

**Indian Maritime University**  
**(A Central University, Govt of India)**  
**End Semester Examinations – June 2023**

**Programme Name: B Tech (ME)**

**Semester: \_\_VI\_\_**

**Subject Code: \_ UG11T3604**

**Subject Name: \_ Marine Auxiliary Machinery–II**

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Date: 02.06.2023

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

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General Instructions

- (i) All Sections (A, B & C) are to be attempted.
  - (ii) Options, if any, are specified in respective section.
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**Part A – 10 MCQs (10 X 01 Mark)**

Q1. 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.

Q2. Which of the following process is used in winter air conditioning?

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

Q3. Which of the listed item is removed from fuel oil by centrifuging?

- (a) Sludge.
- (b) Diesel fuel.
- (c) Lube oil.
- (d) Gasoline.

Q4. A NPS (Nominal pipe size) 14 or DN (Nominal Diameter) 350 will have an OD (outer dia) of.

- (a) 350 mm
- (b) 355 mm
- (c) 355.6 mm

(d) 350.6 mm

Q5. 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.

Q6. IMO Noise limit (db) for sleeping area on a ship is

- (a) 45
- (b) 50
- (c) 60
- (d) 75

Q7. Engine room ventilation is required for

- (a) Keep equipment in the engine room clean and in better working order
- (b) Increase the engine life
- (c) Reduce the required maintenance
- (d) All the above options

Q8. 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.

Q9. The mechanical ventilation system, designed to take exhaust air from the bottom of the CO<sub>2</sub> room which is located below deck or spaces where access from open deck is not provided, are sized to provide at least following air changes per hour

- (a) Four
- (b) Six
- (c) Eight
- (d) Ten

Q10. Which statement is true concerning tag out devices?

- (a) Tags are only warning devices
- (b) Tag out devices can always be used in place of lockout devices
- (c) Tags may be removed by affected employees once LOTO is complete
- (d) Tags provide equivalent security to using a lock

**Part B – 5 Short Questions (05 X 02 Marks)**

Q11. Name any four materials used for gland packing.

Q12. Brief about the ventilation system requirements for cargo pump room, as per SOLAS.

Q13. Explain the role of ALCAP separation system in the treatment of fuel oil for use in Internal combustion engine.

Q14. What are the purposes of ventilation of engine room?

Q15. Mention the dimensional specification you will give for ordering a steel bulb flat and a steel angle.

**Part C – 7 Long Questions-Answer Any 5 (05 X 10 Marks)**

Q16.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)

Q17. 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)

Q18. 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)

Q19. 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)

Q20. Describe about a refrigeration system of cargo holds using brine as secondary refrigerant with a sketch (10 Marks)

Q21.a. What are the sources of noise in ships? (4 Marks) b. What are the Noise suppression techniques applied?(6 Marks)

Q22.a. Draw a sketch of a central air conditioning system with single duct arrangement having arrangements for cooling, humidifying, heating and mixing of return air with fresh air. (5 Marks) b. Explain the above system. (5 Marks)

Tolani