

Indian Maritime University
(A Central University, Govt of India)

Sep/Oct'25 SE

Programme Name: B Tech (Marine Engineering)

Semester: VI

Subject Code: UG11T4604

**Subject Name: Marine Propulsion Plant & Auxiliary Machinery:
Performance Assessment**

Date: 22.10.2025

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.

Section A

(10 x 1 = 10 Marks) MCQ – Choose the correct answer as applicable.

1. Sacrificial Anodes are fitted to Shell and tube heat exchanger to:
 - A. Enhance heat transfer
 - B. easier cleaning of the tubes
 - C. prevent Galvanic Corrosion
 - D. provide turbulence to flow

2. In order to maximise the performance of a purifier. You can adjust the – I. Feed rate, II. Temperature
 - A. I only
 - B. II only
 - C. Both I & II
 - D. None of the above

3. Compression of Air in a Main Air compressor closely resembles a _____ process
 - A. Isothermal compression
 - B. Adiabatic Compression
 - C. Polytropic Compression
 - D. Isobaric Compression

4. When there is a flame failure in an automatically fired auxiliary boiler, the -
 - A. Air supply is shut off
 - B. Fuel supply is shut off
 - C. Water supply is shut off

- D. None of the above
5. With reference to Auxiliary Engine (four stroke/cycle diesel Engine), the camshaft rotates at -
- A. twice the crankshaft speed
 - B. half the crankshaft speed
 - C. same speed as the crankshaft
 - D. All of the above
6. The Light Spring diagram taken from the Engine helps in identifying issues with the
- A. Combustion Process
 - B. Fuel Injection process
 - C. Exhausting and Scavenging process
 - D. Compression process
7. In case of blackout, the Emergency Generator should be able to restore power within _____ seconds
- A. 15
 - B. 25
 - C. 35
 - D. 45
8. Droop setting on a Electro hydraulic Governor of Auxiliary Engines is essential for
- A. Synchronising the Alternators
 - B. Sharing of load between the alternators
 - C. Increasing the fuel Efficiency of Generator
 - D. Cooling the Governor
9. SFOC stands for
- A. Specific Fuel Oil Consumption
 - B. Standard Fuel Oil Consumption
 - C. Specific Fuel Oil Correction
 - D. Standard Fuel Oil Correction
10. The Air vent valve is kept open when the Boiler is
- A. fully pressurised
 - B. flashed up from cold and during complete blow down
 - C. fully filled up with Water
 - D. firing.

Section B

(5 x 2= 10 Marks)

11. Mention 2 advantages of plate type heat exchanger.

12. What is the purpose of fitting a Fusible plug on an Air Reservoir?
13. Discuss the consequences of starting a boiler without pre-purging of the furnace.
14. State the minimum Quantity of fuel that needs to be carried for Emergency Generator.
15. Define and state the formula for i) IHP ii) BHP

Section C

Answer Any 5 (05 X 10 Marks)

16. A. List the various factors that influence the selection of a Plate type Heat Exchanger for the Engine room. (6 Marks)
B. Explain the common types of fouling in Heat Exchangers.(4 Marks)
17. With reference to purifiers used on board ship, Explain: -
(A) Reasons for purifier overflow (5 Marks)
(B) Cause of excessive vibration on purifier (5 Marks)
18. A. State and explain a few alarms and trips fitted on the Main Air Compressor (6 Marks)
B. Explain the running hour-based maintenance schedule for the Main Air Compressor (4 Marks)
19. With reference to Auxiliary Boiler fitted on board, explain the following situations & possible solutions: -
(A) Ignition Failures (5 Marks)
(B) No Flame Establishment (5 Marks)
20. A. Explain the Synchroscope method of paralleling of Generators with sketch. (5 Marks)
B. State the regulations governing the operation of Emergency Generator under SOLAS (5 Marks)
21. Sketch the 'Draw Cards' for the following defects and state the reasons for the fault. (4x 2.5 marks)
A) Maximum firing pressure is too high
B) Peak pressure is too low
C) Compression pressure and peak pressure are low
D) High compression pressure

22. On board ship, list down the important parameters in the following case you will check and further explain how to compare these parameters with sea trial report in order to find out the discrepancies and further necessary actions.

(A) Main Engine performance (5 Marks)

(B) Auxiliary Engine Performance (5 Marks)