

Indian Maritime University
(A Central University, Govt of India)
Supplementary Examinations – September/October 2024
Programme Name: B Tech (ME)
Semester: VI
Subject Code: UG11T4604
Subject Name: Marine Propulsion Plant and Auxiliary Machinery:
Performance Assessment

Date: 28.10.2024

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A

Choose the correct answer as applicable.

1. 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

2. SFOC stands for

- a. Specific Fuel Oil Consumption
- b. Standard Fuel Oil Consumption
- c. Specific Fuel Oil Correction
- d. Standard Fuel Oil Correction

3. In case of blackout, the Emergency Generator should be able to restore power within _____ seconds

- a. 15
- b. 25
- c. 35
- d. 45

4. 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

5. Heavy fuel oil supplied to the Auxiliary Boiler burner at a low temperature will lead to

- a. Improper atomisation
- b. White smoke
- c. High Furnace temperature
- d. Low Water level

6. 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.

7. Compression of Air in a Main Air compressor closely resembles a _____ process

- a. Isothermal compression
- b. Adiabatic Compression
- c. Polytropic Compression
- d. Isobaric Compression

8. Unloader on a Main Air compressor is used to

- a. Remove dirt and debris from the Air
- b. Cool the Air before it enters the compressor
- c. Reduce the starting current of the Compressor Motor
- d. Remove the oil traces in the compressed air.

9. Lubricating Oil is normally heated up to a maximum temperature of _____ deg C for purification.

- a. 50
- b. 75
- c. 85
- d. 100

10. 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.

Section B

Five Questions of 02 Marks each

11. Define and state the formula for i) IHP ii) BHP
12. State the minimum Quantity of fuel that needs to be carried for Emergency Generator.
13. Briefly explain the function of Feed check valves fitted to a boiler.
14. What is a Nomogram with reference to a Purifier?
15. What is the purpose of fitting a Fusible plug on an Air Reservoir?

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

16. Sketch the 'Draw Cards' for the following defects and state the reasons for the fault. (10 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
17.
 - a. The Performance curves of Main Engine against various parameters helps in performance assessment. Substantiate the statement with sample curves. (7 Marks)
 - b. List all the safeties and protections associated with the Main Switch board of the Engine Control room. (3 Marks)
18.
 - 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)
19.
 - a) Justify the need for maintaining the Boiler Feed water in an alkaline condition with the procedure for the following tests. (5 Marks)
 - (i) P-Alkalinity test
 - (ii) T-Alkalinity test
 - b) Why should electrochemical corrosion be prevented in Boiler? Explain the causes, effects and prevention techniques. (5 Marks)
20.
 - 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)
21.
 - a. Explain the causes and remedies for the following problems that can occur in Purifiers. (6 Marks)
 - (i) Excessive vibration on purifier

- (ii) purifier over flow
- (iii) purifier not building up speed while running

b. State the checks to be carried out while running the purifier and procedure for Desludging. (4 Marks)

22. 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)

TAM