Indian Maritime University

(A Central University, Govt of India)

End Semester Examinations – June 2024

Programme Name: B.Tech (Marine Engineering)

Semester: VI

Subject Code: UG11T4604

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

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Date: 05.06.2024 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) None

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

A) Nomograph
B) Topograph
C) Hydrograph
D) None of the above

3. Air blowing out from the intake air filter of an operating air compressor indicates ---
A) Broken Inlet valves
B) Pulsations in the air system
C) Overloading
D) None of the above

4. 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) 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. Main Engine performance is monitored onboard ship by
A. Power Card
B. Light spring card
C. Both A & B
D. None

7. With reference to Auxiliary Engine Electrical power generation on board; Active Power is known as: -
A. Real Power
B. Actual Power
C. True Power
D. All of the above

8. Emergency Generator on board can be started by which method: -

A. Battery Start
B. Hydraulic start
C. Both A & B
D. None

9. With reference to Main Engine power calculation on board;_Indicated Power of Unit = Pm L A N, here A- indicates

A. Liner Bore
B. B. Area of Piston
C. C. Area of piston rings
D. D. None

10. With reference to Main Engine on board; Engine Distance in nautical mile is calculated as: -

A. pitch X Revolutions per day
B. pitch +Revolutions per day
C. pitch - Revolutions per day
D.None

Section B

(5 x 2= 10 Marks) Short Answer type questions

11. Write any two advantages of plate type heat exchanger.

12. Explain purpose of intercooler & Aftercooler of air compressor on board.
13. Discuss the consequences of starting a boiler without pre-purging of the furnace.

14. Name any three equipment connected to Emergency switch board.

15. Define SFOC with reference to Main Engine on board.

Section C

7 Long Questions-Answer Any 5 (05 X 10 Marks)

16. (a) Explain operation & maintenance of Shell & Tube Heat Exchanger used on board ship. (5 Marks)
(b) Explain how the performance of Heat Exchanger is assessed. (5 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. With reference to air compressors fitted onboard, Explain purpose & uses of the following: -
(a) Topping up air compressor (5 Marks)
(b) Emergency air compressor (5 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. With reference to Electrical power generation onboard, Explain the following:
(a) Power Factor (5 Marks)
(b) Improvement of power factor (5 Marks)

21. With Reference to Main Engine Performance; Describe method of taking indicator card through: -
(a) Data Acquisition Unit / Digital Methods. (5 Marks)
(b) Mechanical Indicator card Instrument. (5 Marks).

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)