

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2024**  
**B Tech (ME)**  
**Semester VI**  
**UG11T3604**  
**Marine Auxiliary Machinery II**

Date: 14.06.2024

Duration: 03 Hrs

Max Marks: 70

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**

Answer all Questions (10 x 1 Marks = 10 Marks)  
Choose the Correct Answer

1. Lubricating oil
  - (a) Minimises wear in moving parts.
  - (b) Helps in keeping the parts cool.
  - (c) Washes away and carries away dirt.
  - (d) All of the above.
  
2. Which of the listed item is removed from fuel oil by centrifuging?
  - (a) Sludge.
  - (b) Diesel fuel.
  - (c) Lube oil.
  - (d) Gasoline.
  
3. When centrifugal pump is overhauled it was found that shaft had developed grooves on it and no spare is available on-board. What action can be taken?
  - (a) Order a new spare.
  - (b) Assemble the pump without doing anything and wait for the spare to arrive.
  - (c) Machine the shaft sleeve on lathe and assemble the pump with correct size packing.
  - (d) Leave the pump as it is.
  
4. Modes of vibration in a ship.
  - (a) Free, forced, transverse, axial, torsional.
  - (b) Light, heavy, tough.
  - (c) Simple, oscillatory.
  - (d) None of the above.
  
5. Prior to entering a cargo pump room, you should ensure that \_\_\_\_\_.
  - (a) The forced ventilation system is operating.
  - (b) The cargo pumps are secured.
  - (c) No mono carbon gases are present.
  - (d) The oily water separator is de-energised.

6. In the refrigeration system vegetable room and meat rooms are maintained at different temperatures by \_\_\_\_\_.

- (a) Different expansion valves.
- (b) By putting solenoid valves.
- (c) By boiling the refrigerant at different pressures.
- (d) By using a smaller evaporator.

7. In refrigeration system, the refrigerant absorbs the latent heat of vaporization in the \_\_\_\_\_.

- (a) Compressor.
- (b) Condenser.
- (c) Receiver.
- (d) Evaporator.

8. Which of the following process is used in winter air conditioning?

- (a) Cooling and Dehumidification.
- (b) Heating and Humidification.
- (c) Dehumidification.
- (d) Humidification.

9. Why is the evaporator used in refrigeration system?

- (a) To absorb heat.
- (b) To decrease the refrigeration effect.
- (c) To reject heat.
- (d) To improve C.O.P.

10. What is reefer container?

- (a) The refer container is insulated, with a fixed refrigeration unit mounted internally or externally. This container normally has both refrigeration and heating ability.
- (b) The refer container is insulated, with portable refrigeration unit mounted internally or externally. This container normally has both refrigeration and heating ability.
- (c) The refer container is a normal closed top container with a refrigeration unit mounted externally. This container normally has only heating ability.
- (d) None of the above.

### **Section B**

Answer all Questions (5 x 2 Marks = 10 Marks)

11. Explain the Principle of Refrigeration.

12. What is meant by Critical Speed or Bared Speed Range in a Marine Diesel Engine?

13. What is Residual Fuel Oil (or) Heavy Fuel Oil?

14. What are the properties of air that are altered / modified by an Air Conditioning System?

15. Give the Technical Specification of a Ball Bearings

### **Section C**

Answer any 5 Questions (5 x 10 Marks = 50 Marks)

16. a) Draw and Explain the Construction & Working of ship's Domestic Refrigeration Plant. (5 Marks)  
b) Draw and Explain the Construction and Working of a Thermostatic Expansion valve. (5 Marks)
17. a) What are the desirable properties of a good Refrigerant. (5 Marks)  
b) Draw & Explain the Brine System for Refrigerated Cargo Holds. (5 Marks)
18. a) Explain the terms: micro-organisms, dead cargo & live cargo w.r.t. refrigerated cargo. (5 Marks)  
b) Describe a Single Duct Air Condition System with a simple sketch. (5 Marks)
19. a) Discuss the design considerations of the ventilation system for:  
i. Battery room.  
ii. CO<sub>2</sub> room. (5 Marks)  
b) What are the various modes of vibration in a ship? What are the sources of vibrations and describe the techniques to suppress them? (5 Marks)
20. a) What are the sources of noise in a ship and describe the techniques to suppress it? (5 Marks)  
b) Give the causes for the following troubles in a refrigeration system.  
(i) Compressor short cycles on low-pressure control.  
(ii) Discharge pressure too high. (5 Marks)
21. a) Explain the complete procedure to be followed for overhauling an Air Compressor. (5 Marks)  
b) Explain the treatment of fuel carried out for its effective combustion in Marine I.C Engines. (5 Marks)
22. a) What is Hydrodynamic lubrication? How it is generated in journal bearing? (5 Marks)  
b) List the additives in a crankcase L.O of a 4 stroke Marine I.C. Engine and explain why they are used. (5 Marks)

