OIC - EW: COMPETENCE 1

Maintain a Safe Engineering Watch

1	A fuel oil tank pneumercator will give an inaccurate reading if the:			
	pneumercator is recharged with the air supply open	pneumercator balance chamber bleed orifice is blocked by the oil being measured	pressure in the system is allowed to equalize	operating cock is placed in the „vent" position when the system is not in use
2	A ship travels 234.02 nautical miles in 24 hours at an average propeller speed of 60 RPM. If the propeller pitch is 20.07 feet, what is the propeller slip during this passage?			
	17.95%	20.46%	22.10%	26.20%
3	As the amount of moisture in the air increases, what will happen to the difference between the dry bulb and wet bulb temperatures?			
	increase	decrease	remain unchanged	be greatest at dew point
4	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:			
	limit controls	flame safeguard controls	combustion controls	programming contro
5	In an operating diesel engine, which of the following conditions is an indication of a leaking air starting valve?			
	Noise coming from that air starting valve.	Continuous operation of the starting air compressor.	Zero air pressure in the air starting system.	Overheated starting air pipe to the cylinder head.
6	One cubic foot of salt water would equal approximately how many pounds?			
	24	44	64	84
7	The boiler main feed pump aboard ship can operate with high temperature water without becoming vapor bound because the:			
	pump operates at a high discharge pressure	constant-pressure governor controls the discharge pressure	area above the impeller eye is vented to the main condenser	minimum required net positive suction pressure is provided by the DC heater

8	The dew point is reached when the wet bulb temperature relates to the dry bulb temperature in what manner?			
	equal to the dry bulb temperature	twice the dry bulb temperature	100°F less than the dry bulb temperature	50°F above the dry bulb temperature
9	The possibility of a flareback in a boiler will be reduced if you:			
	rotate the soot blower elements one complete revolution prior to lighting off	maintain the fuel oil to the burner at the flash point	supply a minimum of excess air	purge the furnace with fresh air prior to lighting off
10	The watch engineer finds the cargo refrigeration compressor has blown the shaft seal, with the noticeable presence of oil leaking. In this situation, what should be done?			
	shut down the compressor at once and then close the suction and discharge valves	pump the system down and then isolate the leak by closing the suction and discharge valves	close the suction valve, pump the compressor down, then shut down the compressor	tighten the shaft seal packing to reduce leakage, slow the compressor, and operate the expansion valves by hand until repairs can be made
11	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	overheating because of slipping shoes	chipped reduction gear teeth	excessive wear on the thrust bearings
12	Which of the following ring designs is commonly used on new piston rings to facilitate run-in or seating?			
	Machining a special ring face groove filled with antifriction metal.	Increasing ring tension as high as possible.	Machining the ring from extra soft nonferrous alloys.	Provide a minimum gap clearance under cold conditions to prevent ring expansion.
13	A closed freshwater cooling system is commonly used with marine diesel engines because the:			
	need for water treatment is eliminated	cooling water temperature differential is greater	cooling water pumps are directly reversible	jacket water temperature is more easily controlled

14	A diesel engine cooling water system with a pH factor of 3.0 indicates a condition of:			
	slight acidity	slight alkalinity	excessive alkalinity	excessive acidity
15	A diesel engine cylinder has a swept volume of 130.5 cubic inches and a clearance volume of 9.0 cubic inches at top dead center. What is the compression ratio of the engine cylinder?			
	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1
16	A diesel engine indicator diagram measures 12.5 cm in length and has an area of 22 cm2. What is the cylinder mean effective pressure if the spring used has a scale of 1.25 mm equals 1 kg/cm2?			
	14.08 kg/cm2	22.0 kg/cm2	34.5 kg/cm2	35.75 kg/cm2
17	A hole should be made in the sagged tube occurring in a water- tube boiler, prior to plugging the tube to prevent a.			
	pressure buildup in the tube	quick burnout of the tube	complete sagging failure of the tube	crack failure of the tube
18	A seven cylinder, 2-stroke/cycle, single acting diesel engine has a 750 mm bore and a 2000 mm stroke. What indicated power will be developed if the average mean effective pressure is 14.8 kg/cm2 at a speed of 96 RPM?			
	1,959 Kw	3,906 Kw	14,363 Kw	28,726 Kw
19	An automated diesel engine should normally shut down due to.			
	low lube oil temperature	high ambient air temperature	low lube oil pressure	high exhausts system back pressure
20	Failure to remove calcium and magnesium from feed water before it reaches the boiler can result in tube:			
	scaling	pitting	pitting	erosion
21	The general name given to propane, butane, and mixtures of the two is:			
	LPG	LNG	NGL	LEG

22	If the auxiliary diesel engine will not shut down, the trouble could be.			
	high lube oil pressure	high firing pressure	lube oil leakage into the blower	high fuel oil pressure
23	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 20 knots?			
	19.0 tons	21.7 tons	22.4 tons	27.0 tons
24	Incomplete combustion in a running diesel engine can cause piston rings to become stuck as a result of.			
	residual carbon deposits	lube oil viscosity breakdown	uneven heat expansion of the rings	uneven heat expansion of the piston
25	Leaking suction valves in a refrigeration compressor are indicated by which of the following?			
	higher than normal suction pressure	lower than normal suction pressure	lower than normal evaporator temperature	noticeable increase in compressor noise
26	Proper atomization of fuel in diesel engine combustion chambers will.			
	affect the injection pressure	improve combustion	reduce compression pressure	decrease power output
27	The area where a cam follower would most likely leave the lobe surface of a two-stroke cycle engine camshaft would be at the:			
	first point of acceleration during the exhaust valve opening	first point of the intake valve closing	first point of deceleration during exhaust valve opening	last point of the intake valve closing
28	The conical steel or composition cone installed on a propeller, known as a fairwater cone, provides which of the following benefits?			
	Reduce turbulence	Help with lubrication	Protect against electrolytic corrosion	All of the above
29	The moisture sensitive element of a humidistat can be made of what substance?			
	hair	copper	plastic	steel

30	The safety valve installed on a coil- type auxiliary boiler is located on the.			
	thermostat tube	topmost coil	water tank	flash chamber
31	The vapor pressure of a gas is the pressure necessary to keep it in a(n):			
	soluble state	solid state	insufficient refrigerant charge	ice formation internal to the expansion valve
32	Turbulence is created in the cylinders of a diesel engine to:			
	obtain injection lag	help mix fuel and air	decrease combustion pressure	utilize higher injection pressures
33	What is the equivalent tonnage of a refrigeration system rated at 48,000 BTU per hour?			
	2.5	3	4	5
34	Which of the events listed does NOT occur during the instant the piston just reaches top dead center?			
	Intake	Ignition	Power	Combustion
35	A bendix drive starting motor disengages the drive gear from the flywheel by:			
	spring force	rotating of the starting cam	having the flywheel impart a torque to the starter pinion	applying accumulator pressure
36	A compound Bourdon tube type pressure gage is capable of measuring:			
	temperature and pressure	wet bulb and dry bulb temperatures	humidity and temperature	pressure and vacuum
37	A piston is said to be at top dead center when it is:			
	opening the exhaust ports	placed on top of the engine along its centerline	farthest from the cylinder head	nearest to the cylinder head

38	A diesel engine cylinder has a swept volume of 104 cubic inches and a clearance volume of 8 cubic inches at top dead center. What is the compression ratio of the engine cylinder?			
	14.0 : 1	14.5 : 1	15.0 : 1	15.5 : 1
39	A diesel engine cylinder has a swept volume of 125 cubic inches and a clearance volume of 10 cubic inches at top dead center. What is the compression ratio of the engine cylinder?			
	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1
40	A diesel engine cylinder has a swept volume of 135 cubic inches and a clearance volume of 10 cubic inches at top dead center. What is the compression ratio of the engine cylinder?			
	12.5 : 1	13.5 : 1	14.5 : 1	15.5 : 1
41	A diesel engine indicator diagram has an area of 22 cm2 and a length of 12.5 cm. If the scale of the indicator spring is 1 mm = 1 kg/cm2, what is the cylinder mean effective pressure?			
	17.6 kg/cm2	27.5 kg/cm2	34.5 kg/cm2	36.0 kg/cm2
42	A fuel tank on your vessel is 20 feet high, 20 feet long and 20 feet wide. If it is filled 100% with fuel having an API gravity of 35.7 at a temperature of 60°F, how many long tons of fuel are in the tank?			
	177.76	188.25	196.47	210.84
43	A pressure reading of 00.0 psig is theoretically equal to:			
	30.0 inches of vacuum	300 millimeters of water	14.7 psia	00.0 psia
44	A seven cylinder, two-stroke/cycle, single acting diesel engine with a cylinder indicated horsepower calculated as 1350 kW and brake horsepower measured at 7466 kW has a mechanical efficiency of.			
	18%	55%	79%	83%
45	A unit of measure used to express the chloride content of boiler water is?			
	PPM	Micro-Farads	pH	Micro-Ohms

46	A vessel departed from point “A” at 1206 with a counter reading of 616729 and arrived at point “B” with a counter reading of 731929 at 1148 the following day. This vessel is equipped with a 20 foot 8 inch diameter propeller, with a pitch of 20 feet. The observed distance of 404.16 miles was covered at an observed speed of 16.85 knots. What should be the apparent slip for this trip?			
	1.04%	1.29%	-6.65%	-11.04%
47	An efficient seal between the cylinder block and cylinder heads on many diesel engines is obtained with:			
	graphite packing	sealing compound	lubricating oil	gaskets
48	Before using a boiler compressed air soot blower system, you should:			
	reduce the boiler pressure	lower the water level	decrease the forced draft fan speed	drain the soot blower pneumatic operating lines
49	Boiler refractories previously baked out and fired are most sensitive to:			
	rapid cooling	sustained high furnace temperature	rapid heating	radiant heat of the burner
50	Circulation of boiler water to the water wall tubes is maintained by the:			
	water screen tubes	risers	downcomers	generating tubes
51	Exhaust gases in a two-stroke/cycle diesel engine are discharged through.			
	the air valves	a roots-type blower	exhaust ports or valves	the after cooler and directed to the stack
52	High salinity distillate being discharged from a flash-type distilling plant may be the result of:			
	maintaining the proper distilling plant heat balance	carrying the brine level below normal	leaks in the demister baffles	venting of the saltwater heater drain pump
53	If an engine operates at 900 RPM at no load, and at 870 RPM at full load, the speed droop is:			
	3.10%	3.40%	3.70%	4.00%

54	If your ship burns 8 tons of fuel per hour at 15 knots, how many tons per hour will it burn at 19 knots?			
	10.1 tons	12.8 tons	16.3 tons	19.1 tons
55	In a cross-compound main propulsion Unit, the astern turbine is usually installed at the:			
	low pressure end of the low pressure turbine	high pressure end of the low pressure turbine	low pressure end of the high pressure turbine	high pressure end of the high pressure turbine
56	In terms of linear measurement, approximately how many “inches” equal one “meter”?			
	29.4	39.4	49.4	59.4
57	In terms of metric pressure conversion, an absolute pressure of 1 “bar” would be approximately equal to what value “psia”?			
	3.5	7.5	10.5	14.5
58	Insufficient piston cooling for a large, low speed, main propulsion diesel engine burning heavy fuels, can result in:			
	high temperature corrosion and burning of piston crown metal	dangerous thermal expansion of the piston skirt	excessive crosshead temperatures	change in fuel cetane number
59	Power is defined as the:			
	rate of doing work	amount of force needed to overcome friction	amount of work accomplished	distance through which an object is moved
60	Temperature measurement is an indication of the:			
	level of heat intensity	total heat of a substance	rate of heat transfer from one substance to another	total heat contained in any closed energy system
61	The best conductor of heat in a marine boiler is:			
	steel	water	steam	brick

62	The blower type crankcase ventilation			
	removes combustible gases from the crankcase	prevents the formation of combustible gases in the crankcase	cools lubricating oil	improves cold weather starting
63	The bore of a diesel engine cylinder describes the:			
	swept volume of the cylinder	inside diameter of the cylinder	piston displacement in the cylinder	length of the piston stroke
64	The chemical substance initially responsible for heat loss in the combustion process is:			
	sulfur	carbon	hydrogen	nitrogen
65	The lower water seal on a diesel engine wet cylinder liner must allow for liner axial movement. This seal is most commonly a:			
	neoprene O-ring	soft copper gasket	precision ground flange joint	flexible metallic seal ring
66	The ratio of the brake horsepower to the indicated horsepower of a diesel engine is its:			
	thermal efficiency	mechanical efficiency	brake thermal efficiency	volumetric efficiency
67	The total air capacity for non- reversible main engines is to be sufficient for:			
	six consecutive starts	eight consecutive starts	ten consecutive starts	twelve consecutive starts
68	Thin bronze rings are inserted in the face of some chromium plated piston rings to:			
	promote piston ring seating in the cylinder	prevent rapid wear on the ring face	provide better lubrication of the piston ring	produce an even glaze on the cylinder
69	What is the speed of the crankshaft in a four stroke/cycle engine when the camshaft is turning at 750 rpm?			
	375 RPM	500 RPM	750 RPM	1500 RPM

70	Using a diesel engine indicator P-V diagram, the cylinder mean effective pressure is calculated to be 21.3 kg/cm2. What is the scale of the spring used on the indicator if the diagram area is 18.46 cm2 with a length of 13 cm?			
	9.0 kg/cm	10.0 kg/cm	12.5 kg/cm	15.0 kg/cm
71	When the load is increased on a turbocharged diesel engine, the amount of increased air supplied by the turbocharger will:			
	lag behind the increased fuel supplied to the engine	enter the engine along with the increase in fuel	enter the engine before the increased fuel supply	leave the turbocharger as a negative pulse
72	Which of the following fuel oil characteristics establishes the danger point when transferring, pumping, and firing procedures are concerned?			
	Fire point	Flash point	Specific gravity	Viscosity
73	With an increase in temperature the volume of flammable and combustible liquids:			
	expands	contracts	remains constant	remains constant if pressure remains constant