

Indian Maritime University
(A Central University, Govt of India)
Mar/Apr'26 SE

Programme Name: B Tech (Marine Engineering)
Semester: VI

Subject Code: UG11T4604

Subject Name: Marine Propulsion Plant & Aux Machinery: Performance Assessment

Date: 18.03.2026

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. The General purpose of a heat exchanger is to ---
 - a. Eliminate hot air from the condenser
 - b. Maintain Steady pressure
 - c. Heat or cool one fluid by means of another fluid
 - d. Eliminate cold air from the evaporator

2. Following Pressure is used in the formula "Power = PLAN"
 - a. Peak Pressure
 - b. Compression Pressure
 - c. Mean Indicated Pressure
 - d. Median Indicated Pressure

3. Equipment used to measure the area of PV diagram in power card is called as:
 - a. Area meter
 - b. Power meter
 - c. Plani meter
 - d. Ammeter

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. Power supply is shut off

5. The power supplied to the equipment that performs useful and productive work is called:
 - a. Active Power
 - b. Reactive Power
 - c. Apparent Power

d. Power Factor

6. Pre-Purging of boiler furnace is required for:

- a. To check the performance of FD Fan before starting
- b. To remove unburnt residual fuel, gases from the furnace
- c. To try out alarms & trip before starting
- d. To check the burner performance before starting

7. Following is not a test done on Boiler Water:

- a. Ph Value
- b. Dissolved Solids
- c. Alkalinity
- d. Viscosity

8. Following is provided by manufacturer for selection of Gravity Disc in purifier:

- a. Nomograph
- b. Topograph
- c. Hydrograph
- d. Momograph

9. Following safety device is fitted on the coolers of Air Compressors:

- a. Bursting Disc
- b. High air temperature trip
- c. Low Lubricating oil pressure trip
- d. Cooling water flow switch

10. The main purpose of unloader in air compressor is:

- a. Reduce Starting Current of Motor
- b. Drain Water from Cylinder
- c. Increase Compressor efficiency
- d. None of the above

Section B

(5 x 2= 10 Marks)

11. Explain Light Spring Diagram.

12. Name 3 equipments connected to Emergency switchboard.

13. Discuss the consequences of starting a boiler without pre-purging of the furnace.

14. Explain purpose of intercooler & after cooler of air compressor on-board

15. What is the difference between throughput and backpressure in a purifier?

Section C

Answer Any 5 (05 X 10 Marks)

Q16. a) Sketch and explain working of Mechanical Indicator Instrument and what parameters can be observed using it. (6 marks)

b) Analyse the following and explain the causes and effects with remedy.

"While taking performance of two stroke diesel engine used for propulsion, it is observed that peak pressure is low, exhaust temperature is high but compression pressure is normal for a particular unit. (4 marks)

17. With reference to Electrical power generation on-board, explain the following:

(a) Power Factor (5 Marks)

(b) Improvement of power factor (5 Marks)

18. a) List the critical equipment supplied power by Emergency Switch Board (5 marks)

b) What is Reverse Power Trip? (5 Marks)

19. With reference to Auxilliary Boiler fitted on board, explain the following situations & possible solutions: -

(a) Ignition Failures (5 Marks)

(b) No Flame Establishment (5 Marks)

20. a) Describe the method to access the performance of main air compressor by filling up air bottle (5 marks)

b) What is the bumping clearance in Reciprocating Air Compressor and what is its effect on performance. (5 marks)

21. 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)

22. Explain operation & maintenance of following Heat Exchangers used on-board ship: -

(a) Shell & Tube type Heat Exchanger (5 Marks).

(b) Plate Type Heat Exchanger. (5 Marks)

