

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – Dec 2024
Programme Name: B Tech (Marine Engineering)
Semester: V
Subject Code: UG11T4503
Subject Name: Marine Auxiliary Systems & Deck Machinery

Date: 11.12.2024

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. The fuel oil purifiers used on ships works on the principle of
A. Centripetal Force
B. Centrifugal force
C. Static Force
D. Gravity force
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. A Diaphragm pump is a type of -
A. Centrifugal pump B. Axial flow pump C. Positive Displacement pump
D. Rotodynamic pump
5. Reference to pumps; NPSH stands for -
A. New pump suction head B. New priming suction head C. Net Positive suction head
D. None of the above
6. The Gypsy wheel is an item normally found in the
A. Mooring winch
B. Capstan

- C. Windlass
- D. Chain locker.

7. Aftercoolers are used in air compressors -

- A. To reduce temperature of air
- B. To store air
- C. To remove moisture
- D. To increase temperature of air

8. Deck cranes are examples of which of the following: -

- A. Deck Machinery
- B. Marine Diesel Engine
- C. Diesel Generator
- D. None

9. Sacrificial anodes are used in

- A. HFO Purifier
- B. Shell & Tube Heat Exchanger
- C. DO Purifier
- D. None

10. With reference to Fresh water Generator on board; which of the following method is used for scale removal from evaporator surface: -

- A. In-service treatment
- B. Descaling by acid
- C. Both a & b
- D. None

Section B

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

11. Mention 2 advantages of plate type heat exchanger over Shell & Tube type heat Exchanger.

12. Explain purpose of intercooler & Aftercooler of air compressor on board.

13. Name at least 5 types of Positive displacement pumps

14. With reference to fresh water generator on board, explain suitability of evaporated water for drinking purpose.

15. What is the purpose of purification of Fuel oil & Lubricating oil on board ?.

Section C

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

16. Explain operation & maintenance of following Heat Exchangers used onboard ship: -

- (a) Shell & Tube type Heat Exchanger (5 Marks).
- (b) Plate Type Heat Exchanger. (5 Marks)

17. a. Draw a cross section of a typical purifier showing the various parts. (7 Marks)

b. State a few alarms fitted on the Purifier for its safe operation. (3 Marks)

18. With reference to compressed air system fitted onboard: -

- (a) Explain maintenance & inspection of air bottle (5 Marks)
- (b) Explain effect of moisture in compressed air system (5 Marks)

19. With reference to Deck Machinery fitted on board, answer the following: -

- (a) Brief on classification society rules for windlass (5 Marks)
- (b) Explain the concept of self-tensioning mooring winch (5 Marks)

20. With reference to Modern fresh water generator fitted on board: -

- (a) Draw a simple sketch to show flow of jacket cooling water & Sea water (5 Marks)
- (b) Explain starting & stopping procedure of the same (5 Marks)

21. With Reference to pumping system on board: -

- (a) Explain the effect of vapour pressure in pumping operation. (5 Marks)
- (b) Effect of viscosity in pumping operation. (5 Marks).

22.

- (a) Explain importance of selection of pumps for ship services. (5 Marks)
- (b) Explain operation of 2-stage air compressor. (5 Marks)

