

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.
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)

- 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)

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

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)