

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – December 2023
Programme Name: B. Tech. (M.E.)
Semester: VI
Subject Code: UG11T3604
Subject Name: Marine Auxiliary Machinery II

Date: 16.11.2023

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

Choose the correct answer as applicable. Each MCQ carries 1 marks.

[10 x 1 = 10 marks]

1. Which of the following process is used in winter air conditioning?
 - A. Cooling and Dehumidification
 - B. Heating and Humidification
 - C. Dehumidification
 - D. Humidification
2. Most of the domestic refrigerators work on the following refrigeration system
 - A. Vapour compression
 - B. Vapour absorption
 - C. Carnot cycle
 - D. Electrolux refrigerator
3. One ton of refrigeration is equal to the refrigeration effect corresponding to melting of 1000 kg of ice
 - A. in 1 hour
 - B. in 1 minute
 - C. in 24 hours
 - D. in 12 hours
4. Which of the following is an example of live cargo?
 - A. Electronics equipment
 - B. Fresh fruits and vegetables
 - C. Building materials
 - D. Clothing and textiles

5. In refrigeration system, the refrigerant absorbs the latent heat of vaporization in the -
- A. Compressor
 - B. Condenser
 - C. Receiver
 - D. Evaporator
6. Which of the following is the purpose of heating and humidification systems in indoor environments?
- A. Enhancing lighting conditions
 - B. Improving air quality
 - C. Controlling noise levels
 - D. Regulating temperature and moisture levels
7. Which type of vibration primarily travels through solids, such as building structures or machinery?
- A. Airborne vibration
 - B. Surface vibration
 - C. Structure-borne vibration
 - D. Atmospheric vibration
8. What is the goal of overhauling a compressor?
- A. To increase energy consumption
 - B. To reduce its lifespan
 - C. To maintain or restore its performance
 - D. To maximize noise levels
9. Which of the following is a common additive in engine oil, primarily used to reduce friction and wear between moving engine parts?
- A. Antifreeze
 - B. Antioxidant
 - C. Detergent
 - D. Anti-wear additive
10. What is the characteristic of residual fuels used in the maritime industry?
- A. Low viscosity
 - B. High sulphur content
 - C. Quick ignition properties
 - D. Low energy density

Section B

Answer all questions. Each question carries 2 marks. [5 x 2 = 10 marks]

- 11. Define the principle of refrigeration.
- 12. Appraise the micro-organism control in live cargo.
- 13. Give the Technical Specification of a Ball Bearings.

14. What is meant by "Critical Speed" or "Barred Speed Range" in a Marine Diesel Engine?
15. State the advantage of Emulsified Fuels.

Section C

Answer any 5 questions. Each question carries 10 marks.

16. (a) Illustrate the refrigeration cycle with the graph of Temperature–Entropy diagram of the vapor-compression cycle. (4 marks)
- (b) Appraise the various factors that contribute to cryogenics' exceptional qualities to comprehend why it is the best material for cryogenic tank insulation in LNG and LPG carriers? (3 marks)
- (c) List the numerous elements that affect a refrigerant's suitability for use in refrigeration. (3 marks)
17. 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)
18. (a) Demonstrate with a sketch the Zone control system of air conditioning system. (4 marks)
- (b) Describe the principles of marine air conditioning system. (3 marks)
- (c) Explain how the air is cleaned before being introduced to the air-conditioned space of merchant vessels. (3 marks)
19. (a) Illustrate Ventilation of engine and boiler rooms with sketch. (4 marks)
- (b) Summarize the cargo pump-rooms mechanically ventilated system.(3 marks)
- (c) Write the Ventilation in CO₂ room and battery room. (3 marks)
20. (a) Illustrate the free, forced, transverse, axial, torsional mode of vibration causes and its effects. (4 marks)
- (b) Describe noise sources on ships and noise suppression techniques. (3 marks)
- (c) Appraise anti vibration mountings of machineries for reduction effects of forced vibration. (3 marks)
21. (a) Formulate the Overhauling procedure of purifier. (4 marks)
- (b) Write the Planning for overhaul of Purifier overhaul including stand by equipment, tools, manpower and spares. (3 marks)
- (c) Write short notes on filter cleaning procedure. (3 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)
