

SEP 2025

Q1 (16 marks)

- (a) Sketch a main engine jacket water cooling system (8)
- (b) State why chemical treatment of such systems is necessary (4)
- (c) What tests are carried out to ascertain the level of the concentration of the chemicals in the jacket cooling water system? (4)

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Q2 (16 marks)

- (a) Describe with suitable sketches, how lubricating oil is conveyed to top end, bottom end and main bearings in a large bore slow speed engine. (10)
- (b) List the causes leading to sudden loss of lubricating oil pressure in the engine. (6)

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Q3 (16 marks)

- (a) What is function of Charge air cooler on 2-Stroke Diesel Engine? (4)
- (b) Draw Diagrammatic Sketch of charge air cooler. Describe each part. (8)
- (c) How the efficiency of charge air cooler can be checked? (4)

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Q4 (16 marks)

- (a) Describe a pressure relief device fitted on a diesel engine crankcase. Are these devices fitted on all sizes of the engine? (8)
- (b) What attention do crankcase pressure relief device require? (4)
- (c) Name the factors which must be present for an explosion to occur in the crankcase of a diesel engine. (4)

Crankcase & OMD

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Q5 (16 marks)

- (a) In modern electronic type 2 stroke main engines which components are replaced by electronic equivalents. (8)
- (b) Describe by drawing a simple sketch, fuel injection system on electronic type engine. (6)
- (c) How fuel is injected at right moment in electronic type engine? (2)

Electronic engine & common rail

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Q6 (16 marks)

(a) Sketch and describe the significance of Chocks ? Give the three different types of chocks fitted in marine diesel engines. Briefly describe the purpose of each. (8)

(b) What are the different classification of chocks based on its material? (4)

(c) What are resilient chocks? Where are these fitted and why? (4)

Engine construction & working

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Q7 (16 marks)

(a) Draw diagrammatic Sketch, describing each part of thrust block. (8)

(b) Describe how propeller thrust is transmitted to hull? (4)

(c) How to measure thrust clearances on the block? (4)

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Q8 (16 marks)

(a) Draw Lubricating oil piping diagram with all fittings for a trunk type 4-Stroke Diesel Engine. (8)

(b) What properties are required for a Lubricating oil used in a 4-stroke Diesel engine? (4)

(c) What is the effect on lubricating oil due to various contaminants during operation of engine? (4)

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Q9 (16 marks)

With reference to engine inlet and exhaust valves:

(a) State why tappet clearance is essential and why it must be periodically checked. (6)

(b) List with reasons the likely consequences of excessive and insufficient tappet clearance. (4)

(c) State how carbon build-up can occur during engine running and indicate the possible effects on cylinder performance. (6)

Cylinder head

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