

**Indian Maritime University**  
**(A Central University, Govt of India)**

**Supplementary Examinations – September/October 2024**

**Programme Name: B TECH [ME]**

**Semester V**

**UG11T4503**

**MARINE AUXILIARY SYSTEMS AND DECK MACHINERY**

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Date: 16.10.2024	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.

**Section A**

**Multiple Choice Questions (1 mark each) .....(10)**

1. Vapour pressure of a liquid is
  - a. Pressure generated by the fluid at atmospheric pressure.
  - b. Pressure required to boil the fluid at the given temperature.
  - c. Pressure required to overcome the gravity.
  - d. None of the above.
  
2. Which of the following is not a positive displacement pump?
  - a. Gear Pump
  - b. Screw pump
  - c. Lobe pump
  - d. Centrifugal pump
  
3. In a purifier, gravity disc with a larger hole will lead to
  - a. Oil leaking into water side
  - b. water leaking into oil side
  - c. reduced purification temperature
  - d. increased sludge generation
  
4. The correct gravity disc for a purifier is selected by

- a. Oil analysis
  - b. Hologram
  - c. Nomogram
  - d. Running Speed of purifier
5. Baffles are used in a Shell and tube type heat exchanger to?
- a. Increase the strength
  - b. Guide the flow
  - c. Absorb heat
  - d. Corrosion prevention
6. Plate type heat exchangers are more suitable for
- a. Low temperature and low pressure applications
  - b. Low temperature and high pressure applications
  - c. High temperature and low pressure applications
  - d. High temperature and High pressure applications
7. Intercoolers are used in air compressor?
- a. To prevent dust to enter
  - b. To store air
  - c. To reduce temperature of air after compression
  - d. To remove traces of moisture
8. Synthetic oil are preferred in air compressor due to
- a. More volatility
  - b. Lengthening air compressor life
  - c. Lower flashpoint
  - d. Easily degradable.
9. Boiler feed pumps used in modern ships are generally of
- a. Reciprocating pump
  - b. Heleshaw pump
  - c. Multistage centrifugal pump
  - d. Single stage centrifugal pump
10. In a ship Warping drum is related to
- a. Oil pollution equipment
  - b. Windlass/Mooring winches
  - c. Navigation equipment
  - d. Automation

**Section B**  
**ANSWER ALL QUESTIONS**  
**(5x2 marks each)**

11. What is the purpose of an air vessel in a reciprocating type positive Displacement pump?
12. What is the difference between purifier and clarifier?
13. Explain how a fresh water generator capacity can gradually reduce during a long sailing. What will be the remedy?
14. Explain why unloaders are fitted at inter cooler and after coolers of an air compressors?
15. List out parts of a typical hydraulic windlass (cable lifter)

**Section C**  
**ANSWER ANY FIVE**  
**(5x10 marks each)**

16. a. Explain the principles of a centrifugal pump referring the purpose of impeller diffuser & volute casing? Support your answer with sketch. (6)  
b. What is the function of wear ring fitted in a centrifugal pump. (4)
17. a. Explain the working principle, construction and operation of a plate type heat exchanger (7)  
b. What are the different materials used for the parts of a flat plate type heat exchanger (3)
18. a. Why water made in FWG plant on ship needs treatment (3)  
b. How is it made to fit for drinking? Discuss in detail (7)
19. For the two stage main air compressor
  - a. Sketch a line diagram (4)
  - b. Explain working in brief (3)
  - c. What is the need of intercooler and after cooler? (3)
20. a. What will be the reason for following faults in a multistage air compressor?
  - i) First stage discharge pressure low
  - ii) Relief valve of second stage is lifting  
b. What are function of WMS and SMS fitted at ALCAP type purifier?  
Describe in brief.
21. W.r.t purifiers used in fuel oil systems

- a. Describe the precautions and procedure for starting a purifier (6)
- b. Explain how modern purifiers without a gravity disc work (4)

22. Explain the operation of a hydraulically operated windlass. How speed control is facilitated?

