

Indian Maritime University  
(A Central University, Govt of India)  
End Semester Examinations- December 2023  
Programme Name: B Tech (ME)

Semester: III  
Subject Code: UG11T4306  
Subject Name: Marine Machinery Systems

Date: 15.12.2023 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  
(All questions are compulsory)  
(10 x 1 = 10 Marks)

1. Sea Chests are used for:
  - a) Intake of fresh water.
  - b) Intake of seawater.
  - c) Discharge of seawater.
  - d) Intake of fresh water.
2. Taking samples of oil when bunkering is necessary for a number of reasons. Which one of the following is the recommended manner of obtaining a representative sample?
  - (a) Fill a sample container at ship's manifold by a continuous drip method.
  - (b) Directly from the supplier from shore-side/barge tanks.
  - (c) Fill a sample container at ship's manifold at the end of bunkering.
  - (d) Fill a sample container at ship's manifold at the start of bunkering.
3. Which of the following is used for start the compressor at low load?
  - a. Relief valve
  - b. Unloader
  - c. Low pressure cut-out
  - d. Intercooler
4. Which ONE of these best describes the process of "Fresh Water Generator" on Ships?
  - (a) Seawater is boiled at low pressure and temperature before being condensed into fresh water.
  - (b) Fresh water is boiled at low pressure and temperature before being condensed.

- (c) Fresh water is boiled at low pressure but high temperature before being condensed.
- (d) Fresh water is boiled at low pressure but high vacuum.

5. It converts the rotational energy of fuel to pressure energy
  - a. Gravity Disc
  - b. Bowl
  - c. Pilot Plugs
  - d. pairing Disc

6. Accidental flooding of the engine room bilges by the bilge main is prevented by \_\_\_\_\_.

- a) Non return Stop check valves installed in the bilge suction line.
- b) Using a positive displacement reciprocating bilge pump.
- c) Installing educators in all bilge suction.
- d) Installing a swing check before each bilge valve.

7. \_\_\_\_\_ is a kind of coarse filter which is used for filtering large impurities and contaminants present in the liquid.

- a. Strainer
- b. Filters
- c. Bilge Cleaners
- d. Bilge catchers

8. A purifier will satisfactorily remove which of the following contaminants from fuel oil?

- a) Gasoline.
- b) Water.
- c) Lubricating oil.
- d) Sulphur compounds

9. Stabilization systems can be broadly classified into

- a. Modern and Old
- b. Active and Passive
- c. Stable and Unstable
- d. Fixed and Movable

10. A high differential pressure indication in an Oil Filter on board a ship indicates:

- a) Oil inlet pressure is low.
- b) Oil outlet pressure is high.
- c) Filter is choked / dirty.
- d) All of the above.

(4 Marks)

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

20. a. State the risks associated with bunkering of Fuel Oil? (5 Marks)

b. What is ICCP? Briefly discuss how it is protecting Ship's hull? (5 Marks)

21. a. Draw a layout of Second Platform of a Ship's Engine Room and show different machines. (6 Marks)

b. With the help of a simple sketch, describe the ALCAP System. (4 Marks)

22. a. Sketch and describe a Fresh Water Hydrophore System used on board ships (4 Marks)

b. What are the different types of Pipe Materials used on ships? (3 Marks)

c. Give a list of different colour codes used on ships with respect to different piping system. (3 Marks)

Section B  
(All questions are compulsory)  
(5 x 2 = 10 Marks)

11. Name any 4 pumps placed in the Bottom Platform of a Ship and state their purposes.

12. Mention the differences between purifier and clarifier?

13. What are the uses of Steam on board a Ship

14. What do mean by Priming of Filters.

15. Explain the purpose of emergency bilge suction valve?

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

16. Sketch and label a simple line diagram of Bilge system on-board a ship? Describe the diagram drawn in brief? (10 marks)

17. a) Sketch a two stage reciprocating air compressor? Label also the safety devices fitted on the air compressor? (7 marks)

b) List the mounting and safety devices fitted on air bottles? (3 marks)

18. a. What is the principle difference in purification process with respect to settling tank and centrifuges? (3 marks)

b. What is desludging? How the desludging process is carried out? (3 marks)

c. Sketch a Fresh Water Generator use on board ships showing all the arrangements for optimum operation. (4 Marks)

19. a. What do you understand by the core maintenance of filters? (3 marks)

b. What are the different types of Filters used on Seagoing vessel?