

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – JUN 2023
Programme Name: B Tech (ME)
Semester: III
Subject Code: UG11T4306
Subject Name: MARINE MACHINERY SYSTEMS

Date: 22.05.2023

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

Ten MCQs/Fill in the Blanks of 01 Mark each (**1×10=10**)– Choose the correct answer as applicable.

1. What colour coding is used for Sea water cooling line?
 - a. Red
 - b. Blue
 - c. Green
 - d. Silver

2. Accidental flooding of the engine room bilges by the bilge main is prevented by _____.
 - a) Stop-check valves (non-return valves) installed in the bilge suction line.
 - b) Using a positive displacement reciprocating bilge pump.
 - c) Installing eductors in all bilge suction.
 - d) Installing a swing check before each bilge valve.

3. The name of the tank which is present in Fresh Water Cooling system used to give constant pressure head at the suction of pumps is called as
 - a. Compression Tank
 - b. Expansion Tank
 - c. Central Fresh Water-Cooling Tank
 - d. Jacket Water Preheater

4. Before Loading of Bunkers, a Plan is to be made by Chief Engineer. This plan is called as
- Discharging Bunker Plan
 - Bunker Checklist Plan
 - SOPEP Plan
 - Pre-Loading Plan for Bunkers
5. Which of the following is used for start the compressor at low load?
- Relief valve
 - Unloader
 - Low pressure cut-out
 - Intercooler
6. Which type of pump is used generally as a Ballast pump?
- Screw pump
 - Gear pump
 - Vane pump
 - Centrifugal pump
7. The lube oil pump used in a diesel engine is a _____.
- Volute pump.
 - Centrifugal pump.
 - Diaphragm pump
 - Gear pump
8. The pressure at which Osmosis ceases to exist, i.e. there is no flow of low concentration fluid to the high concentration fluid through the semi permeable membrane is called as _____.
- Hydraulic Pressure
 - Low Concentration Pressure
 - Osmotic Pressure
 - Low Pressure
- 9 A Strainer is usually _____ filter, while Filters are used to remove _____ particles
- Coarse, Finer
 - Finer, Finer
 - Coarse, Coarse
 - Finer, Coarse
10. Thrusters [bow & stern] are used to control the movement of the vessel when the vessel speed should be
- high speeds only
 - low speeds only
 - independent of the vessel speed
 - None of the Above

Section B

Five Questions of 02 Marks each

11. List out at least 6 Equipment's or Machineries which are commonly installed on the Engine Room Bottom Platform
12. Explain the purpose of emergency bilge suction valve?
13. What do mean by Priming of Filters
14. What is the full form of SOPEP? Name at least five items of the SOPEP Locker
15. Explain why the use of centrifugal separation is much faster and more effective than gravity in the separation process?

Section C

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

16. a) What is a Fresh Water Hydrophore? How the pressure is maintained inside the Hydrophore? (2 + 3 marks)
b) Draw a simple sketch of Bilge and Ballast system on Ships. (5 Marks)
17. a) What is Reverse Osmosis? Explain with a sketch how fresh water is produced by using Reverse Osmosis process. (2 + 5 Marks)
b. Describe the treatment required on board for water produced in Fresh Water Generator for Human Consumption. (3 marks)
- 18 a) State the precautions to be taken in Bunkering Operation. (5 Marks)
b) What is Hull Corrosion? Briefly discuss how Hull Corrosion can be prevented for ships? (5 Marks)
19. a) State differences between a Strainer and Filter? (3 marks)
b) Write a short notes on following types of filters ? (7 marks)
 - i) Duplex Filters
 - ii) Auto Klean Filters
20. a) What are the mountings attached on an Air Bottle. State the purposes of each of them. (5 marks)
b) List the safeties and trips fitted in a Two Stage Reciprocating Air Compressor use on Ships. (5 marks)
21. What is priming of Centrifugal Pump? (3 Marks)
b. How automation and control of pumps can be achieved on board ships? (4 Marks)

c. State the differences between Centrifugal Pumps and Positive Displacement Pumps. (3 marks)

22. a) Briefly Explain the principle of Alfa Laval (ALCAP) system and how it purifies the oil separating the water as well as sludge mentioning the operating water , sealing water use, automatic sludge discharge (7 Marks)

b). Explain with help of a diagram the Marine Growth Prevention System which uses Aluminium / Copper Anodes (3 Marks)