Government of the People's Republic of Bangladesh

Department of Shipping

Sample Oral Question Bank

Marine Engineer Officer Class 4 (Coastal vessels)

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1.0 Main and Auxiliary Engine

1. Draw a four stroke engine timing diagram and describe.
2. How to take crank shaft deflection?
3. What do you understand by crank shaft deflection?
4. What is telescopic feeler gauge? What is the purpose of it?
5. Draw a liner and describe all the parts.
6. What is the purpose of tell tale hole in liner?
7. Describe the procedure of liner overhaul of a four stroke engine.
8. During liner overhauling, if linear is not coming easily what will be the actions.
9. What is the materials of piston ring? Sketch and describe different types of piston ring clearance.
10. What is the indications if piston ring broken during engine running time? What will be your action for this kinds of trouble takes place?
11. What is gudgeon pin? What checks to be done on gudgeon pin & connecting rod at time of overhauling?
12. If the piston rings broken repeatedly for one unit even after changed with new one, what may be the causes? And what the actions to be taken care for this reasons?
13. What are safety devices used in starting air system and describe the purpose of its?
14. Main engine not even started with air, what the items to be checked?
15. Main engine started with air but not continuing with fuel, what the items to be checked?
16. What are the causes of overload of the main engine?
17. What are the actions to be taken if main engine experience overload due to rough weather?
18. State the procedure to take liner calibration.
19. If found main engine one unit exhaust temperature high at sea, what may the causes and actions to be taken?
20. If found main engine all units exhaust temperature high at sea, what may the causes and actions to be taken?
21. What is the purpose of maintain the tappet clearance?
22. What is crank case explosion? What are causes of crank case explosion?

23. What are the discussions to be done in work plan/tool box meeting?
24. What is risk assessment? Necessity of it?
25. What is turbo charger surging? What are the causes of turbo charger surging?
26. What are the actions to be taken in case of repeated turbo charger surging?
27. How the starting air line explosion happened?
28. What are precautions to be taken to avoid starting air line explosion?
29. Draw a line diagram of main engine lubricating oil system and explain.
30. Draw a line diagram of main engine fuel oil service system and explain.
31. Draw a line diagram of main engine jacket cooling system and explain.
32. What is viscosity regulator? Describe with drawing.
33. How to find out the tube leakage and rectify of the lubricating oil cooler?
34. What are safety devices available for the main engine?
35. What are safety devices available for the auxiliary engine?
36. What are the actions to be taken in case of main engine failure and after recovery?

2.0 Auxiliary machinery

1. What is bumping clearance?
2. How to check and adjust the bumping clearance?
3. What are indications for intercooler leakage of air compressor?
4. How to determine the air compressor performances?
5. What are the maintenances to be done for increasing the air compressor performance?
6. How the cylinder lubrication being done in the air compressor?
7. Consequences of excessive cylinder lubrication of air compressor.
8. What are the safety devices incorporated in the air compressor?
9. What are the safety devices incorporated in the main air reservoir?
10. Why cylinder gasket thickness of air compressor is very important?

3.0 Boiler

4.0 Maintenance and Repair

1. Preparation before starting the maintenance job on an electrical switchboard.
2. What are the precautions to be taken before main engine major over hauling?
3. What are checks to be done on hydraulic jack and pump before doing any overhauling job.
4. How to take the main engine and auxiliary engine liner calibration?
5. What is “Torque Spanner” and what is the purpose of it?

5.0 Fuel and lubricating oil management

1. From which point you will collect engine lubricating oil sample for testing and why?
2. What are the effects of incorrect cylinder lubrication?
3. Describe the adverse effect of using lower TBN grade of lube oil in the main engine.
4. If you find water presence in the system oil, what may the causes and actions?
5. Considering main engine system oil, describe the reasons and remedy of the followings: i) Increase in pH level, ii) Low viscosity.
6. If diesel oil had access to lubricating oil sump of an auxiliary engine, describe the reasons, indications, effects on engine and actions to be taken.
7. What are the causes and effects of bacteria attack of lubricating oil? What actions to be taken in case of bacteria attack of lubricating oil?
8. What is maximum bunker lift?
9. What are the things to be considered during bunker calculation?
10. Considering the fuel quantity in m3 and supply temperature, find the bunker quantity in MT by applying temperature correction formula.
11. Describe shortly the fuel oil bunkering procedure including all safety procedures and documentations.
12. Describe the procedure of colleting fuel oil samples during bunkering.
13. What do you understand fuel oil analysis report ‘Off-specific’?

14. Describe the effects on the engine performance due to excess presence of following in fuel: i) Silicon, ii) Vanadium
15. Lists the contents with code which to be recorded in oil record book for the fuel oil bunker.

6.0 Pump and pumping system

1. Name any two types of positive displacement pumps generally used on board ships.
2. Draw a gear pump and describe how it works.
3. Why reciprocating pump is used as bilge pump?
4. Why a relief valve is incorporated in positive displacement pump?
5. State main two difference between centrifugal pump & positive displacement pump.
6. What is NPSH? What is the effect of temperature changes on the NPSH?
7. Why priming is necessary for a centrifugal pump?
8. What will be your action if a centrifugal pump not taking suction?
9. What will be your action if a positive displacement pump not taking suction?
10. What will be your action if a centrifugal pump doesn't deliver at rated capacity?
11. Advantages and disadvantages of mechanical seal and gland packing?
12. Why screw type and gear type pump are not suitable for sea water and fresh water use?
13. What is multi stage pump? Where and why it is used?

7.0 Fuel Transfer

1. Draw a line diagram of fuel oil service system.
2. What are the safeties incorporated in fuel service system.
3. What are the causes and actions to be taken if fuel pressure drop in main engine fuel system.
4. What are causes of fuel oil leakage alarm?
5. What are the actions to be taken if fuel oil leakage alarm comes during main engine running condition.

6. What will be the actions if fuel service tank drain valve is chocked?
7. Causes of vapor locked in the fuel system and how to rectify.

8.0 Steering System

1. Draw schematic diagram of a two ram steering gear and describe how it works.
2. Draw schematic diagram of a rotary vane type steering gear and describe how it works.
3. State the advantages and disadvantages of ram type steering gear.
4. State the advantages and disadvantages of rotary vane type steering gear.
5. What is the purpose of hunting gear.
6. What the regulations for steering gear as per the “SOLAS”?
7. What do you mean by “FOLLOW UP” and “NON-FOLLOW UP” system?
8. Describe the emergency steering.
9. What will happen if low oil level alarm comes?

9.0 Refrigeration System

1. Draw a line diagram of a shipboard refrigeration system and describe.
2. What is the purpose of expansion valve?
3. How you recharge the refrigerant gas?
4. What are causes of icing on suction line?
5. How you understand that air ingress in the system and how to purge air from the system.
6. What are indications of oil carrying over in the system and what is your actions?
7. How to stop the refrigeration system for long period?
8. How to recharge the crank case oil and what types oil are used?
9. What is short cycling and what is your action in case of short cycling?
10. How vegetable room and meat/fish room different temperatures are maintained?

10.0 Fire fighting & life saving appliances

1. How tests are carried out on the following types of fire detector:
   i) Smoke detector, ii) Heat detector, iii) Flame detector
2. Draw a smoke and flame detector and describe how it works?
3. What are the safeties incorporated in ship's FIRE-MAIN system?
4. Why mixed types of sensor are preferable in the engine room?
5. Draw a line diagram & describe the flooding system in engine room in case of fire.
6. As a chief engineer what procedure you follow to operate the fixed flooding system for engine room.
7. What are the requirement of emergency fire pump as per the "SOLAS".
8. What kinds of fire detector is used above the main engine or auxiliary engine and why?

11.0 Safety of Personnel and care of Person Onboard

1. What are the safeties to be taken during carrying out any major maintenance job in engine room?
2. Procedure to entering into enclosed space.
3. As a chief engineer what will be your actions in case of collision?
4. As a chief engineer what will be your actions in case of grounding?
5. What is actions in case of power failure and describe the recovery after power failure?
6. What are the actions to be taken in case of steering failure?
7. What are safeties to be taken before and during any hot work?
8. What are safeties to be taken before performing any repair job on electrical equipment?
9. How you manage the work and rest hour of the engine crew?
10. State the work and rest hour period as per the STCW 2010.

12.0 Electrical and Electronic Engineering

1. Sketch & describe a schematic diagram of emergency power supply.
2. Sketch & describe a schematic diagram of electrical power distribution system.
3. What is meant by synchronizing? Mention the condition of parallel operation of two generators.
4. What is earth fault? How to find out a earth fault on a specific line or equipment.
5. Lists the name of any four electrical safety devices.
6. How to isolate a system for any electrical job?
7. State some of the hazards of electrics shock.
8. What is Preferential trip and Reverse power trip?
9. What is Under voltage trip and Overload trip?
10. How to check the motor insulation?

13.0 Rules, Regulation & Pollution prevention

1. What is “MARPOL”? Write “MARPOL” annexes by sequence with enforcement date.
2. Sketch a cross-section drawing of OWS and describe its principle.
3. What are causes of oil might be carried over with the water from an “OWS”?
4. What are actions to be taken if 15 PPM alarm comes repeatedly?
5. What are the functions of test cocks of each stage of OWS.
6. How to manage the bilge water onboard the ship?
7. State regulations for machinery space oily bilge water discharge.
8. What will be the actions if accidental discharge of oil into the sea?
9. What are the actions to be taken in case of failure of OWS?
10. Describe the operating procedure of oily water separator onboard the ship.
11. What are actions to be taken in case of any oil pollution?
12. Procedure to write down the bunkering operation in oil record book with code mention.
13. State the regulations for sewage discharge to sea.
14. Advantages possessed by vacuum sewage system.

14.0 Legislative requirements

1. What is port state and flag state control? What is the function of these?
2. Define the purpose of followings:
   i) BMSO, ii) DOS, iii) ISO
3. State the name of different types of survey by mentioning the interval.
4. What are the items to be checked during load line survey?

15.0 Naval architecture/ship construction

1. Draw and describe the load line mark.
2. State the name of different types of welding.
3. Refer to welding fault detection, describe the procedure of the followings:
   i) Dye penetrant testing, ii) Magnetic particle testing, iii) Ultrasonic testing
4. Explain with reason, the properties of material required for ship side sea water overboard valve.
5. Draw a general cargo ship midship section and describe the purpose of a