

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations– December 2022
Programme Name: B Tech (ME)
Semester: III
Subject Code: UG11T4306
Subject Name: Marine Machinery Systems

Date: 20.12.2022

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. Bunker samples are collected for:
 - a) For laboratory analysis.
 - b) For receiving ship and supply barge for future reference.
 - c) For MARPOL.
 - d) All of the above.
3. Which of the following statements represents the path of air flow passing through a typical two stage, low pressure, reciprocating air compressor?
 - a) Intercooler, L.P. cylinder, H.P. cylinder and Air Filter.
 - b) L.P. cylinder, air filter, intercooler and H.P. cylinder.
 - c) Air filter, L.P. cylinder, H.P. cylinder and intercooler.
 - d) Air filter, L.P. cylinder, intercooler and H.P. cylinder.
4. Which of the following frequent maintenance procedures is required of compressed air receivers?
 - a) A close watch on the temperature.
 - b) Constant cleaning to remove oil and dirt.

- c) Constant testing of the relief valves.
 - d) Frequent draining of water.
5. The lube oil pump used in a diesel engine is a _____.
- a) Volute pump.
 - b) Centrifugal pump.
 - c) Diaphragm pump
 - d) Gear pump.
6. 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.
7. A purifier will satisfactorily remove which of the following contaminants from fuel oil?
- a) Gasoline.
 - b) Water.
 - c) Lubricating oil.
 - d) Sulphur compounds.
8. Scale formation in a Fresh Water Generator evaporator can lead to:
- a) Poor heat transfer.
 - b) Reduced capacity of Fresh Water production.
 - c) Increased Shell temperature.
 - d) All of the above.
9. A Multistage Centrifugal Pump is used for:
- a) High Head.
 - b) High discharge flow.
 - c) High viscous fluid.
 - d) Low viscous fluid.
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.

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. (2 Marks)
12. State the purpose of Gravity Disc in a Centrifugal Separator. (2 Marks)
13. What are the uses of Compressed Air on board a Ship? (2 Marks)
14. What do mean by Priming of Filters. (2 Marks)
15. Explain why Fuel Oil treatment is necessary before it is used for combustion. (2 Marks)

Section C

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

- 16.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)
17. a. Explain with a sketch the working of a Fresh Water Generator use on board ships. (7 marks)
- b. Describe the treatment required on board for water produced in Fresh Water Generator for Human Consumption. (3 marks)
18. a. State the standard colour codes used in pipeline system of a seagoing vessel. (3 marks)
- b. Discuss with the help of a simple sketch sea water cooling system of a Seagoing vessel. (7 Marks)
19. a. Explain with the help of a simple sketch the working principle of Centrifugal pump (6 Marks)
- b. State the differences between Centrifugal Pumps and Positive

Displacement Pumps.

(4 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 machineries. (6 Marks)
- b. With the help of a simple sketch, describe the ALCAP System. (4 Marks)
22. a. Draw simple sketch of any auto backwash filter and describe backwash process. (7 Marks)
- b. State advantages of duplex filter over simplex filter. (3 Marks)

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