SEP 2025

Q1 (16 marks)

(a) What are the different types of coupling bolts used in practice? Name at least 3. (3)

(b) Explain with the help of sketch, as to how a 'pilgrim' hydraulic bolt is fitted and removed? (8)

(c) How are fitted boards installed on the coupling? (5)

Apr 2025 - 1

Q2 (16 marks)

(a) Sketch and describe the modern purification system using 'ALCAP' concept for purifying fuel with specific gravity about 0.991. (8)

(b) Explain how 'ALCAP' separater operates as clarifier & how is the water drained (5)

(c) What is 'paring disc'? How does it function? (3)

Purifiers & system

Q3 (16 marks)

Clean and dry control air is essential for efficient,troublefree operation of a ship's pneumatic ' control air system.

(a) Sketch and describe a low pressure control air systems used on board ships,showing various arrangements to deal with dust,oil and moisture.as well as safety systems. (8)

(b) Explain using a line diagram, arrangement provided, to reduce the air pressure to 7/8 bars, required for control air system. (8)

Q4 (16 marks)

(a) Whilst on 'seawatch' you observe that the Oil Mist detector(OMD) in the engine room has triggered an alarm; and in feeling the crankcase doors on the bottom platform, you find that the unit in question feels warmer than the rest. What pre-emptive action will you take as Watch-keeper to bring the situation under control. (10)

(b) Draw a simple line diagram of a 'OMD' and explain it's working. (6)

Crankcase & OMD

Sep 2024 - 1

Q5 (16 marks)

Explain the following terms and give examples of where each condition might

(a) Stress Corrosion cracking (6)

(b) Creep cracking (5)

(c) Corrosion fatigue. (5)

Q6 (16 marks)

(a) What are the Safety Devices fitted to an Air Compressor? (4)

(b) What is the Purpose of the Scum Valve on a Boiler? (4)

(c) What is the Function of an Evaporator in a Refrigeration System? (4)

(d) Regarding the Emergency Bilge Injection Valve, what is its relevant size compared to the Main Sea Water Injection Valve? (4)

Q7 (16 marks)

(a) Sketch a four-ram steering gear arrangement capable of 100% redundancy. (8)

(b) Describe the operation of the arrangement sketched in (a). (8)

Jan 2025 - 1

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Q8 (16 marks)

(a) Explain why air receivers should be drained frequently and its internal surfaces to be provided with protective coatings; (6)

(b) Describe the procedure for internal inspection of air receivers and the possible defects that may be encountered. Suggest suitable repair methods for the (6)

(c) Describe fault conditions associated with air receiver mountings and the remedies to rectify the same. (4)

Q9 (16 marks)

(a) Define 'centrifugal pump' and where it is used on ships? Using a simple line diagram show a circuit which includes a centrifugal pump.Explain the meaning of suction lift (6)

(b) Sketch and describe the construction of a centrifugal pump, labelling its parts.What is a 'lantern ring 'and why it is fitted? (10)

Pumps & system