

Government of the People's Republic of Bangladesh Department of Shipping Sample Oral Question Bank

Marine Engineering Officer Class 5 (Coastal vessel)

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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 are checks to be done during crank case inspection?
- 4. Draw a liner and describe all the parts.
- 5. What is the purpose of telltale hole in liner?
- 6. What are the materials of piston ring? Sketch and describe different types of piston ring clearance.

7. What is gudgeon pin? What are the checks to be done on gudgeon pin & connecting rod at time of overhauling?

- 8. What is oil scrapper ring in a piston rings set? What is the functions of oil scrapper ring?
- 9. What is Gear teeth backlash? Procedure to take Gear teeth backlash?
- 10. What is flywheel marking? What is the purpose of flywheel marking?
- 11. What are safety devices used in starting air system and describe the purpose of its?
- 12. How many faults of fuel injection valve? How you understand that fuel injector is faulty?
- 13. What is your action if found fuel oil leakage alarm at sea?
- 14. What are the actions to be taken if main engine experience overload due to rough weather?
- 15. State the procedure to take liner calibration of a medium speed engine.
- 16. Main engine one unit exhaust temperature high at sea, what may the causes and actions.
- 17. How to understand the performance of engine air cooler?
- 18. Describe the procedure of cleaning the main engine air cooler.
- 19. What is the purpose of maintain the tappet clearance?
- 20. How to measure and adjust the engine tappet clearance?
- 21. What are the discussions to be done in work plan/tool box meeting?
- 22. How the starting air line explosion happened?
- 23. What is the purpose of exhaust/inlet valve stem seal? What is the purpose of exhaust/inlet

valve roto cap?

- 24. Draw a line diagram of main engine lubricating oil system and explain.
- 25. Draw a line diagram of main engine fuel oil service system and explain.
- 26. Draw a line diagram of main engine jacket cooling system and explain.
- 27. How to find out the tube leakage and rectify of the lubricating oil cooler?
- 28. Describe the cleaning procedure of tube type cooler/heater.
- 29. Describe the cleaning procedure of plate type cooler.

30. Describe the materials and their advantages of the following items:

i) Plate of plate type heat exchanger, ii) Sealing gasket of plate type heat exchanger,

ii) Tube of tube type cooler.

- 31. What are safety devices available for the main engine?
- 32. What are safety devices available for the auxiliary engine?

33.Why medium speed engine con rod bolts are prone to failure .What are the precaution to be taken to avoid premature failure.

2.0 Auxiliary Air Compressor

- 1. What is bumping clearance?
- 2. How to check and adjust the bumping clearance?
- 3. What will be your action if the cooling water high temperature alarm comes for air compressor?
- 4. What are indications for intercooler leakage of air compressor?
- 5. How to determine the air compressor performances?
- 6. Why reciprocating type of compressor commonly used in ship?
- 7. How the cylinder lubrication being done in the air compressor?
- 8. Consequences of excessive cylinder lubrication of air compressor.
- 9. What are the safety devices incorporated in the air compressor?
- 10. What are the safety devices incorporated in the main air reservoir?

3.0 Auxiliary Boiler

- 1. List five important mountings of an auxiliary boiler.
- 2. Procedure and safeties of boiler water blow down.
- 3. How to depressurize the boiler?
- 4. What are actions to be taken in case of 'boiler water level low' alarm comes?
- 5. What are causes and actions to be taken in case of black smoke in the funnel?
- 6. Difference between fire tube, water tube and composite boiler.
- 7. If you trace oil on the case cade tank water, what may the causes and actions?
- 8. During water test if the chloride level found high, what may the causes and actions?
- 9. Procedure of gauge glass blow down with sketch? Why it is necessary?
- 10. What is caustic corrosion and pitting?
- 11. What are the items to be checked in case of miss fire alarm comes during watch?

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. What checks to be done of the following lifting equipment:
 - i) Overhead crane, ii) Chain block
- 5. What is procedure of any fine fuel filters cleaning?
- 6. How to take the main engine and auxiliary engine liner calibration?
- 7. What is "Torque Spanner" and what is the purpose of it?

5.0 Fuel and lubricating oil Management

- 1. State the properties of lubricating of a diesel engine.
- 2. From which point you will collect engine lubricating oil sample for testing and why?
- 3. What are the effects of incorrect cylinder lubrication?
- 4 If you find water presence in the system oil, what may the causes and actions?
- 5. What would be the result if the engine continued to run at this water mixed lubricating oil.
- 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. Describe the procedure of colleting fuel oil samples during bunkering.
- 9. Describe the effects on the engine performance due to excess presence of following.
- in fuel: i) Silicon, ii) Vanadium
- 5.1 Fuel Transfer
- 1. Draw a line diagram of fuel oil service system.
- 2. What are the safeties incorporated in fuel service system.
- 3. What is flash point and pour point?
- 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. Causes of vapor locked in the fuel system and how to rectify.

6.0 Pumps and Pumping system

- 1. Name various types of pumps generally used on board ships
- 2. Draw a centrifugal pump and describe how it works.
- 3. Name any two types of positive displacement pumps generally used on board ships.
- 4. Draw a gear pump and describe how it works.
- 5. Why reciprocating pump is used as bilge pump?
- 6. Why a relief valve is incorporated in positive displacement pump?
- 7. State main two difference between centrifugal pump & positive displacement pump.
- 8. Why priming is necessary for a centrifugal pump?
- 9. What is cavitation? Identify the cause of cavitation in centrifugal pump.
- 10. What will be your action if a centrifugal pump not taking suction?
- 11. What will be your action if a positive displacement pump not taking suction?
- 12. What will be your action if a centrifugal pump doesn't deliver at rated capacity?
- 13. Procedure to change the pump gland packing.
- 14. What is wear ring and describe the purpose of it?
- 15. What is shaft sleeve and what is purpose of it?
- 16. Advantages and disadvantages of mechanical seal and gland packing?

17. Why rotary type, like screw type and gear type pump are not suitable for sea water and fresh water use.

- 18. What is submersible pump? Where and why it is used?
- 19. What is multi stage pump? Where and why it is used?
- 20. What is type of wilden pump? How it works?

7.0 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. Describe the emergency steering.
- 7. What action you will take if low oil level alarm comes?

8.0 Refrigeration System

- 1. Draw a line diagram of a shipboard refrigeration system and describe.
- 2. State five desirable properties of refrigerant which used in domestic refrigeration system.
- 3. What are causes of icing on suction line?
- 4. How you understand that air ingress in the system and how to purge air from the system.
- 5. What are indications of oil carrying over in the system and what is your actions?
- 6. How to stop the refrigeration system for long period?
- 7. What is short cycling and what is your action in case of short cycling?
- 8. What is the procedure for evaporator cleaning?
- 9. How vegetable room and meat/fish room different temperatures are maintained?

9.0 Fire Fighting & Life Saving Appliances

- 1. Why the portable CO2 fire extinguisher is better than foam type in case of electrical fire.
- 2. How tests are carried out on the following types of fire detector:

i) Smoke detector, ii) Heat detector, iii) Flame detector

- 3. Draw a smoke and flame detector and describe how it works?
- 4. What are the safeties incorporated in ship's FIRE-MAIN system?
- 5. What is international shore connection?
- 6. Why mixed types of sensor are preferable in the engine room?
- 7. What are the actions to be taken in case of fire on running auxiliary engine?
- 8. What are items to be checked in Self-contained breathing apparatus (SCBA) set?
- 9. What is fire plan and what are the items indicated in the fire plan?
- 10. State the regulation for the emergency fire pump as per the "SOLAS".
- 11. Sketch cross-sectional drawing and describe any of the following fire extinguisher:
 - i) Portable dry powder, ii) Portable foam extinguisher
- 12. What is uptake fire? What will be your actions in case of uptake fire?
- 13. What kinds of fire detector is used above the main engine or auxiliary engine and why?

10.0 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. What are the PPE to be used during carrying out any major maintenance job?
- 3. List the hazards of entering into enclosed space.
- 4. Procedure to entering into enclosed space.
- 5. What is actions in case of power failure and describe the recovery after power failure?
- 6. What are safeties to be taken before and during any hot work?
- 7. What are safeties to be taken before performing any repair job on electrical equipment?
- 8. How you manage the work and rest hour of the engine crew?
- 9. State the work and rest hour period as per the STCW 2010.

11.0 Electrical and Electronic Engineering

- 1. Sketch & describe a schematic diagram of emergency power supply.
- 2. What is meant by synchronizing? Mention the condition of parallel operation of two generators.
- 3. What is earth fault? How to find out a earth fault on a specific line or equipment.
- 4. Describe the synchronizing lamp system with a simple diagram.
- 5. What are the items to be checked before starting a generator engine?
- 6. Lists the name of any four electrical safety devices.
- 7. How to isolate a system for any electrical job?
- 8. State some of the hazards of electrics shock.
- 9. What is Preferential trip and Reverse power trip?
- 10. What is Under voltage trip and Overload trip?
- 11. How to check the motor insulation?
- 12. What is emergency battery and purpose of it?

12.0 Rules, Regulation & Pollution Prevention

- 1. What is "MARPOL"? What are the "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 the functions of test cocks of each stage of OWS?
- 5. How to manage the bilge water onboard the ship?

- 6. State regulations for machinery space oily bilge water discharge.
- 7. Describe the operating procedure of oily water separator onboard the ship.
- 8. Procedure to clean up the coalesce filter.
- 9. What are actions to be taken in case of any oil pollution?
- 10. Lists the name of "SOPEP" items.
- 11. State the regulations for sewage discharge to sea.
- 12. Advantages possessed by vacuum sewage system.

13.0 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

14.0 Naval Architecture/ship Construction

- 1. Draw and describe the load line mark.
- 2. What is draught and free board?
- 3. State the name of different types of welding.
- 4. Refer to welding fault detection, describe the procedure of the followings:i) Dye penetrant testing, ii) Magnetic particle testing, iii) Ultrasonic testing
- 5. Explain the essential difference between cast iron and mild steel.
- 6. Draw a general cargo ship midship section and describe the purpose of all parts