engine	protect the crankcase from overpressure in event of explosion	<b>utilize the flow of exhaust gases to supercharge the engine</b>	provide air starting pressure
543	The device shown in the illustration is utilized in some diesel control systems. If the output of "2" is directed to the engine governor, what will be its primary function?	The output is for speed jumps and is utilized to ensure the transmission of stepped speed reductions.	The output of this device is used to secure the engine if it becomes overloaded.	The output shown is used to prevent torpid speed changes resulting from fluctuations of the input signal.	<b>The pneumatic arrangement serves to prevent the engine from operating within a critical speed range.</b>
544	The device used to limit engine torque at various engine speeds is called a _____.	speed limiting governor	variable speed governor	constant speed governor	<b>load limiting governor</b>
545	The diesel engine cylinder scavenging system illustrated is an example of _____.	crossflow scavenging	<b>uniflow scavenging</b>	loop scavenging	direct scavenging
546	The diesel engine exhaust gas bypass, as fitted with some waste heat boilers, is installed to _____.	prevent engine back pressure at heavy loads	increase total engine efficiency at low loads	<b>prevent boiler corrosion at low engine loads</b>	improve engine fuel consumption at any load
547	The diesel engine shown in the illustration can be fitted with a pyrometer at each exhaust elbow. If one of the cylinder pyrometers is reading significantly higher than the others, which of the following should be your FIRST action?	<b>Check the pump rack setting.</b>	Examine the water outlet header for evidence of blockage.	Replace the fuel injector nozzle.	Examine the exhaust valves for evidence of burning.
548	The diesel engine shown in the illustration, is provided with an auxiliary blower to _____.	increase scavenge air pressure at full load	<b>provide scavenge air pressure at low load</b>	maintain a vacuum on the crankcase	maintain a positive pressure on the crankcase
549	The diesel engine shown in the illustration, the exhaust manifold is indicated by the letter _____.	A	B	P	<b>U</b>
550	The direct acting mechanical governor used with some small diesel engines, controls fuel flow to the engine by _____.	governor flyweight action on a pilot valve which controls fuel injection	<b>governor flyweight motion acting on fuel controls through suitable linkage</b>	positioning a butterfly valve in the fuel delivery system	positioning a servomotor piston attached to the fuel controls
551	The driving force of a propeller is transmitted to the hull through the _____.	bevel gear teeth	helically cut gear teeth	sleeve bearings	<b>main thrust bearing</b>
552	The easiest way to locate a defective diesel engine exhaust valves is by _____.	taking compression readings	inspecting the valves visually	<b>comparing exhaust pyrometer readings</b>	listening to the engine

ID #	Question	Choice A	Choice B	Choice C	Choice D
553	The engine shown in the illustration is currently on what stroke of its mechanical cycle?	<b>intake stroke</b>	exhaust stroke	compression stroke	power stroke
554	The exhaust gas temperature prior to entering the turbocharger, of the system shown in the illustration, is 100°-150° (37.8°-65.5°C) higher than the individual cylinder temperatures. This indicates _____.	an exhaust valve leak	an exhaust manifold leak	the turbocharger is fouled	<b>a normal condition</b>
555	The exhaust gases in a supercharged two-stroke/cycle diesel engine are expelled from the cylinder by _____.	pumping action of the piston	pressure of the fuel charge	vacuum developed in the manifold	<b>pressure of the fresh air charge</b>
556	The exhaust ports of a diesel engine using the crossflow scavenging method are opened and closed by the _____.	reciprocating motion of exhaust valves	rotary motion of the camshaft	<b>reciprocating motion of the piston</b>	developed differential
557	The exhaust ports shown in the illustration are identified with the letter '_____':	B	<b>Q</b>	T	U
558	The exhaust system for a diesel engine is usually designed to remove exhaust gases and to _____.	power the Roots-type exhauster	remove the emission of exhaust smoke pollutants	power a reciprocating supercharger	<b>muffle exhaust noise</b>
559	The exhaust system for a turbocharged diesel engine functions to _____.	power the after coolers	<b>power the turbocharger</b>	reduce the cylinder scavenge effect	cool the turbocharger
560	The exhaust system for a turbocharged two-stroke/cycle diesel engine functions to _____.	discharge exhaust gases and smoke	furnish energy to the turbocharger	reduce engine room noise	<b>all of the above</b>
561	The exhaust system of a diesel engine is usually designed to remove exhaust gases and to _____.	provide exhaust back pressure	prevent exhaust smoke emissions	power a reciprocating supercharger	<b>muffle exhaust gas noise</b>
562	The exhaust valve opens before bottom dead center in a four stroke engine to _____. I. allow for blow down II. reduce pumping losses	I only	II only	<b>both I and II</b>	neither I nor II
563	The firing order of an in-line, four-stroke/cycle, six cylinder, auxiliary diesel engine is 1-5-3-6-2-4. When the #1 cylinder is firing at top dead center, the #3 piston is _____.	<b>on the intake stroke</b>	on top dead center	on the power stroke	at bottom dead center
564	The firing range of a variable capacity, return flow-type fuel atomizer is regulated to meet steam demand by varying the _____.	fuel oil damper setting	<b>fuel oil return pressure</b>	burner register opening	atomizer orifice setting
565	The flame safeguard control system of a large automatic auxiliary boiler will provide fuel shut off in the case of high _____.	water	voltage	fuel pressure	<b>steam pressure</b>
566	The flame safeguard controls of a large automatically fired auxiliary boiler, may consist of a _____.	stack switch	pyrostat	<b>photoelectric cell</b>	thermistor

ID #	Question	Choice A	Choice B	Choice C	Choice D
567	The flash chamber attached to the auxiliary boiler illustrated, _____.	prevents flashing of feed water in the system	regulates the eccentricity of the thermostat tube	preheats feed water entering the boiler	<b>permits heated boiler water to flash into steam</b>
568	The force exerted by a valve spring to close the diesel engine valves, is proportional to _____.	<b>spring compression</b>	engine speed	the natural frequency of vibration	spring surge
569	The fuel oil strainers in the fuel oil service system of an automatically fired auxiliary boiler are permitted by the Coast Guard Regulations (46 CFR) to be either the simplex type or the _____.	Sintered metal type	filter bag type	<b>duplex type</b>	absorbent type
570	The fuel oil strainers located in the fuel oil service system of an automatic auxiliary heating boiler are either the duplex type or the _____.	filter bag type	Perry filter type	<b>simplex type</b>	absorbent type
571	The fuel oil supply system to an automatic auxiliary boiler, will automatically shutdown if the boiler _____.	steam demand is high	salinity is high	safety valve simmers	<b>burner flame is extinguished</b>
572	The fuel supply system to an automatic auxiliary boiler, will automatically shutdown if the boiler _____.	salinity is abnormally high	steam demand is too high	<b>water level is abnormally low</b>	feed water flow is low
573	The function of the after cooler installed between the turbocharger and intake manifold on some diesel engines, is to _____.	<b>increase the density of the intake air</b>	decrease turbocharger power usage	reduce exhaust gas temperature	compensate for turbocharger RPM fluctuations
574	The function of the synchronizing motor on the generator governor illustrated is to _____.	drive the terminal shaft at a set speed	turn the governor drive shaft during start-up	<b>provide remote control for speed adjustment</b>	power the generator synchronizing lamps
575	The fusible plugs used in fire-tube auxiliary boilers are installed in the _____.	furnace	corbel header	stay tube	<b>crown sheet</b>
576	The gage glass on a coil-type auxiliary boiler is connected to the _____.	heating coil inlet and outlet	surge chamber	<b>accumulator</b>	water softener
577	The gear drive, shown in the illustration, can have the backlash determined best by using a _____.	<b>feeler gauge</b>	lead wire	red dye indicator	lash indicator
578	The governor controlling a diesel engine modulates crankshaft RPM by adjusting the _____.	intake air supply	turbocharger speed	<b>fuel injection pumps</b>	engine speed droop
579	The governor for an auxiliary diesel engine is shown in the illustration. Which of the pieces listed rotates proportionally to engine speed?	"1"	"3"	"21"	<b>"22"</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
580	The governor for an emergency diesel generator is shown in the illustration. When a large change in load results in a change in engine speed, which of the parts listed will be the FIRST governor component to react to the change in load?	Piece #8	<b>Piece #9</b>	Piece #13	Piece #21
581	The governor shown in the illustration can produce shutdown of the engine by _____.	<b>rotating the load limit cam</b>	lowering the pilot valve plunger	raising the actuating compensation piston	lowering the speeder rod
582	The governor utilized with the device shown in the illustration has become inoperative while the vessel is underway at sea. Which of the following statements describes what action should be taken?	It is necessary to disconnect the shuttle valve from the throttle lever horizontal bar, in order to effectively jump out the pneumatic engine enable control circuit.	The governor should be replaced with one that has been proven to be useful in isochronous applications.	<b>The engine speed can be controlled using the fuel control lever without changing the position of the maximum fuel stop.</b>	The linkage to the shutdown servomotor and the governor output shaft must be disconnected in order to operate the engine via the fuel control lever.
583	The governor, shown in the illustration, will have its preset speed droop altered whenever _____.	the speeder spring tension is changed	<b>the speed droop lever fulcrum is changed</b>	the compensating lever fulcrum is changed	all of the above
584	The high air velocity leaving the air impeller of an exhaust gas turbocharger is converted to pressure in the _____.	inlet nozzle ring	turbine wheel blading	<b>diffuser passages</b>	inlet volute
585	The highest loads applied to the diesel engine crankshaft main bearings are _____.	axial loads	<b>firing loads</b>	inertia loads	centripetal loads
586	The hunting of a diesel engine may be caused by _____.	excessive speed droop	insufficient speed droop	excessive sensitivity	<b>low governor power</b>
587	The impeller in area "A", shown in the illustration, is powered by _____.	air	<b>exhaust gas</b>	water	oil
588	The initial reaction of the governor floating lever to a decrease in load, shown in the illustration, is best described by which of the following statements.	<b>The floating lever moves up at the speeder rod end.</b>	The floating lever moves down at the speeder rod end.	The floating lever remains stationary.	The floating lever shifts to the left.
589	The intake air ducting to a diesel engine should not draw from an area on deck where flammable vapors released from tanks are present, because _____.	flammable vapors will accelerate corrosion of the turbocharger	<b>the engine may overspeed and the normal governor or overspeed trip will not be able to secure the engine</b>	the flammable vapors will result in an excessively rich mixture which will increase the brake horsepower output	all of the above
590	The intake ports of a two-stroke/cycle diesel engine are opened and closed by the action of the _____.	camshaft	<b>piston movement</b>	exhaust valves	vertical drive



ID #	Question	Choice A	Choice B	Choice C	Choice D
591	The intake valves in a 4-stroke diesel engine are reseated by _____.	cam followers	push rods	combustion gases	<b>valve springs</b>
592	The leveling plates in a Kingsbury thrust bearing are held in position by _____.	lock wires	buttons or pivots	<b>dowels and pins</b>	pivoted segments
593	The lobes of a Roots-type blower are sometimes twisted into a spiral formed around the axes of rotation to _____.	decrease air losses around the lobes	decrease maintenance	allow for higher blower operating speeds	<b>produce a more constant airflow</b>
594	The magnetic lock between the armature and field in an electromagnetic coupling is established by _____.	controlled engine speed	<b>energizing the field coils</b>	brush contact with the armature	rotating the primary rotor
595	The major cause of trouble in a mechanical-hydraulic governor is contamination of the hydraulic fluid by _____.	<b>dirt</b>	fuel oil	governor cooling water	fuel oil tars
596	The manufacturer of a particular diesel engine recommends when running on heavy fuel for the vanadium content not to exceed 300 ppm. If there are 10 ounces of vanadium per 3125 pounds of fuel just taken on board, which of the following statements is correct?	The vanadium content is 2 ppm.	The vanadium content is slightly above acceptable values.	<b>The vanadium content is well within recommended limits.</b>	The vanadium content will accelerate cylinder wear.
597	The maximum allowable working pressure on a packaged auxiliary boiler is 200 psig. The normal working pressure for one particular packaged boiler is 175 psig. Which of the following safety relief valve settings would be proper for this boiler?	165 psig	<b>195 psig</b>	210 psig	220 psig
598	The maximum pressure developed by a waste heat boiler is determined by the main engine exhaust _____.	gas composition	<b>gas temperature</b>	pressure	timing
599	The method of scavenging used in the diesel engine, shown in the illustration, is known as _____.	uniflow scavenging	inertia scavenging	<b>loop scavenging</b>	central scavenging
600	The most common cause of scale formation in an auxiliary boiler is _____.	<b>concentrations of calcium sulfate in the boiler water</b>	fuel oil in the feed water	improper treatment of the feed water with calcium sulfate	excessive feed water alkalinity
601	The most common contaminate of governor hydraulic fluid is _____.	moisture	<b>dirt</b>	acid	air
602	The most common instrument used to measure diesel engine exhaust pressure is the _____.	pyrometer	bourdon gauge	pneumercator	<b>manometer</b>
603	The nuts of main bearings, connecting rod bolts and all other moving parts are to be secured by _____.	hardened steel nut locks	cotter pins made of spring steel	<b>split pins or other effective means</b>	hydraulic nuts as commonly found on large low speed engines

ID #	Question	Choice A	Choice B	Choice C	Choice D
604	The opening of an exhaust valve on a modern, large, low-speed, main propulsion diesel engine, may be actuated by _____.	direct action of the overhead cam shaft	compressed air pressure	<b>hydraulic "push rods"</b>	direct action of the main piston moving down
605	The operating speed of a turbocharger is directly dependent upon _____.	engine speed	<b>engine load</b>	intake manifold pressure	atmospheric pressure
606	The overspeed trip device installed in some diesel engines is automatically actuated by _____.	spring force	hydraulic pressure	<b>centrifugal force</b>	mechanical linkage
607	The parts labeled 'I' and 'II', shown in the illustration are respectively identified as the _____.	<b>exhaust valve and intake valve</b>	intake valve and exhaust valve	fuel atomizer valve and exhaust valve	starting air valve and intake valve
608	The pinion gear shown in the illustration, is located _____.	below #1 and #3	<b>between #1 and #3</b>	between #2 and #4	below #2 and #4
609	The pneumatic circuit shown in the illustration is part of a complex control circuit for a large low speed diesel engine. How will the operation of the engine be affected if the line from the double check valve to the servo motor is severed?	The engine will continue to operate; however, restarting of the engine will be difficult.	The engine will automatically stop, although there will be no difficulty in restarting the engine.	<b>The shutdown servo motor will develop a force overriding the output of the governor, causing in the fuel to the engine to be secured.</b>	The safeguard provided by these devices will result in a temporary cessation of air flow through valve "D".
610	The pneumatic circuit shown in the illustration is part of a complex large low speed engine control system. Which of the following statements describes the function of this circuit?	The circuit shown is used to shift the cam shaft position when reversing the engine.	The piston labeled A provides a low pressure signal to the other components illustrated.	<b>Valve D, when depressed, allows the retained pneumatic pressure within the shut-down servo motor to be relieved.</b>	When oil pressure to valve C is diminished, a pressure decrease is developed at valve D, causing it to shift, and nullifying the actuating signal to device A.
611	The pneumatic circuit shown in the illustration is part of a control system used with large low speed diesel engines. The arrangement may be used to control _____.	bridge tachometer variations	the proportional offset of the throttle signal	<b>main engine speed</b>	emergency clutching operations
612	The polar timing diagram shown in the illustration is of a four stroke cycle, high speed diesel engine, with fuel injection timing commencing at 10° BTDC. Approximately how many degrees will the crankshaft rotate from the point at which fuel injection begins to the point where the exhaust valves begin to open?	55°	95°	<b>135°</b>	235°
613	The power consumed during the scavenging process of a diesel engine is known as the _____.	compression loss	valve loss	back pressure loss	<b>pumping loss</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
614	The power developed by a large slow-speed main propulsion diesel engine is dependent upon the _____.	quantity of air it takes in and retains in the cylinders during a given time period	proportion of trapped air that is utilized in the combustion process	thermodynamic efficiency of the engine cycle	<b>all of the above</b>
615	The power developed by a large slow-speed main propulsion diesel engine is dependent upon the _____.	quantity of air and fuel available for combustion in the cylinder	mean effective pressure developed in the cylinder during the combustion process	thermodynamic efficiency of the engine cycle	<b>all of the above</b>
616	The power loss associated with slip in a fluid coupling appears as _____.	chattering in the driving member	<b>heat in the hydraulic fluid</b>	vibration in the driving member	leakage around the ring valve
617	The power output of a turbocharged diesel engine will drop if the cooling water flow through the after cooler is interrupted because the _____.	turbocharger stalls	exhaust pressure increases	<b>air charge density decreases</b>	scavenge effect increases
618	The pressure differential across a diesel engine lube oil system duplex filter should be checked to _____.	<b>determine the need for filter cleaning</b>	measure any change in oil viscosity	prevent excess pressure downstream	determine the need for batch filtration
619	The pressure differential across a diesel engine lube oil system duplex filter should be checked to _____.	<b>determine the need for filter changing</b>	measure any change in oil viscosity	monitor lube oil pump performance	determine the need for batch filtration
620	The pressuretrol which is installed on an auxiliary boiler senses steam pressure changes and _____.	controls the flow of feed water to the boiler	monitors the boiler high water level	secures the fires when a fusible plug burns out	<b>automatically regulates the quantity of oil and air flow to the burner</b>
621	The primary function of a flame safeguard system, as used on an automatically fired auxiliary boiler, is to prevent _____.	accidental dry firing and overpressure	uncontrolled fires in the furnace	<b>explosions in the boiler furnace</b>	overheating of the pressure parts
622	The PRIMARY function of a waste heat boiler is to _____.	reduce engine exhaust noise	reduce engine back pressure	<b>recover heat which otherwise would be lost</b>	increase turbocharger efficiency
623	The principal characteristic of an isochronous governor is it will _____.	slow the machine down as the load is increased	shut down the engine if it overspeeds	display excessive speed droop	<b>maintain a constant speed with variations of load</b>
624	The principal difference between loop scavenging and crossflow scavenging, as used in single acting diesel engines, is the _____.	<b>direction of air flow within the cylinder</b>	sequence of port opening	method of opening exhaust ports	volume of air admitted to the cylinder
625	The principal purpose of refractory and insulation installed in the firebox of an auxiliary boiler is to _____.	prevent slag accumulation on the corbels	<b>protect the inner casing and reduce heat loss</b>	direct the force draft into the space between the inner and outer casings, to maintain a pressure seal	prevent flame impingement on the generating tube bank

ID #	Question	Choice A	Choice B	Choice C	Choice D
626	The principal purpose of refractory and insulation installed in the firebox of an auxiliary boiler is to _____.	prevent flame impingement on the generating tube bank	direct the force draft into the space between the inner and outer casings, to maintain a pressure seal	<b>protect the inner casing and reduce heat loss</b>	prevent slag accumulation on the corbels
627	The procedures recommended for auxiliary boilers having high salinity include _____.	treating with oxygen scavengers	<b>securing the boiler and giving it a bottom blow</b>	increasing the pH	reducing the phosphate level
628	The process of scavenging a two-stroke/cycle diesel engine serves to _____.	improve fuel flow volume	<b>cool the exhaust valves</b>	reduce the intake air charge density	increase the temperature of exhaust gases
629	The process of supplying a diesel engine cylinder with air at a pressure greater than atmospheric is called _____.	engine displacement	super-aspirating	air injection	<b>supercharging</b>
630	The programmed control system of an automatic auxiliary boiler will terminate the light off process during the prepurge period if air flow is not sensed and _____.	<b>the damper is not sufficiently open</b>	the damper is not fully closed	oil pressure is not sensed	water pressure is not sensed
631	The purpose of a temperature sensing device installed in the stack of a small automatically fired auxiliary steam boiler is to secure the oil burner _____.	<b>in the event of a flame failure</b>	in the event of a stack fire	when the water level reaches the crown sheet	when the feed pump discharge pressure drops to a preset minimum
632	The purpose of an after cooler is to _____.	reduce the turbocharger operating temperature	increase the pressure of the inlet air	<b>increase the density of the inlet air</b>	reduce the blower operating temperature
633	The purpose of an interference angle in a diesel engine exhaust valve is to _____. I. break up seat deposits II. work in conjunction with valve rotators to rotate the valve	<b>I only</b>	II only	both I and II	neither I nor II
634	The purpose of an interference angle in a diesel engine exhaust valve is to _____. I. seat the valve quickly II. break up seat deposits	I only	II only	<b>both I and II</b>	neither I nor II
635	The purpose of an interference angle in a diesel engine exhaust valve is to _____. I. work in conjunction with valve rotators to rotate the valve II. seat the valve quickly	I only	<b>II only</b>	both I and II	neither I nor II

ID #	Question	Choice A	Choice B	Choice C	Choice D
636	The purpose of an interference angle in a diesel engine exhaust valve is to _____.  I. work in conjunction with valve rotators to rotate the valve  II. break up seat deposits	I only	<b>II only</b>	both I and II	neither I nor II
637	The purpose of designing some waste heat boilers with sinuous fire tubes, is to _____.	increase exhaust gas velocity through the boiler	reduce accumulations of carbon deposits on the heat transfer surfaces	eliminate exhaust gas pulsations and noise	<b>increase the rate of heat transfer to the waterside</b>
638	The purpose of the ball-head unit shown in the illustration of the governor is to _____.	transmit fly weight movement to the floating lever	<b>rotate the fly weights at a speed proportional to engine speed</b>	transmit speeder spring compression to the fly weights	transmit speeder rod motion to the rotating bushing
639	The purpose of the compensating adjustment used in a diesel engine hydraulic governor is to _____.	compensate for low oil level	increase governor promptness	<b>prevent governor hunting</b>	limit engine load
640	The purpose of the programmed purge cycle on an automatically fired auxiliary boiler is to _____.	cool the furnace to prevent preignition	<b>remove explosive vapors from the furnace</b>	evaporate accumulated unburned fuel oil	provide sufficient air in the furnace to allow ignition of the fuel
641	The purpose of the rotating seal located at the aft end of the reversing reduction gear shown in the illustration, is to _____.	provide lube oil to the gears	attach a tachometer to indicate relative speed	<b>provide operating air pressure to the clutch glands</b>	prevent lube oil from leaking out of the gear case from the roller bearings
642	The purpose of the safety relief valves installed on an auxiliary boiler is to _____.	relieve excess fuel oil pressure during the 'off' fire cycle	admit water to the dry pipe	throttle the forced draft fan output for proper combustion	<b>reduce excess steam pressure in the boiler</b>
643	The purpose of the separating nozzle in the accumulator of a water-tube, coil-type, steam generator is to separate _____.	<b>dry steam from the steam and water mixture</b>	condensate from feed water	superheated steam from saturated steam	sludge accumulations from feed water
644	The purpose of try-cocks used on an auxiliary boiler is to _____.	<b>provide an alternate means of determining the water level, if the gage glass fails</b>	provide a means of adding chemical feed to the boiler water	provide a means for blowing down the gage glass	act as a steam sentinel valve, if any of the fusible plugs should melt
645	The quantity of air delivered at any given speed by a Roots-type blower, as shown in the illustration, decreases as the pressure ratio increases. This is due to the _____.	decrease in clearance between the mating lobes	<b>increase in air leakage past the rotors</b>	decrease in air leakage past the rotors	increase in clearance between the mating lobes
646	The rate of heat transfer in a water-tube auxiliary boiler can be increased by _____.	operating the boiler at less than normal water level	<b>installing fins on the firesides of water-tubes</b>	increasing the amount of excess air to the burners	treating the boiler water with chemical oxygen scavengers

ID #	Question	Choice A	Choice B	Choice C	Choice D
647	The relative air pressure in the inlet manifold of a turbocharged diesel engine is usually _____.	<b>greater than the average exhaust manifold pressure</b>	less than the average exhaust manifold pressure	greater at the turbine wheel than at the impeller	greater at reduced engine speed
648	The required amount in the change of speed necessary before a governor will make a corrective movement is known as _____.	speed droop	<b>sensitivity</b>	stability	promptness
649	The RPM of "A" is 100 and has 80 teeth. If gears "B", "C", and "D" have 62, 20, and 38 teeth respectively, the RPM of "D" in the gear train illustration is _____.	67.91 RPM	<b>652.63 RPM</b>	505.79 RPM	52.63 RPM
650	The RPM of "A" is 100 and has 76 teeth. If gears "B", "C", and "D" have 60, 32, and 42 teeth respectively, the RPM of "D" in the gear train illustration is _____.	<b>339.29 RPM</b>	96.51 RPM	267.86 RPM	76.19 RPM
651	The RPM of "A" is 100 and has 88 teeth. If gears "B", "C", and "D" have 66, 22, and 48 teeth respectively, the RPM of "D" in the gear train illustration is _____.	61.11 RPM	412.50 RPM	<b>550.00 RPM</b>	45.83 RPM
652	The RPM of "A" is 100 and hobbled with 72 teeth. If gears "B", "C", and "D" have 64, 24, and 36 teeth respectively, the RPM of "D" in the gear train illustration is _____.	<b>533.33 RPM</b>	112.50 RPM	711.11 RPM	100.00 RPM
653	The RPM of "A" is 100 and hobbled with 76 teeth. If gears "B", "C", and "D" have 60, 32, and 42 teeth respectively, the RPM of "D" in the gear train illustration is _____.	<b>339.29 RPM</b>	96.51 RPM	267.86 RPM	76.19 RPM
654	The RPM of "A" is 100 and hobbled with 80 teeth. If gears "B", "C", and "D" have 62, 20, and 38 teeth respectively, the RPM of "D" in the gear train illustration is _____.	67.91 RPM	<b>652.63 RPM</b>	505.79 RPM	52.63 RPM
655	The RPM of "A" is 100 and hobbled with 88 teeth. If gears "B", "C", and "D" have 66, 22, and 48 teeth respectively, the RPM of "D" in the gear train illustration is _____.	61.11 RPM	412.50 RPM	<b>550.00 RPM</b>	45.83 RPM
656	The RPM of "A" is 100 and hobbled with 96 teeth. If gears "B", "C", and "D" have 80, 30, and 46 teeth respectively, the RPM of "D" in the gear train illustration is _____.	78.26 RPM	463.77 RPM	65.22 RPM	<b>556.52 RPM</b>
657	The RPM of "A" is 150 and hobbled with 78 teeth. If gears "B", "C", and "D" have 60, 32, and 42 teeth respectively, the RPM of "D" in the gear train illustration is _____.	148.57 RPM	<b>522.32 RPM</b>	401.79 RPM	114.29 RPM

ID #	Question	Choice A	Choice B	Choice C	Choice D
658	The RPM of "A" is 150 and hobbled with 82 teeth. If gears "B", "C", and "D" have 62, 20, and 38 teeth respectively, the RPM of "D" in the gear train illustration is _____.	104.41 RPM	758.68 RPM	<b>1003.42 RPM</b>	78.95 RPM
659	The RPM of "A" is 150 and hobbled with 84 teeth. If gears "B", "C", and "D" have 64, 24, and 36 teeth respectively, the RPM of "D" in the gear train illustration is _____.	131.25 RPM	711.11 RPM	100.00 RPM	<b>933.33 RPM</b>
660	The RPM of "A" is 150 and hobbled with 86 teeth. If gears "B", "C", and "D" have 66, 22, and 48 teeth respectively, the RPM of "D" in the gear train illustration is _____.	<b>806.25 RPM</b>	89.58 RPM	618.75 RPM	68.75 RPM
661	The RPM of "A" is 150 and hobbled with 94 teeth. If gears "B", "C", and "D" have 80, 30, and 46 teeth respectively, the RPM of "D" in the gear train illustration is _____.	114.95 RPM	<b>817.39 RPM</b>	695.65 RPM	97.83 RPM
662	The RPM of "D" is 500 and hobbled with 36 teeth. If gears "A", "B", and "C" have 72, 64, and 24 teeth respectively, the RPM of "A" in the gear train illustration is _____.	<b>93.75 RPM</b>	70.31 RPM	444.44 RPM	62.50 RPM
663	The RPM of "D" is 500 and hobbled with 42 teeth. If gears "A", "B", and "C" have 42, 60, and 32 teeth respectively, the RPM of "A" in the gear train illustration is _____.	147.37 RPM	142.22 RPM	<b>266.67 RPM</b>	394.74 RPM
664	The RPM of "D" is 600 and has 46 teeth. If gears "A", "B", and "C" have 94, 80, and 30 teeth respectively, the RPM of "A" in the gear train illustration is _____.	84.38 RPM	<b>110.11 RPM</b>	510.64 RPM	71.81 RPM
665	The RPM of "D" is 600 and has 48 teeth. If gears "A", "B", and "C" have 84, 66, and 22 teeth respectively, the RPM of "A" in the gear train illustration is _____.	111.63 RPM	66.67 RPM	460.47 RPM	<b>114.29 RPM</b>
666	The RPM of "D" is 600 and hobbled with 46 teeth. If gears "A", "B", and "C" have 94, 80, and 30 teeth respectively, the RPM of "A" in the gear train illustration is _____.	84.38 RPM	<b>110.11 RPM</b>	510.64 RPM	71.81 RPM
667	The RPM of "D" is 600 and hobbled with 48 teeth. If gears "A", "B", and "C" have 84, 66, and 22 teeth respectively, the RPM of "A" in the gear train illustration is _____.	111.63 RPM	66.67 RPM	460.47 RPM	<b>114.29 RPM</b>
668	The RPM of "D" is 700 and hobbled with 38 teeth. If gears "A", "B", and "C" have 82, 62, and 20 teeth respectively, the RPM of "A" in the gear train illustration is _____.	72.84 RPM	529.27 RPM	<b>104.64 RPM</b>	55.07 RPM

ID #	Question	Choice A	Choice B	Choice C	Choice D
669	The RPM of "D" is 800 and hobbled with 38 teeth. If gears "A", "B", and "C" have 80, 62, and 20 teeth respectively, the RPM of "A" in the gear train illustration is _____.	<b>122.58 RPM</b>	64.52 RPM	83.25 RPM	620.00 RPM
670	The RPM of "D" is 900 and hobbled with 36 teeth. If gears "A", "B", and "C" have 72, 64, and 24 teeth respectively, the RPM of "A" in the gear train illustration is _____.	<b>168.75 RPM</b>	112.50 RPM	100.00 RPM	800.00 RPM
671	The RPM of gear "D" is 900 and it is hobbled with 48 teeth. If gears "A", "B", and "C" have 88, 66, and 22 teeth respectively, the RPM of gear "A" in the gear train illustration is _____.	75.00 RPM	<b>163.64 RPM</b>	100.00 RPM	675.00 RPM
672	The safety valve installed on a coil-type auxiliary boiler is located on the _____.	thermostat tube	topmost coil	water tank	<b>flash chamber</b>
673	The satisfactory operation of diesel engine exhaust valves usually depends on _____.	the proper back pressure	the cooling water temperature	<b>correct timing and proper seating</b>	accurate metering and the exhaust temperature
674	The schematic diagram of an isochronous hydraulic governor is shown in the illustration. If there is an increase in applied load, the speed will decrease, and the _____.	flyweights (piece #8 and #9) move outward and the pilot valve (piece #10) moves upward	balance piston (piece #22) moves upward	proportioner piston (piece #25) moves downward	<b>pilot valve (piece #10) moves downward</b>
675	The section of the turbocharger which would be connected to the after cooler inlet is labeled _____.	<b>B</b>	C	H	K
676	The small clearances existing between each of the blower lobes, and between the lobes and casing of a Roots-type blower, must be maintained to _____.	provide for normal timing	prevent blower oil leakage	provide adequate blower lubrication	<b>prevent abnormal air leakage</b>
677	The solenoid valves in the fuel oil supply line to an automatically fired auxiliary boiler, are automatically closed by _____.	a decrease in feed temperature	high furnace air pressure	<b>high steam pressure</b>	low steam pressure
678	The speed droop characteristics of two similar diesel engines, driving two similar AC generators, are connected in parallel. From the illustrated diagram, determine which of the following statements is true.	<b>Engine "A" will take a greater part of the load than engine "B".</b>	Engine "B" will operate at a lower RPM than engine "A" when operating alone.	Engine "A" will take lesser part of the load than Engine "B".	Engine "B" will operate at a higher RPM than engine "A".
679	The speed droop characteristics of two similar diesel engines, driving two similar DC generators, are connected in parallel. From the illustrated diagram, determine which of the following statements is true.	<b>Engine "A" will take a greater part of the load than engine "B".</b>	Engine "B" will operate at a lower RPM than engine "A" when operating alone.	Engine "A" will take lesser part of the load than Engine "B".	Engine "B" will operate at a higher RPM than engine "A".



ID #	Question	Choice A	Choice B	Choice C	Choice D
680	The speed droop characteristics of two similar diesel engines, driving two similar DC generators, are connected in parallel. From the illustrated diagram, determine which of the following statements is true.	Engine "B" will take a greater part of the load than engine "A".	Engine "B" will operate at the same RPM as engine "A" when operating alone.	<b>Engine "B" will take lesser part of the load than Engine "A".</b>	Engine "B" will operate at a higher RPM than engine "A".
681	The speed of the turbocharger for a four-stroke/cycle diesel engine driving a generator at constant speed depends on the _____.	engine speed	<b>kilowatt load</b>	fuel injection pressure	air intake manifold temperature
682	The submerged electrode low water cutoff used in some automatically fired auxiliary boilers, will secure the burner fuel supply if the boiler water level _____.	touches the bottom of the electrode	<b>drops below the electrode tip</b>	changes from low to high level	remains constant and unvarying
683	The term 'diesel engine cylinder scavenging' means _____.	delivering more air into the cylinder than it would normally receive during an ordinary charging process	<b>forcing the products of combustion out of the cylinder with the fresh air charge</b>	collecting the air charge at the air cleaner	combustion and expansion of hot gas
684	The termination of fuel injection for a large low speed diesel engine is initiated by _____.	rotation of part #433	valve action of part #436	pressure applied to component #511	<b>movement of rod #581</b>
685	The torque transmitted by an electromagnetic induction coupling for an auxiliary diesel is dependent upon excitation and the _____.	engine speed	harmonic frequency	<b>amount of slip</b>	resonance
686	The total air capacity for non-reversible main engines is to be sufficient for _____.	<b>six consecutive starts</b>	eight consecutive starts	ten consecutive starts	twelve consecutive starts
687	The total starting air capacity required for reversible main engines is to be sufficient for a least _____.	six consecutive starts	eight consecutive starts	ten consecutive starts	<b>twelve consecutive starts</b>
688	The tube sheets installed in a fire-tube auxiliary boiler are normally connected by _____.	girder stays	<b>fire-tubes and stay-tubes</b>	external boiler plating	separate crown sheets
689	The turbocharger diffuser ring of the compressor element shown in the illustration, is indicated by the part labeled _____.	<b>"D"</b>	"E"	"F"	"G"
690	The upper leveling plates in a Kingsbury thrust bearing are held in place by _____.	<b>pins through the base ring</b>	buttons on the thrust shoes	pivots on the thrust collar	screw dowels in the base ring
691	The valve bridge, illustrated, allows for _____.	<b>two exhaust valves to be operated from one rocker arm</b>	the exhaust valves to be lubricated through an internal lube oil passage	positive closing action of the exhaust valves	positive rotation of the exhaust valves

ID #	Question	Choice A	Choice B	Choice C	Choice D
692	The valve gear shown in the illustration is for a four-stroke/cycle, medium speed, diesel engine, with fuel injection commencing in at 10° Before TDC. Approximately how many crankshaft degrees from the point at which fuel injection begins, does the exhaust valve push rod begin to move up?	90°	90°-120°	<b>130°-160°</b>	180°-190°
693	The valve spring shown in the illustration, functions to _____.	prevent movement of the bushings	<b>hold the valve against its seat</b>	position the bushing to the cam	open the valve at the proper time
694	The valve stem expansion associated with engine warm-up is allowed for by the _____.	valve springs	hydraulic governor	<b>valve lash adjusters</b>	cooling system
695	The variation in the amount of fuel oil burned in the operation of an auxiliary boiler, utilizing a return flow type atomization system, is a function of the _____.	fuel oil recirculating valve	<b>fuel oil back pressure</b>	fuel supply pressure regulating valve	automatic steam atomizer assembly
696	The volume of available air supply required by an air clutch varies with the _____.	size of the clutch	volume of the supply line between the control valve and the clutch	frequency of engagement	<b>all of the above</b>
697	The water in a steaming auxiliary boiler should be tested daily for _____.	dissolved oxygen	<b>chlorides</b>	sludge	dissolved nitrogen
698	The water in an auxiliary boiler should be chemically tested daily for alkalinity and _____.	soap hardness	nitrogen content	<b>chloride content</b>	dissolved CO2
699	The water in an auxiliary boiler should be tested for chloride content to determine _____.	total dissolved solids	<b>salt contamination</b>	water hardness	chlorine contamination
700	The water in an operating auxiliary boiler should be tested for alkalinity and chloride content each _____.	hour	<b>day</b>	week	month
701	Thermocouple pyrometers are used on large, main propulsion diesel engines to indicate the temperature of the _____.	cooling water leaving each cylinder	fuel oil entering the injector	<b>exhaust gases at various locations</b>	lube oil at the bearing supplies
702	Throttling a burner air register on an auxiliary boiler could result in _____.	<b>smoky boiler operation</b>	decreased fuel consumption	improved fuel combustion	fewer soot deposits
703	To check the setting of the overspeed trip on a diesel powered generator, you would use a _____.	<b>tachometer</b>	torsion meter	dynamometer	pony brake
704	To correct a hunting problem in a main propulsion diesel engine hydraulic governor, you should _____.	increase the governor oil pressure	adjust the speed droop setting	adjust the speeder spring travel	<b>adjust the compensating needle valve</b>
705	To guarantee that a reduction gear bearing is receiving proper oil supply, you should check the _____.	lube oil temperature at the cooler outlet	lube oil strainer magnets	<b>bearing lube oil temperature</b>	lube oil pressure to the bearing

ID #	Question	Choice A	Choice B	Choice C	Choice D
706	To guarantee that a reduction gear bearing is receiving proper oil supply, you should check the _____.	lube oil pressure to the bearing	lube oil strainer magnets	<b>lube oil temperature leaving the bearing</b>	lube oil temperature at the cooler outlet
707	To increase the speed setting of the governor shown in the illustration, which of the listed adjustments must be made?	<b>Increase the compression of the speeder spring.</b>	Open the compensating needle valve.	Increase the load limit adjustment.	Compress the compensating dashpot spring.
708	To prevent vibration damage to the fuel supply line of a diesel engine, you may use _____.	a short length of heavy duty clear plastic tubing	<b>a length of approved flexible nonmetallic hose</b>	welded flange connections for all joints	aluminum piping with expansion loops
709	To stop the diesel engine governor from hunting, the governor oil system is to be purged of trapped air by adjusting the part shown in the illustration labeled _____.	A	B	<b>C</b>	D
710	To successfully reduce an excessively high diesel engine exhaust gas temperature, you should _____.	reduce the engine driven fuel pump outlet pressure	retard the fuel injector timing to reduce power	increase the fuel rack setting	<b>reduce the load on the engine</b>
711	To test the operation of the flame failure switch of an operating automatically fired auxiliary boiler, you should _____.	de-energize the high voltage ignition system	move the igniter away from the normal firing position	<b>close the manual fuel valve with the burner firing</b>	shift the controls to low fire
712	Torque capacity of the air clutch shown in the illustration, may be increased by _____.	putting in a thinner friction plate #6	<b>increasing air pressure</b>	removing clutch spring #4	adjustment of nut #22
713	Turbocharged four-stroke/cycle diesel engines utilize valve overlap for _____.	<b>improving cylinder scavenging</b>	preheating the combustion chamber	reducing air charge density	preventing valve wear
714	Two air compressors are provided for the starting air system and should be capable of _____.	<b>charging the starting air containers within one hour</b>	providing the minimum quantity of starting air at all times	supplying all the air necessary to start both the main engine and an auxiliary at the same time	topping off all receivers at the required design pressures
715	Two inflatable clutch glands are provided in the main engine reduction gear illustrated because _____.	this is a two-speed gear	additional clutch friction is required at high speeds	one is a spare in the event of failure of the primary gland	<b>the reduction gear is able to provide a reverse output</b>
716	Two solenoid control valves are required on large automatic auxiliary boilers, and will simultaneously shut off the fuel in the event of _____.	<b>low water</b>	low steam pressure	high voltage	all of the above
717	Under which of the following conditions must the combustion control system for a small automatic auxiliary boiler secure the burner?	High water level	Low steam pressure	<b>Flame failure</b>	High fuel oil temperature
718	Valve rotators are commonly used on which of the listed diesel engine cylinder head valves?	Air starting	Cylinder relief	<b>Exhaust</b>	Blow down

ID #	Question	Choice A	Choice B	Choice C	Choice D
719	Valves and fittings used with diesel engine fuel oil pressure piping may be threaded in sizes up to and including 60 mm O.D., but screwed unions _____.	are to be used on pressure lines in sizes 33 mm O.D. and over	over 33 mm O.D. will be permitted in lieu of flanged connections	shall not be used in any instance where the fitting is subjected to excessive vibration	<b>are not to be used on pressure lines in sizes 33 mm O.D. and over</b>
720	Valves in the cylinder head of a diesel engine are opened by the direct action of the _____.	exhaust pressure	valve spring pressure	<b>rocker arm movement</b>	wrist pin movement
721	Valves used in diesel engine fuel oil pressure piping are to be _____.	<b>so constructed as to permit packing under pressure</b>	solenoid released upon the failure of engine lubrication	either of the gate or globe valve type	forge constructed under the approval of the Marine Inspector
722	Variations in the amount of fuel oil burned in a return flow type burner of an auxiliary boiler, are controlled by the _____.	atomizing steam pressure	size of the whirling chamber	<b>back pressure in the fuel oil return line</b>	area of the tangential slots
723	Vessels having main engines arranged for air starting are to be provided with at least _____.	one automatic drain serving both containers	<b>two air starting containers of approximately equal size</b>	one control air container and one starting air container	one additional means of starting the main engine
724	Waste heat boilers may be equipped with vents on the feed water heater heads to _____.	<b>prevent air binding</b>	release excess pressure	allow for feed water treatment	remove sediment
725	Waterside scale in a fire-tube boiler may cause _____.	increased heat transfer	fireside erosion	high steam demand	<b>overheated tubes</b>
726	Wear occurring at the tips of the reduction gear teeth is usually the result of _____.	surface fatigue	fretting corrosion	heavy overloading	<b>gear misalignment</b>
727	Wet-type exhaust silencers, used with some lifeboat diesel engines, utilize which design feature?	The silencer is equipped with a water seal.	The exhaust gases are preheated in the silencer to reduce noise.	<b>A cooling water spray and internal baffles break up the exhaust gas flow.</b>	The exhaust temperature always increases when passing through the silencer.
728	What changes in valve timing will tend to increase the cooling effect on the exhaust valve in a four-stroke cycle turbocharged diesel engine?	Retard the intake valve opening and advance the exhaust valve closing period.	Advance the intake and exhaust valve opening period.	<b>Advance the intake valve opening and retard the exhaust valve closing periods.</b>	Retard the intake and exhaust valve closing period.
729	What color exhaust will be exhibited when a slow speed two-stroke/cycle main propulsion diesel engine, designed to operate on light and heavy fuel oil, is operated on insufficiently preheated heavy fuel oil?	White	<b>Black</b>	Blue	Clear
730	What component would normally be installed at location "D", as shown in the illustration ?	Boiler water level indicator	<b>Oil fired mechanical burner</b>	Boiler soot blower unit	Flue gas smoke density indicator

ID #	Question	Choice A	Choice B	Choice C	Choice D
731	What condition listed below would indicate that a pump overhaul was necessary for a centrifugal saltwater service pump.	Indicated head pressure does not change when the discharge valve is closed	Pump vibration has increased	Shaft packing gland requires constant repacking due to an excessively worn sleeve	<b>All of the above</b>
732	What condition listed below would specifically indicate that a pump overhaul was necessary for a centrifugal saltwater service pump.	<b>Indicated head pressure does not change when discharge valve is closed.</b>	Observed operational speed has decreased	Excessive noise coming from drive motor	Excessive noise coming from pump coupling
733	What condition listed below would specifically indicate that a pump overhaul was necessary for a centrifugal saltwater service pump.	Pump coupling requires constant maintenance.	Observed operational speed has decreased.	<b>Indicated head pressure does not change when discharge valve is closed.</b>	Salt water heat exchangers running hot.
734	What device is installed and used as a safety feature to satisfy Coast Guard regulations for the unit shown in the illustration?	Spring clutch	Overrunning clutch	Pneumatic three position valve	<b>Electrical limit switch</b>
735	What harmful condition can result if a diesel engine is operated at very light loads for long periods of time?	<b>Increased carbon buildup.</b>	Burning of intake valves.	Excessive firing pressures.	Increased fuel consumption.
736	What indications would you use to determine that a pump overhaul was necessary for a salt water service centrifugal pump assuming normal salt water supply conditions?	<b>Shutoff head pressure had dropped by 20%</b>	Noticeable decrease in operational speed	Pump coupling requires constant maintenance	All of the above
737	What is required for crosshead type engines that have a scavenging space in open connection to the cylinder?	The air flow from the scavenging space must always be protected by plate type check valves and under no circumstance may other devices be used.	A suitable gasket for the interface of both manifolds is necessary to prevent recirculation of scavenging gases, while additionally minimizing exhaust gas leakage.	<b>The scavenging space is to be permanently connected to an approved fire extinguishing system, entirely separate from the fire extinguishing system of the engine room.</b>	The required equipment for a crosshead type engine is totally dependent upon manufacturers ability to placate market demands.
738	What is the best way of stopping an overspeeding diesel engine?	Disconnect the battery cables from the starting motor.	Drain the hydraulic fluid from the governor sump.	Block the flow of cooling air to the radiator.	<b>Secure the fuel supply and block the air intake</b>
739	What is the function of the after coolers installed in the diesel engine air intake system?	Decrease the air density	Increase the exhaust temperature	Decrease the lube oil temperature	<b>Increase the air density</b>
740	What is the function of the main thrust bearing?	Prevents lateral movement of the slow speed gear.	<b>Transmits propeller thrust to the hull.</b>	Keeps spring bearings in line.	Prevents main reduction gear axial movement.

ID #	Question	Choice A	Choice B	Choice C	Choice D
741	What is the primary purpose of the pneumatic component shown in the illustration?	The valve with finite positioning is used to segregate terminal signals originated by the governor whenever the throttle is repositioned.	The indicated valve prevents transmission of transient signals to the governor speeder spring.	If the locking handle is in any position other than 'zero', the output of the pneumatic valve will equal the input.	<b>If the throttle is manually moved from its 'zero' position, the resulting effect will tend to override the output of the governor, and secure the air to the control circuit.</b>
742	What is to be installed on an internal combustion engine if its cylinder bore exceeds eight inches?	Crankcase vapor monitors	Engine exhaust silencers	Constant pressure type turbochargers	<b>Explosion relief valves</b>
743	What may be used to protect starting air mains against explosions arising from improperly functioning starting valves?	The starting air main shall be protected by the use of a rupture disc.	No protection is necessary because all starting air valves are designed similar to check valves.	<b>An isolation non-return valve is to be installed at the starting air supply connection to each engine.</b>	The materials used in the construction of the starting air mains will contain any explosion.
744	What method is used to supply air to the cylinders of the diesel engine illustrated?	Operation of the turbocharger at full load	Operation of an auxiliary blower at low load	The pumping action of the piston	<b>All of the above are correct.</b>
745	What method is used to supply air to the cylinders of the diesel engine shown in the illustration?	By the action of the turbocharger at full load.	By the action of an auxiliary electric blower at low load.	By the pumping action of the piston.	<b>All of the above.</b>
746	What type of fitting is to be used on diesel engine fuel injection line piping?	Mild steel	Hardened steel	<b>Extra heavy</b>	Double extra heavy
747	What type of reduction gear would most commonly be used with twin medium-speed propulsion diesel engines driving a single shaft?	Single reduction, planetary	Single reduction, single input	<b>Single reduction, double input</b>	Double reduction, double input, articulated
748	What will cause valve stem blow-by to the valve section shown in the illustration?	A cracked lower spring plate.	Worn, broken or stuck compression rings.	Damaged rubber rings on the valve seat insert.	<b>Defective rubber seal rings in the valve guides.</b>
749	What would be the approximate gap clearance value for a flywheel magnetic pickup speed sensor as found on most medium and high speed engines?	.001 " - .003 "	<b>.022 " - .033 "</b>	.222 " - .333 "	.333 " - .666 "
750	What would cause a coil type evaporator to require consistently higher steam coil pressure to maintain its output capacity?	The brine density is improper.	<b>Heat transfer surfaces are being layered with scale.</b>	Impure distillate is being produced.	Shell vapor pressure is constantly decreasing.
751	When a diesel engine is attached to a reduction gear, diesel engine speed is reduced and the torque available for work _____.	remains the same	is reduced	<b>is increased</b>	is eliminated

ID #	Question	Choice A	Choice B	Choice C	Choice D
752	When a diesel engine is equipped with a hydraulic starting system designed to operate at pressures of 150 psi or more, Coast Guard Regulations (46 CFR) require that the hydraulic fluid shall _____.	have a viscosity index number greater than 100	have a flash point of not greater than 200°F	<b>have a flash point of not less than 315°F</b>	be oxidation resistant and nontoxic
753	When a generator diesel engine is operated at partial load, as compared to full load, a decrease will occur in the average _____.	piston speed	fuel injection pressure	<b>combustion pressure on the power stroke</b>	compression pressure on the compression stroke
754	When a hydraulic valve lifter is on the base circle of the cam, 'zero' valve lash is maintained by the _____.	valve spring	<b>plunger spring</b>	oil pressure	rocker arm
755	When a naturally aspirated four-stroke/cycle diesel engine is converted for supercharging, which of the following changes must be made to the valve timing?	<b>The intake valve opening is advanced and the exhaust valve closing is retarded.</b>	The intake valve opening is unchanged and the exhaust valve closing is advanced.	The intake valve opening is retarded and the exhaust valve closing is advanced.	The intake valve closing is retarded and the exhaust valve closing is advanced.
756	When a waste heat boiler is installed in the exhaust of a main propulsion diesel engine, the exhaust gas bypass would be used _____.	at high loads to prevent overheating	<b>at low loads to prevent corrosion in the boiler</b>	during periods of high steam demand	when the turbocharger is in operation
757	When accumulated carbon at the air inlet ports of a two-stroke/cycle diesel engine is being removed, you should take care to avoid carbon _____.	<b>entering the cylinder</b>	particles becoming lodged under the intake valves	entering the water jacket	particles entering lube oil
758	When air is delivered under pressure to one of the glands of an air-bladder clutch, the _____.	inside diameter of the clutch gland increases	<b>inside diameter of the clutch gland decreases</b>	gland rotates out of contact with the drums	clutch begins to rotate with the engine
759	When an additional load is applied to a diesel engine which is using an air bladder clutch unit that is inadequately inflated, you can expect _____.	chipped reduction gear teeth	<b>overheating because of slipping shoes</b>	pneumatic seizure	excessive wear on the thrust bearings
760	When an additional load is applied to a diesel engine which is using an inadequately inflated air bladder clutch unit, you can expect _____.	pneumatic seizure	<b>overheating because of slipping shoes</b>	chipped reduction gear teeth	excessive wear on the thrust bearings
761	When an auxiliary boiler is on the line, the output of the flame scanner can be checked by placing a microammeter in series with the photoelectric cell circuit. The readings on high fire should be _____.	<b>higher than those at low fire</b>	equal to those at low fire	lower than those at low fire	lower than those at low fire, but the generated voltage will be higher
762	When an auxiliary boiler is panting and emitting black smoke, you should _____.	increase the fuel oil temperature	decrease the fuel oil temperature	decrease the fuel oil supply pressure	<b>increase the air supply</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
763	When an auxiliary boiler is secured and you expect to relight the unit within six hours, you should _____.	<b>maintain a head of steam not less than 10 psig</b>	completely fill the boiler with feed water	flush the boiler and close the waterside airtight	maintain steam pressure 10 psig below normal boiler load
764	When attempting to start a main propulsion diesel engine, the engine turns at the proper speed but will not start. You should check the _____.	starting air pressure	scavenge air pressure	<b>overspeed trip</b>	banjo oiler line
765	When changing the direction of propeller shaft rotation in a diesel plant equipped with a pneumatic clutch, you must pause at neutral to allow the _____.	fuel rack to readjust	engine to slow down	propeller to stop	<b>clutch to deflate</b>
766	When checking for the presence of sulfite in the feed water of an auxiliary boiler, you are in essence checking _____.	the hardness of the makeup feed water	to ensure the compound additions are adequate for control of pH	<b>to ensure the compound additions are adequate for controlling dissolved oxygen</b>	to ensure the automatic or manual blow down rate and frequency is adequate for control of total dissolved solids
767	When checking the underside of the valve cover shown in the illustration, you find localized black patches. You should suspect _____.	worn valve locks	loose tapered collars	a damaged inner valve spring	<b>worn exhaust valve guides and seals</b>
768	When conducting a hydrostatic test on a water-tube auxiliary boiler, the test water should be heated to a temperature of at least 70°F (21°C). This is done to _____.	maximize the coefficient of expansion within the varying types of metals used in boiler construction	<b>help prevent the formation of condensation on the tube exteriors</b>	eliminate refractory thermal stress	all of the above
769	When conducting a hydrostatic test on a water-tube auxiliary boiler, the test water should be heated to a temperature of at least 70°F. This is done to _____.	minimize the coefficient of expansion within the varying types of metals used in boiler construction	<b>help prevent the formation of condensation on the tube exteriors</b>	eliminate oxygen being carried into the system	all of the above
770	When fuel oil heaters are required for main engine operation, _____.	each heater shall have the capacity to supply the main engine at full power	<b>at least two heaters of approximately equal size are to be installed</b>	the system shall be designed to permit series or parallel operation	none of the above
771	When inspecting the valve mechanism shown in the illustration, normal maintenance would include _____.	mechanically adjusting the valve at point "D"	mechanically adjusting the valve at point "E"	changing the tappet clearance as measured between points "A" and "B"	<b>measuring the cold valve clearance between components "C" and "D"</b>



ID #	Question	Choice A	Choice B	Choice C	Choice D
772	When lighting off an auxiliary boiler, which of the problems listed could cause the burners to sputter?	Cold fuel oil	Low fuel oil pressure	Low atomizing steam pressure	<b>Water in the fuel oil</b>
773	When may the crankcase ventilation pipes or oil drain pipes of two or more engines be connected?	Propulsion engines under 1000 shaft horsepower may share a common crankcase vent provided the oil drains remain separate.	In most cases it is desirable and cost effective for propulsion engines to share a common crankcase ventilation and monitoring system.	<b>No interconnection may be made between the crankcase ventilation pipes or oil drain pipes.</b>	None of the above are correct.
774	When monitoring diesel engine performance, the most useful instrument to use is the _____.	dwell-tachometer	<b>exhaust gas pyrometer</b>	fuel flow rate meter	exhaust gas analyzer
775	When more than one propulsion diesel engine is connected to a single propeller shaft through reduction gears, the gears are usually _____.	<b>single reduction</b>	double reduction	triple reduction	quadruple reduction
776	When one cylinder has a lower compression pressure and higher exhaust gas temperature than any of the other engine cylinders, which of the conditions listed will be indicated?	Advanced ignition	Clogged air intake	<b>Leaky exhaust valve</b>	High exhaust pressure
777	When passing through mesh contact, the teeth of a reduction gear first go through a series of actions best described as _____.	galling	squeezing	<b>sliding</b>	slipping
778	When preparing to light off a cold boiler equipped with a return flow fuel oil system, the recirculating valve directs the flow of oil _____.	directly to the fuel oil heater inlet for further warm-up	back to the fuel oil settler for further filtration	<b>back to the suction side of the service pump</b>	directly to the deep tanks
779	When removing carbon that has accumulated at the air inlet ports of a two-stroke/cycle diesel engine, you should take precautions to prevent carbon particles from _____.	entering the lube oil	<b>entering the cylinder</b>	entering the water jacket	becoming lodged under the intake valves
780	When replacing tubes in a water-tube auxiliary boiler, to eliminate the possibility of leaks at the tube seats, the replacement tubes should be _____.	stress relieved to ensure expansion when rolled	annealed to prevent cracking when rolled	fitted with a welded backing ring in the seat area	<b>rolled, beaded, and seal welded around the bead edge</b>
781	When the cold tappet clearance is less than that specified by the engine manufacturer, the diesel engine valves will _____.	<b>open earlier than normal</b>	close earlier than normal	remain open for a shorter duration	fail to open when the valves are warm
782	When the cold valve lash is less than that specified by the manufacturer, diesel engine valves, operating at normal temperatures, will _____.	open later than normal	<b>close later than normal</b>	have less total lift	have less total duration

ID #	Question	Choice A	Choice B	Choice C	Choice D
783	When the diesel engine hydraulic governor shown in the illustration is operating at controlled speed, which of the relationships listed will occur between the edges of the pilot valve and the ports of the pilot valve bushings?	<b>The edges register with and just close off the ports without allowing oil flow.</b>	The edges are above the ports and oil under pressure supplies the power piston.	The edges are above the ports and oil bleeds to the sump.	The edges are in constant motion going both above and below the ports and governor stability is maintained.
784	When the load is increased on a turbocharged diesel engine, the amount of increased air supplied by the turbocharger will _____.	<b>lag behind the increased fuel supplied to the engine</b>	enter the engine along with the increase in fuel	enter the engine before the increased fuel supply	leave the turbocharger as a negative pulse
785	When the prime movers of two paralleled generators are equipped with mechanical-hydraulic governors, and are operating within their designed range, the unit with the least amount of speed droop will _____.	<b>pick up more of any increase in load</b>	pick up less of any increase in load	share an equal amount of any increase in load	drop an equal amount of any decrease in load
786	When the steam pressure drops below a set value on an automatically fired auxiliary boiler, fitted with rotary cup atomizers, the combustion control system will _____.	<b>increase the fuel oil control valve opening</b>	increase the rotary cup speed	decrease the back pressure regulating valve opening	decrease the supply steam control valve opening
787	When the timing gear backlash for a Roots-type blower has become excessive, the problem is properly repaired by _____.	renewing the drive gear	renewing the driven gear	<b>renewing both driving and driven gears as a set</b>	shimming and pinning the gears with proper backlash
788	When there is a flame failure in an automatically fired auxiliary boiler, the _____.	air supply is shut off	<b>fuel supply is shut off</b>	water supply is shut off	safety valve lifts
789	When two direct air start reversible medium speed diesel engines are coupled in parallel to a common propeller shaft, which of the operating conditions listed will apply during extended periods of maneuvering?	Full horsepower is available ahead and astern.	Mechanical reduction gearing is not required.	Full reversing torque is available.	<b>One engine will be turning ahead and the other astern with the appropriate engine clutched in and out to answer bells.</b>
790	When two medium speed diesel engines are electrically coupled in parallel to a common propeller shaft which will operate at a speed less than 100 RPM, which of the operating conditions listed will apply?	Propeller shock loads can severely damage the clutch.	One engine must be running ahead and the other astern.	Full reversing torque is not available.	<b>Mechanical reduction gearing is required.</b>
791	When used in conjunction with a turbocharger, the main function of an after cooler is to _____.	<b>increase the density of the cylinder air charge</b>	prevent turbocharger overheating	eliminate the need for a precooler	remove moisture from air compressed by the turbocharger

ID #	Question	Choice A	Choice B	Choice C	Choice D
792	When used with reversing reduction gears, main propulsion diesel engines should be bolted tight to their foundations with fitted bolts at the output drive end and snug bolts with elongated bolt holes at the opposite end. This is done to _____.	maintain alignment when the ship's hull is working in heavy seas	ensure engine vibrations correspond to the natural frequency of the hull	<b>permit thermal expansion of the engine frame away from the driven equipment as the engine reaches operating temperature</b>	maintain proper engine thrust bearing clearances
793	When would a diesel engine exhaust valve spring be under the greatest compression load?	when the valve is seated	when the valve is partially closed	when the valve is partially open	<b>when the valve is fully open</b>
794	When would the available energy of the exhaust gases of a two-stroke/cycle diesel engine be insufficient to drive an exhaust gas turbocharger, resulting in the incorrect amount of air for combustion?	During operation at low load and speed	During operation at rated speed, but low power output	During acceleration	<b>All of the above</b>
795	When would the available energy of the exhaust gases of a two-stroke/cycle diesel engine driving a turbocharger, result in a low value of scavenging air pressure for combustion?	During operation at low load and speed	During operation at rated speed, but low power output	During acceleration	<b>All of the above</b>
796	Where engine bores exceed 230 mm, a bursting disc or flame arrester is to be fitted _____.	at the supply inlet to the control air manifold for non-reversing engines	on the exhaust manifold prior to the inlet of the turbochargers	on all devices subject to the by-products of combustion or lubrication system vapors	<b>in way of the starting valve of each cylinder for direct reversing engines having a main starting manifold</b>
797	Where engine bores exceed 230 mm, a bursting disc or flame arrester is fitted _____.	<b>at the supply inlet to the starting air manifold for non-reversing engines</b>	on the exhaust manifold prior to the inlet of the turbocharger	on all devices subject to the by-products of combustion or lubrication system vapors	in way of the control valve of each cylinder for direct reversing engines having a main starting manifold
798	Where is a fusible plug installed on a Scotch or auxiliary boiler?	At the shell approximately 1 1/2 inches (3.8 cm) below the normal waterline.	<b>At or near the center of the crown sheet of the combustion chamber.</b>	In the furnace approximately 1 1/2 inches (3.8 cm) below the normal waterline.	In the furnace not more than 1 inch (2.54 cm) below the lowest permissible water level.
799	Where one or more diesel driven AC generators are operating in parallel, reducing the value of the speed droop to 'zero' on one unit will allow that unit to _____.	gradually reduce its speed as load is applied	<b>change load without changing speed</b>	automatically divide and balance the loads	effectively anticipate the amount of fuel necessary to bring the engine up to the proper output to accept the increased load

ID #	Question	Choice A	Choice B	Choice C	Choice D
800	Where the size and design of an engine is such that lubrication before starting is not necessary and an attached pump is normally used, _____.	an additional pump is not required provided the engine driven pump is capable of producing sufficient pressure regardless of the direction of rotation	no additional pumps are required if the vessel is equipped with two propulsion engines clutched to reduction gears through a suitable arrangement	an independently driven pump capable of supplying each engine with sufficient quantities of oil during ahead operations is required	<b>an independently driven stand-by pump is not required if a complete duplicate of the attached pump is carried as a spare</b>
801	Which action should be taken when an auxiliary boiler is in operation?	Clean all electrical connections.	Lift the relief valves by hand.	Inspect and clean all solenoid valves.	<b>Inspect for oil and water leaks.</b>
802	Which condition indicates the air side fouling of an after cooler on a turbocharged diesel engine?	An increased air temperature differential between the cooler inlet and outlet.	A decrease in the air pressure differential across the cooler.	Excessive condensate forming in the air box.	<b>A decrease in the air temperature differential between the cooler inlet and outlet.</b>
803	Which direction of rotation of the gear pump shown in the illustration will produce the correct direction of oil discharge to operate the governor?  I. clockwise II. Counterclockwise	I only	II only	<b>Both I and II</b>	Neither I nor II
804	Which letter represents the scavenging air system non-return valve in the illustration?	<b>P</b>	Q	W	U
805	Which of the air intake systems listed will require the least amount of brake horsepower to operate?	Natural aspiration	<b>Turbocharged</b>	Roots blower	Underside piston compression
806	Which of the air intake systems listed will result in the lowest specific fuel consumption?	Natural aspiration	<b>Turbocharged</b>	Roots blower	Piston blower
807	Which of the automatic boiler controls listed should be tested prior to lighting off an auxiliary boiler?	Automatic bottom blow valve	<b>Low water level cutoff switch</b>	Voltage output of the ignition transformer	Insulation resistance readings in the ignition system high tension leads
808	Which of the bearing types listed is most commonly used for their ability to absorb thrust in reduction gear applications?	Ball bearings	Poured bearings	Sleeved bearings	<b>Tapered roller bearings</b>
809	Which of the changes in the valve timing listed should be carried out when a naturally aspirated four-stroke/cycle diesel engine is converted to a supercharged engine?	Retard the intake valve opening and advance the exhaust valve closing period.	Advance the intake and exhaust valve opening period.	<b>Advance the intake valve opening and retard the exhaust valve closing periods.</b>	Retard the intake and exhaust valve closing period.
810	Which of the clutch types listed is shown in the illustration of the reversing reduction gear unit? (See illustration MO-0085)	Hydraulic coupling	Electromagnetic coupling	<b>Air operated friction clutch</b>	Synchromesh coupling

ID #	Question	Choice A	Choice B	Choice C	Choice D
811	Which of the conditions listed will occur as a result of having an intercooler installed in the diesel engine intake system shown in the illustration?	Intake valve burning is eliminated.	<b>Air charge density will be increased.</b>	Brake specific fuel consumption will be increased.	Cylinder combustion temperatures will be lowered.
812	Which of the coupling types listed is shown in the illustration?	<b>Solid flange</b>	Hydraulic flexible	Pneudraulic flexible	Fluid drive
813	Which of the couplings listed is normally not repairable, and is usually replaced if completely damaged?	Flexible disk-ring coupling	<b>Gear-type coupling</b>	Grid spring coupling	Block and jaw coupling
814	Which of the couplings listed will prevent shock loads from being transmitted to an engine?	Grid	Dog type	Friction	<b>Hydraulic</b>
815	Which of the designs listed will keep the lobes from making contact in a Roots-type blower?	Drive chain	<b>Blower timing gears</b>	Air trapped between blower lobes	Oil filter between blower lobes
816	Which of the diesel engine components listed increases air density and helps to improve engine operating efficiency?	Impeller	Compressor	<b>After cooler</b>	Exhaust diffuser
817	Which of the diesel engine exhaust mufflers listed is usually equipped with a spark arrestor?	A wet-type exhaust muffler	A constant pressure muffler	<b>A dry-type exhaust muffler</b>	A constant velocity muffler
818	Which of the engine components listed increases air charge density and helps to improve engine operating efficiency?	Intake manifold	Water-cooled exhaust system	<b>After cooler</b>	Exhaust diffuser
819	Which of the equal horsepower diesel engines listed, running at the same speed, is least affected by exhaust back pressure?	<b>A four-stroke/cycle "V" type engine</b>	A two-stroke/cycle "V" type engine	An in-line two-stroke/cycle engine	An opposed piston engine
820	Which of the following actions should normally be taken during each watch when the auxiliary boiler is in operation?	Vent air from the steam drum	<b>Observe general boiler performance</b>	Lift the safety valves by hand	Inspect and clean burner oil solenoid valves
821	Which of the following actions should normally be taken during each watch when the auxiliary boiler is in operation?	Test boiler water alkalinity	Inspect and clean burner fuel oil solenoid valves	Lift the safety valves by hand	<b>Blow down the water gage glass</b>
822	Which of the following actions should normally be taken during each watch when the auxiliary boiler is in operation?	Clean the flame scanner photocell window.	Inspect and clean all solenoid valves.	Lift the safety valves by hand.	<b>Inspect for oil or water leaks.</b>
823	Which of the following actions takes place in the control circuit of an automatically fired auxiliary boiler when the desired steam pressure is obtained?	A temperature sensing device opens the circuit breaker in the burner motor.	<b>The high limit control secures power to the entire oil firing system.</b>	The stack relay actuates the low limit control which breaks the ignition circuit.	The stack relay secures power to the high voltage side of the ignition transformer.
824	Which of the following adjustments is always required whenever the diesel engine governor oil has been drained and renewed?	Speed droop	<b>Compensation</b>	Idle speed setting	Load limit control
825	Which of the following beneficial results can be expected from supercharging a previously naturally aspirated engine?	Increased cylinder air turbulence	Increased maximum horsepower	Increased cylinder mean effective pressure	<b>All of the above.</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
826	Which of the following characteristics is true relative to meshing spur gears?	<b>The gear of larger diameter will rotate at a slower RPM.</b>	Both gears will operate in the same direction.	The teeth on the larger gear are larger than the teeth on the smaller gear.	The teeth on the larger gear are smaller than the teeth on the smaller gear.
827	Which of the following components may be installed at location "B", as shown in the illustration?	Boiler water level indicator	Oil fired mechanical burner	Boiler soot blower unit	<b>Flue gas pyrometer</b>
828	Which of the following conditions can cause above normal air temperature to develop in the intake manifold of a four-stroke/cycle, turbocharged, diesel engine?	Unbalanced cylinder loading	Excessive piston blow-by	<b>A dirty after cooler</b>	Early injection timing
829	Which of the following conditions can cause below normal air pressure in the intake manifold of a turbocharged diesel engine?	Excessive piston blow-by to the manifold.	Insufficient cooling water flow.	Accumulated water in the air boxes.	<b>Clogged air intake filters.</b>
830	Which of the following conditions could cause black smoke to be discharged from the stack of an auxiliary boiler equipped with turbine-driven rotary cup atomizers?	Insufficient steam supply to the fuel oil heater.	Excessive opening of the dampers in the combustion air inlet.	<b>Improper turbine shaft speed in the atomizer assembly.</b>	Low fuel oil viscosity being maintained.
831	Which of the following conditions could cause the feed pump for an auxiliary boiler to lose suction?	Increased suction head pressure	Decreased feed water temperature	Pump recirculating line being open too much	<b>Excessive feed water temperature</b>
832	Which of the following conditions is indicated by the presence of water in the scavenging air receiver?	Leaking cylinder head gaskets	<b>Leaking after cooler</b>	Excessively high scavenge air temperature	Auxiliary blower failure
833	Which of the following conditions is likely to develop if the thermocouple element of a pyrometer becomes coated with excessive amounts of combustion by-products?	Indicated exhaust pressure readings will increase.	<b>Pyrometer responses will be retarded.</b>	Indicated cylinder temperature readings will increase.	Indicated firing pressure readings will increase.
834	Which of the following conditions is realized by the turbo charging of a previously naturally aspirated diesel engine?	Ignition lag increases.	Lube oil system pressure increases.	Brake specific fuel consumption increases.	<b>Mechanical efficiency increases.</b>
835	Which of the following conditions is responsible for the fuel oil to atomize when using a steam atomizer in an auxiliary boiler?	<b>Expansion of the steam in the furnace.</b>	Expansion of the steam in the whirling chamber.	Expansion of the steam in the orifice plate.	All of the above.
836	Which of the following conditions may be attributed to a fouled turbocharger compressor inlet screen or filter?	Decreasing scavenge air pressure.	Increasing exhaust temperatures before the turbine.	Reduction in engine speed.	<b>All of the above</b>
837	Which of the following conditions may cause an engine to overspeed on initial startup?	Faulty injectors	Turbocharger seal ring failure	Airborne hydrocarbons in surrounding area	<b>All of the above</b>
838	Which of the following conditions may contribute to the formation of deposits on the blades of the turbocharger turbine?	Poor combustion	High cylinder oil consumption	Leaking exhaust valves	<b>All of the above.</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
839	Which of the following conditions will cause only one of the burner solenoid valves to close on an automatically fired, two burner unit, auxiliary boiler?	Loss of the forced draft fan	Low boiler water level	High boiler water level	<b>A faulty coil in one of the solenoid valves</b>
840	Which of the following conditions would cause 'panting' in a steaming auxiliary boiler?	<b>Insufficient combustion air</b>	Low water level	Flame failure	Faulty flame scanner
841	Which of the following conditions would require the removal of a turbocharger for repair?	Excessive oil consumption	Broken blades	High vibration	<b>All of the above</b>
842	Which of the following cylinder scavenging methods will include an exhaust valve located in the cylinder head?	Return-flow	<b>Uniflow</b>	Crossflow	Direct flow
843	Which of the following devices is a common basic element with nearly all mechanical governors?	Power piston	Control rack	<b>Weights acted on by centrifugal force</b>	Isochronous droop spring
844	Which of the following devices is common to both mechanical and hydraulic governors?	Direct linkage between the ball-head and fuel rack	A servomotor	A compensating device	<b>Flyweights</b>
845	Which of the following devices will increase the power output of a diesel engine without increasing its frictional load?	Positive displacement blower	Roots-type rotary blower	Gear-driven centrifugal blower	<b>Turbine-driven centrifugal blower</b>
846	Which of the following instruments can be used to compare the exhaust gas output of each cylinder of a diesel engine to determine if the engine load is balanced?	dynamometer	calorimeter	pedometer	<b>pyrometer</b>
847	Which of the following is necessary for all waste heat boiler installations, regardless of design or manufacturer?	<b>A means to control of evaporation</b>	An independent means to prevent feed water contamination	Installation of a powered circulating booster pump	Installation of a superheater
848	Which of the following is necessary for all waste heat boiler installations, regardless of design or manufacturer?	<b>A means to control of evaporation</b>	An independent means to prevent feed water contamination	Installation of a deaerating feed water heater	Installation of a superheater
849	Which of the following listed construction details of internal combustion engines is required?	<b>A warning notice to caution against the opening of a hot crankcase for a specified period of time after shut down.</b>	The use of end block construction for engines developing over 1000 brake horsepower.	Removable cylinder liners must be used for engines developing over 1000 brake horsepower.	All engines shall be provided with an exhaust gas pressure monitoring system.
850	Which of the following manufacturing methods is recommended for diesel engine fuel injection line piping?	Cold rolled	Electric resistance welded	<b>Seamless drawn</b>	Straight seam

ID #	Question	Choice A	Choice B	Choice C	Choice D
851	Which of the following methods is typically employed in the design of waste heat boilers to obtain maximum heat transfer, while maintaining low overall weight?	Feed water is preheated in a separately fired economizer.	An external superheater unit is located above the boiler in the gas passages.	An unfired exhaust gas preheater is added to increase the heat transfer rate.	<b>Steel fins are installed on the generating tube surfaces to increase the effective surface area.</b>
852	Which of the following methods is used with a varying load on an auxiliary boiler equipped with the burner assembly shown in the illustration?	An oil control valve in the fuel return line controls the combustion rate.	<b>The burner is cycled 'on' and 'off' in response to boiler pressure.</b>	The ignition electrode is fired from a step up transformer.	The triple nozzle assembly responds to a low steam pressure signal from a pyrostat.
853	Which of the following precautions should be taken when cleaning the air filter on a diesel engine equipped with a turbocharger?	Reduce engine speed to idle before removing the filter.	Soak the dirty filter in kerosene only.	Blow out the air inlet with compressed air.	<b>With the engine stopped, cover the air inlet after removing the filter.</b>
854	Which of the following problems can cause an above normal air temperature to develop in the intake manifold of a turbocharged and after cooled diesel engine?	Faulty turbocharger turbine diffuser ring	Faulty turbocharger compressor ring	<b>Insufficient cooling water flow to the after coolers</b>	Clogged air intake filters
855	Which of the following problems represents one possible cause of high lube oil consumption in a four stroke diesel engine?	<b>Worn intake valve guides</b>	Pitted precombustion chambers	Loose valve tappets	High exhaust back pressure
856	Which of the following procedures decreases the total dissolved solids concentration in the water of an auxiliary boiler?	Hydrazine treatment of condensate	Frequent compounding	Chemical cleaning	<b>Bottom blowing</b>
857	Which of the following procedures should be carried out to permit the continued operation of a crosshead engine with a leaky after cooler?	Bypass the after cooler to operate at sea speed.	<b>Blank off the cooling water lines and run at reduced speed.</b>	Switch to diesel fuel and run at reduced speed.	Nothing needs to be done due to the low heating value of heavy fuel.
858	Which of the following statements about a coil-type forced circulation auxiliary water-tube boiler is correct?	Steam bubbles are generated in the flash chamber.	Steam is recirculated to the heating coils.	<b>Response to steam demand is comparatively rapid.</b>	Un evaporated feed water drains to the bilge.
859	Which of the following statements best describes the operational characteristics of an isochronous governors?	They are suitable for use on main propulsion units.	<b>They strive to maintain a constant prime mover speed for all values of steady load.</b>	They cause a proportional drop in prime mover speed as the load is increased.	They have poor sensitivity at high RPM.
860	Which of the following statements concerning fire-tube boilers is correct?	<b>Combustion gases flow through the tubes.</b>	Flames impinge on the tubes.	Combustion occurs in the tubes.	Water flows through the tubes.



ID #	Question	Choice A	Choice B	Choice C	Choice D
861	Which of the following statements concerning the alarms for automatically controlled auxiliary boilers complies with applicable Coast Guard Regulations (46 CFR).	<b>Shutdown due to the activation of a vital alarm will require a manual reset.</b>	Audible alarms shall not be silenced manually.	Visible indicators are not required for low water shutdown.	Failure of the flame safety system need not be monitored.
862	Which of the following statements concerning the lubrication of diesel propulsion engines used in vessels over 300 gross tons is most accurate?	Lubrication systems using engine driven lube oil pumps do not require any additional independent arrangements when such arrangements have been proven reliable.	The use of engine driven pre-lube pumps is permitted on vessels with propulsion systems developing less than 500 shaft horsepower.	<b>When forced lubrication is used for propulsion engines, one independently driven stand-by pump is to be provided in addition to the necessary pumps for normal operation.</b>	Lubrication systems where two oil coolers are fitted require a minimum of two temperature control devices which may be actuated by similar sensors.
863	Which of the following statements concerning the marine type reversing reduction gear set shown in the illustration is correct?	The gear illustrated is a reversing double reduction gear.	When operating astern, the ahead pinion is mechanically jogged out of mesh with bull gear.	<b>Both ahead and astern clutch glands are driven by the engine.</b>	The ahead and astern clutches engage their respective gear trains by sliding axially on the input shaft.
864	Which of the following statements concerning the operation of a coil-type forced circulation auxiliary water-tube boiler is correct?	Water is continuously circulated through a preheater before it enters the flash chamber.	Steam is generated in the heating coils and is force fed to an accumulator.	<b>Unvaporated boiler water collects in the bottom of the accumulator.</b>	Moisture is removed from generated steam in a radiant superheater.
865	Which of the following statements describes how the fuel oil enters the whirling chambers of the sprayer plates used in a auxiliary boiler return flow fuel oil system?	Through the outer barrel tube.	Through the sprayer plate drilled passages.	<b>Through tangential slots in the sprayer plate.</b>	Through baffles in the orifice plate.
866	Which of the following statements describes the function of the device labeled "C" shown in the illustration?	The regulator reduces the pressure of the supply air to provide ancillary main engine services.	The device is a relief valve with feedback to prevent excessive pressure from damaging system components.	Constant pressure is maintained at device "B" while device "C" is used only to modify the output signal.	<b>The regulator, or pressure reducer, drops the supply pressure to the desired operating level.</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
867	Which of the following statements describes the operation of the circuit shown in the illustration?	The output of "2" will always be less than the input at "1" by 0.35 bar (35 kPa), to prevent engine damage due to operation in the critical speed range.	A gradual rise of the input signal to "1" will cause a multiple stepped output from "2" proportional to the input signal.	The output signal from "2" will be equal to the set point of '17A' only when the input is less than the set point of '17B', permitting the transition signal to become modulated.	<b>The output from "2" is equal to the input to "1" except when the input of "1" is between the set points of '17A' and '17B', when it will remain at the value of '17A'.</b>
868	Which of the following statements describes the primary reason for the device shown in the illustration to be incorporated into the air start system?	The shuttle valve compensates for any decrease in the operator's physical abilities.	The three position valve prevents the fuel flow reaching the fuel injection pumps.	This unit controls the air operated turning motor exhaust when the unit is in operation.	<b>The unit shown is used to prevent starting of the main engine when the turning gear is engaged.</b>
869	Which of the following statements identifies the purpose of the valve bridge shown in the illustration?	<b>Operate two exhaust valves from one rocker arm.</b>	Lubricate the exhaust valves through internal lube oil passages.	Ensure positive closing action of the exhaust valves.	Provide positive rotation of the exhaust valves.
870	Which of the following statements is an accurate description of fuel injection piping used on diesel engines with a cylinder bore of 250 mm and above?	The piping shall be so arranged to allow for uncomplicated removal of the fuel injection equipment and other associated components located on the cylinder head.	All high pressure piping shall be of the double lined type, with the outer leak off line suitably channeled to a dedicated tank.	All storage tanks connected to the leak off piping of fuel injection systems shall be provided with high level alarms and sufficient means for emptying.	<b>The piping is to be effectively shielded and secured to prevent fuel or fuel mist from reaching a source of ignition on the engine or its surroundings.</b>
871	Which of the following statements is correct concerning ABS rules for fuel oil injection systems as found on diesel propelled vessels?	Check valves are to be located at the service tank and be so arranged as to be operable from the uppermost platform of the engine compartment.	<b>Cut-out valves are to be located at the service tanks and be so arranged as to be operable from the engine room floor plates.</b>	Strainers are to be provided in the fuel oil injection pump discharge line and shall be capable of being cleaned while the engine is in operation.	The injection line is to be of seamed drawn pipe and fittings are to be extra heavy.

ID #	Question	Choice A	Choice B	Choice C	Choice D
872	Which of the following statements is correct concerning available astern power for diesel main propulsion systems?	<b>Astern power is to be provided in a sufficient amount to secure proper control of the ship in all normal circumstances.</b>	The astern power of the main propelling machinery is to provide for continuous operation astern at 60% of the ahead rpm at rated speed.	For main propulsion systems without reversing gears, controllable pitch propellers or electric propulsion drive, running astern is not to lead to overload conditions.	Astern power available will be equal to ahead power when controllable pitch propellers are utilized, thus discounting the need for increased operating parameters.
873	Which of the following statements is correct concerning diesel engine cooling water systems?	Each engine must have its own engine driven cooling water pump capable of providing cooling for all ranges of operation.	Propulsion engines with bores exceeding 200 mm are to be fitted with a means to display the cooling water temperature of each cylinder.	<b>At least two independent sea suctions are to be provided for supplying water to the engine jackets or to the heat exchangers.</b>	Suitable strainers are to be fitted between the circulating pumps and heat exchangers when sea water is used for direct cooling.
874	Which of the following statements is correct concerning the operating function of the governor shown in the illustration?	The dial type adjusting knob (B) is used for setting speed droop and damping out hunting.	<b>Excess oil under high pressure is released from the spring loaded accumulators to the sump.</b>	The speed droop lever spring prevents the engine from racing or hunting by arresting the movement of the power piston after a speed change.	The compensating mechanism provides positive control to lower engine speed as load is increased.
875	Which of the following statements is correct for the design and installation of diesel engine cooling water systems?	An alarm device with audible and visible signals is required for all cooling water systems.	Propulsion engines with bores over 200 mm are to be fitted with cooling water thermometers at each cylinder.	Each totally enclosed cooling system shall be provided with a suitable head tank.	<b>Drain cocks are to be provided at the lowest points of all cylinder water jackets.</b>
876	Which of the following statements is correct regarding a turbocharged four-stroke/cycle diesel generator?	At zero load the intake manifold pressure is greater than the exhaust manifold pressure.	At full load the intake manifold pressure and exhaust manifold pressure are equal.	At full load the intake manifold pressure is less than the exhaust manifold pressure.	<b>At full load the intake manifold pressure is greater than the exhaust manifold pressure.</b>
877	Which of the following statements is true concerning pressure limit switches and pressuretrols installed on auxiliary boilers?	They are bimetallic elements sensing temperature differentials corresponding to pressure changes.	<b>They consist of a bellows assembly, linked with a snap action switch, through a pressure adjusting mechanism.</b>	They automatically relieve excessive steam pressure by acting as a pilot to the safety valve.	They automatically restart the burner sequence via the high water level signal.

ID #	Question	Choice A	Choice B	Choice C	Choice D
878	Which of the following statements is true concerning the cylinder head and valve assembly of the diesel engine illustrated?	Both exhaust valves are oil cooled.	Dual sets of valve springs are used for each valve to reduce valve bounce.	Valve lash is mechanically adjusted at the top end of the push rod.	<b>Both exhaust valves are opened simultaneously by the valve bridge.</b>
879	Which of the following statements is true concerning the diesel engine valve gear shown in the illustration?	Both exhaust valves are operated simultaneously from one rocker arm by a valve bridge.	Valve lash is mechanically adjusted.	The engine head is fitted with replaceable valve seats.	<b>All of the above.</b>
880	Which of the following statements is true concerning the standby diesel engine shown in the illustration?	The camshaft rotates at the same speed as the crankshaft.	Turbulence is provided by the air intake ports.	<b>The valve spring shown is under additional compression.</b>	The top piston rings are prevented from overheating by a heat dam.
881	Which of the following statements pertains to propulsion engines with bores exceeding 200 mm?	There shall be a means to display the cooling water outlet temperature of each cylinder.	All engines connected to controllable pitch propellers shall be of the direct reversible type.	<b>The engines will be fitted with a means to display the exhaust gas temperature of each cylinder.</b>	All of the above are correct.
882	Which of the following statements represents an advantage of an electromagnetic clutch?	Large misalignments can be tolerated between the shaft and engine coupling.	Slip is held to a minimum when reversing shaft rotation.	<b>Engine torsional vibrations to the driven shaft are eliminated.</b>	It aids in maintaining power factor.
883	Which of the following statements represents the correct operating sequence of events applied to the auxiliary diesel engine governor shown in the illustration?	If the governor spring (piece #7) breaks, the engine will dangerously overspeed.	When engine load increases, the governor weights (piece #9) turn faster.	If the centrifugal force developed by the rotation of the governor weights is equal to the force of the governor spring, the engine will stop.	<b>When the centrifugal force developed by the rotation of the governor weights is substantially greater than the force of the governor spring, the fuel rack will decrease fuel.</b>
884	Which of the following statements represents the function of the valve bridge and hydraulic lash adjuster assembly shown in the illustration?	The exhaust valves are opened by the action of the bridge spring.	<b>The lash adjuster maintains zero lash between the valve stem and the bridge.</b>	The ball check is always seated when the valve is closing.	The bridge spring keeps pressure between the plunger and the valve.
885	Which of the following statements represents the proper order of thrust transmission when a Kingsbury thrust bearing is used with diesel propulsion?	Engine shaft, thrust collar, thrust bearing housing, and thrust shoes	Engine shaft, thrust shoes, thrust collar, and thrust bearing housing	Propeller shaft, thrust shoes, thrust bearing housing, and thrust collar	<b>Propeller shaft, thrust collar, thrust shoes, and thrust bearing housing</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
886	Which of the following statements represents the proper order of thrust transmission when a Kingsbury thrust bearing is used with main propeller shaft?	Engine shaft, thrust collar, thrust bearing housing, and thrust shoes	Engine shaft, thrust shoes, thrust collar, and thrust bearing housing	Propeller shaft, thrust shoes, thrust bearing housing, and thrust collar	<b>Propeller shaft, thrust collar, thrust shoes, and thrust bearing housing</b>
887	Which of the following statements would apply when checking the valve clearance of the unit shown in the illustration?	The valve is mechanically adjusted at point "D".	The valve is mechanically adjusted at point "E".	Tappet clearance is measured between points "A" and "B".	<b>Cold valve clearance is measured between components "C" and "D".</b>
888	Which of the following terms best describes the Roots-type blower used to supercharge a diesel engine?	Rotary vane	<b>Positive displacement</b>	Axial flow	Centrifugal
889	Which of the following turbo charging systems channels the exhaust gases of each individual cylinder directly into the turbine rotor blades?	Reaction	<b>Pulse</b>	Constant Pressure	Variable pressure
890	Which of the following types of feed water regulators is commonly used with a water-tube, natural circulation, auxiliary boiler?	<b>Thermo mechanical</b>	Bimetallic element	Ring thermostat	Modulating pressuretrol
891	Which of the general advantages listed does the electrical pyrometer have over the mechanical pyrometer?	When heated, it will move proportional to the amount the metal has lengthened or expanded.	The pointer associated with the pyrometer scale can be made to also measure engine RPM.	It can be utilized in exhaust manifolds and heat exchangers interchangeably.	<b>It can indicate temperature at a distant point from the source of heat.</b>
892	Which of the items listed causes a direct acting mechanical governor to operate the engine fuel control linkage?	Hydraulic oil pressure	Servomotor action	<b>Flyweight centrifugal force</b>	Relay motion
893	Which of the listed adjustments must be made to a naturally aspirated four-stroke/cycle diesel engine if a turbocharger is to be installed?	Increase the compression ratio.	<b>Increase the exhaust and intake valve overlap.</b>	Increase the ignition lag.	Decrease the amount of exhaust and intake valve overlap.
894	Which of the listed characteristics is common to both wet and dry type diesel engine exhaust mufflers?	Both mufflers contain moving parts.	They never require any maintenance.	<b>They function as spark arresters.</b>	Both have a dust collecting chamber.
895	Which of the listed components will ensure equal continuous pressure on the thrust shoes of a Kingsbury thrust bearing?	Collar	Base ring	Thrust pins	<b>Leveling plates</b>
896	Which of the listed conditions represents the greatest problem if item #8 in the illustration fails while underway at sea?	Fresh water will not be distilled due to insufficient heating.	The standby pump #7 will automatically be placed into operation for emergency cooling.	Cooling water will be supplied by pump #15 through valve "M".	<b>The main engine will overheat unless slowed or secured until an alternate means of cooling water flow can be provided.</b>

ID #	Question	Choice A	Choice B	Choice C	Choice D
897	Which of the listed conditions will occur if a diesel engine exhaust valve is leaking?	Loss of compression for that cylinder	Misfiring or rough running	Damage to the valve	<b>All of the above</b>
898	Which of the listed conditions will result in the failure of an auxiliary diesel engine to shut down?	Supplying high temperature inlet air.	Maintaining a high exhaust back pressure.	<b>Lube oil entering in the air intake manifold.</b>	Carbon buildup on the overspeed pawl.
899	Which of the listed construction characteristics is apparent of the diesel engine shown in the illustration?	The engine is equipped with a constant pressure turbocharger.	The engine operates on the two-stroke/cycle.	The engine is equipped with unit injectors.	<b>Valve lash is mechanically adjusted.</b>
900	Which of the listed design features is found in an exhaust valve and NOT in an intake valve?	<b>Hard alloy steel construction</b>	Zinc alloy stems	Swirling vanes	Poppet type design
901	Which of the listed devices is the only method allowed by Coast Guard Regulations (46 CFR), to ease the starting of emergency generator engines?	Bayonet-type electrical oil heaters.	Steam or hot water lube oil heating.	<b>Thermostatically controlled electric water jacket heating.</b>	Electric resistance heaters in the air intake manifold.
902	Which of the listed failures, occurring in an automated diesel generator system, should cause an audible alarm at the engine room control station?	Low cooling water outlet temperature	High lube oil pressure	Low lube oil temperature	<b>Low starting air pressure</b>
903	Which of the listed fuel oil ignition methods are commonly found on automatically fired auxiliary boilers aboard merchant vessels?	<b>A high energy electric spark</b>	A gas pilot light	An incandescent glow plug	A manually-operated friction igniter
904	Which of the listed governor characteristics will determine the final load sharing relationship between paralleled diesel generators?	Sensitivity	Power	<b>Speed droop</b>	Compensation
905	Which of the listed governor operating characteristics is considered to be isochronous?	<b>Zero speed droop</b>	Positive speed droop	Negative speed droop	Varying speed droop
906	Which of the listed parts on a fire-tube auxiliary boiler requires a written report to the Officer-in-Charge of Marine Inspection when renewed?	Cleanout plug gaskets	<b>Fusible plugs</b>	Gage glasses	Water columns
907	Which of the listed problems will happen when the water level of a fire-tube type auxiliary boiler approaches the crown sheet?	<b>The fusible plugs will melt.</b>	The furnace will explode.	Excess steam will be generated.	The furnace will overheat.
908	Which of the listed reasons is the most likely cause of a sudden drop in compression pressure in one diesel engine cylinder?	Missing filter segment of an intake filter	<b>Malfunctioning valves</b>	Leaking fuel injector nozzle	Excessively early fuel injection

ID #	Question	Choice A	Choice B	Choice C	Choice D
909	Which of the listed sequence of events occurs when an automatic auxiliary boiler is prepurged?	The damper on the inlet side of the furnace is moved to the open position for a given number of seconds and then moved to the closed position.	<b>The damper on the inlet side of the furnace is moved to the open position for a given number of seconds and then moved to the low fire position.</b>	The damper is moved to the closed position for a given number of seconds and then moved to the low fire position.	The damper in the uptakes is moved to the wide open position for a given number of seconds and then moved to the low firing rate position.
910	Which of the listed types of control systems is required by Coast Guard Regulations (46 CFR) for large automatic auxiliary boiler heating equipment?	Flame safeguard control system	Programming control system	Limit control system	<b>All of the above</b>
911	Which of the listed types of superchargers will NOT have a volumetric capacity proportional to engine speed?	<b>Exhaust gas turbocharger</b>	Roots blower	Piston type blower	Vane type blower
912	Which of the operating characteristics listed applies to the Roots-type blower shown in the illustration?	Each set of lobes is independently driven, assuring proper timing.	Compression of the air is accomplished between the rotors.	<b>Air delivery is approximately proportional to engine speed.</b>	All of the above
913	Which of the operating characteristics listed is correct concerning the blower shown in the illustration?	Each of the lobes are in constant contact with each other	The blower is driven by engine exhaust gases	<b>Air delivery is approximately proportional to engine speed.</b>	Air delivery is inversely proportional to engine speed.
914	Which of the operating characteristics listed would apply to the turbocharger shown in the illustration?	<b>The turbine operating speed is dependent on engine load.</b>	The air is compressed in the air cleaner.	The compressor operating speed matches the engine operating speed.	Compressor power consumption varies directly as engine speed varies.
915	Which of the operating functions listed applies to the clutch glands of the unit shown in the illustration?	<b>The clutch glands are fitted with friction blocks.</b>	When the ahead clutch gland is engaged, the astern clutch gland is not rotating.	Control air is supplied so that both clutch glands inflate simultaneously.	When the idle clutch gland is deflated, its friction blocks ride on the drum.
916	Which of the operating positions, for valve "A" shown in the illustration, should be chosen to maintain the circuit in continuous flow, regardless of failure to the included down stream components?	1	<b>2</b>	3	4
917	Which of the Roots blower rotors listed below, will supply air to a two-stroke/cycle, medium-speed, diesel engine with the least amount of turbulence and pulsation?	<b>Three-helical lobes</b>	Two-helical lobes	Three-cylindrical lobes	Two-cylindrical lobes
918	Which of the speeder springs listed is more suitable for a governor installed on an engine operating over a wide speed range?	Spiral	<b>Conical</b>	Cylindrical	Helical

ID #	Question	Choice A	Choice B	Choice C	Choice D
919	Which of the springs shown in the illustration, will have its output force controlled by the movement of a speed control shaft, and the engine speed setting will in turn be proportional to the amount of compression exerted on the spring?	19	34	46	50
920	Which of the statements represents a characteristic of the thrust collar in a Kingsbury thrust bearing?	<b>It turns with the shaft and the pivot shoes do not rotate.</b>	It is stationary and the shoes turn with the shaft.	It is turned by the base ring of the bearing.	It is held in position by the bearing base ring.
921	Which of the turbo charging methods listed directs the exhaust gases to the turbine at fairly uniform velocity and pressure?	<b>Constant pressure</b>	Pulse pressure	Constant velocity	Axial flow
922	Which of the turbo charging systems listed operates with the least average back pressure in the exhaust manifold?	Constant volume	Constant pressure	<b>Pulse pressure</b>	Radial flow
923	Which of the types of reduction gearing listed is best suited for medium speed main propulsion units?	Hypoid	<b>Helical</b>	Cyclical	Spur
924	Which one of the engine firing orders listed would be suitable for the diesel engine cam shown in the illustration?	1 3 5 2 6 4	<b>1 5 3 6 2 4</b>	1 4 2 3 6 5	1 3 5 2 4 6
925	Which operating characteristic is indicated in the valve bridge and hydraulic lash adjuster assembly shown in the illustration?	The exhaust valves are closed by the action of the bridge spring.	<b>The lash adjuster maintains zero lash between the end of the valve stem and the valve bridge.</b>	The ball check is always seated when the exhaust valve is closed.	The bridge spring applies pressure to maintain contact between the plunger and the exhaust valve.
926	Which statement regarding the arrangement and location of explosion relief valves used on an internal combustion engines is true _____?	They may be omitted on all engines having a cylinder bore of nine inches or less	They may be omitted provided the engine utilizes a crankcase monitoring system	The type of engine and operating cycle must be considered by the designer	<b>Minimizing the danger from emission of flame is a key consideration</b>
927	Which type of pump is typically used to supply fuel to a unit type auxiliary boiler?	Centrifugal	Propeller	Reciprocating	<b>Rotary</b>
928	While an auxiliary boiler is operating at design load, which of the following actions will occur if the automatic combustion control system detects a steam pressure drop?	More burners will be lighted off.	The registers will open fully.	<b>The fuel oil valve and air damper will open wider.</b>	The steam flow will be automatically regulated.
929	While maneuvering, you discover heavy smoke coming from the turbocharger casing, you should _____.	check the air filter for dirt	check for an exhaust leak	check the cooling water temperature	<b>notify the bridge that you are going to shut the engine down</b>



ID #	Question	Choice A	Choice B	Choice C	Choice D
930	While standing watch at sea, a main engine bearing high temperature alarm has just been indicated on the control panel. Your next action should be to _____.	immediately notify the bridge	<b>decrease the main engine speed to idle</b>	increase the speed of the lube oil supply pump	verify the main engine lube oil coolers are functioning properly
931	While standing watch in the engine room, you suspect an air leak while checking a low pressure distilling plant. Which of the following should be checked as a possible cause of the air leak?	gasketed joints	valve stems	gage glass packing	<b>all of the above</b>
932	While standing watch underway, if the brine level of a low pressure distilling plant is above the sight glass, which action should be taken?	Do nothing as this is the normal operating level.	<b>Reduce the feed rate and check the brine eductor system.</b>	The brine overflow weir should be raised to allow greater outflow.	The brine section should be drained down a minimum of 6 inches below the seawater heater bundle.
933	While standing watch underway, you notice carryover occurring in a low pressure distilling plant. This can be a result of _____.	<b>faulty operation of the brine overboard pump</b>	a pressure drop through the loop seal	high distillate conductivity	low distillate conductivity
934	White smoke exhausting from a diesel engine can be caused by _____.	high compression temperature	<b>late injection timing</b>	high lube oil temperature	plugged oil-scraper ring holes
935	White smoke exhausting from a diesel engine can be caused by a _____.	high combustion temperature	high compression pressure	<b>cracked cylinder liner</b>	fuel with a high vanadium content
936	White smoke exhausting from a diesel engine can result from _____.	high exhaust temperature	high lube oil temperature	low turbocharger speed	<b>low cooling water temperature</b>
937	White smoke exhausting from an operating diesel engine may indicate _____.	<b>a cracked liner</b>	burning lube oil	an overloaded engine	insufficient combustion air
938	White smoke issuing from the exhaust of an auxiliary diesel engine could mean _____.	the engine is overloaded	<b>the engine is cold</b>	there is too much lube oil in the cylinders	the turbocharger is fouled
939	Why should handhole gaskets not be allowed to leak on an auxiliary boiler?	Water circulation in the boiler will be disrupted.	<b>The gasket and its seating surface may become wire drawn.</b>	The gasket material will become hardened.	Scale and sediment will form on the gasket.
940	Why should the main steam stop valve of an auxiliary boiler be eased off its seat and then gently closed before lighting off?	To examine the valve stem for scars or nicks.	To check for a tight bonnet seal.	<b>To ensure that the valve will not be seized shut when hot.</b>	To check the valve packing.
941	Why will a turbocharged diesel engine produce black smoke if excessive additional load is applied too quickly?	Exhaust energy would draw excess air.	<b>The inertia of the turbocharger rotor causes a time lag which delays the turbocharger speed increase.</b>	Exhaust gas pumping losses are increased due to turbine windage.	Exhaust gas back pressure falls slightly due to increased nozzle action.

ID #	Question	Choice A	Choice B	Choice C	Choice D
942	With which of the following types of diesel engine arrangements is a waste heat boiler most likely to produce the maximum steam pressure, temperature, and flow conditions?	<b>Supercharged, four-stroke/cycle diesel engine</b>	Supercharged, loop scavenged diesel engine	Turbocharged, crossflow scavenged diesel engine	Turbocharged, return flow diesel engine
943	Within the cycle of a forced circulation auxiliary water-tube boiler, part of the water flashes into steam, and the remaining hot water is _____.	<b>collected in the lower portion of the steam accumulator for recirculation back to the heating coil or water tank</b>	returned to the lower drum via downcomers due to density difference for reheating	passes through the domestic heating system return line steam traps to the auxiliary feed supply tank	automatically dumped into auxiliary feed heater and reheated by auxiliary exhaust back pressure
944	Worn cylinder head valve seats in a diesel engine will cause _____.	<b>less cold valve lash</b>	more cold valve lash	excessive pressure in hydraulic valve lash adjusters	broken valve springs
945	Worn diesel engine intake valve guides can result in _____.	increased engine breathing efficiency	excessive valve lash	<b>excessive lube oil consumption</b>	lower than normal fuel consumption
946	You are operating a 16-cylinder diesel engine at 75% load, turning 900 RPM. All exhaust temperatures are between 900°F and 950°F, except the #3 cylinder, with an indicated reading of 750°F. All fuel rack settings are between 21 and 22 millimeters, with the exception of a 17 millimeter setting for the #3 cylinder. Which of the following corrections should be carried out?	Reduce engine load.	Stop the engine and change out the #3 fuel nozzle.	<b>Increase the #3 cylinder rack setting and monitor the cylinder exhaust temperature.</b>	Stop the engine and adjust the #3 cylinder pump timing.
947	You are preparing to undertake the repiping of a water column for an auxiliary fire-tube boiler exceeding a 15 psig operating pressure and is piped similarly to the arrangement shown in the illustration. According to Coast Guard Regulations (46 CFR, Part 52), which of the following statements is true?	It is permissible to locate water column piping in the uptake, smoke box, or boiler casing.	The minimum size of the piping connecting the water column to the boiler is to be 1.5 inches (3.8 cm).	The various fittings used must be of cast iron construction.	<b>The shut off valves on the boiler must be locked, or sealed open.</b>
948	You are standing watch in the engine room of your vessel. Reduced capacity, accompanied by vibration and noise at the suction of a centrifugal pump, results from cavitation in the fluid being pumped. Cavitation describes the formation of _____.	<b>vapor pockets</b>	water hammer action	fluid friction	steam knock
949	You are standing watch in the engine room on your vessel. The usual symptoms of cavitation in a centrifugal pump are _____.	<b>noise and vibration</b>	an increase in discharge pressure	an increase in suction pressure	lifting of the relief valve
950	You are standing watch in the engine room with an auxiliary boiler. You should blow down a gage glass periodically to _____.	<b>remove any sediment from the glass</b>	maintain the proper water level in the steam drum	provide water samples for the second assistant	test the feed water stop-check valve

ID #	Question	Choice A	Choice B	Choice C	Choice D
951	You have just been notified by the watch stander in the engine room, a main engine bearing high temperature alarm is indicated and remotely displayed as 145 degrees Fahrenheit, you should _____.	<b>assume, but verify that the circuit has malfunctioned</b>	notify the bridge that you will be slowing down the main engine	change over to the standby main lube oil supply pump	increase the speed of the operating main lube oil supply pump
952	You have just received a call from the watch stander in the engine room reporting that a high temperature alarm for a main engine bearing has just sounded. Your next instruction to the watch stander should be to _____.	immediately notify the bridge	check the status of the lube oil coolers	increase the speed of the lube oil supply pump	<b>bring the main engine speed to "idle"</b>

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