

B.E/B.Tech Degree Examination, December 2020**Third Semester****MR18306 - Marine Refrigeration and Air Conditioning**

(Use of Refrigeration and Air Conditioning Tables and Psychrometric chart permitted)

(Regulation 2018)**Time: Three hours****Maximum : 80 Marks****Answer ALL questions****PART A - (8 X 2 = 16 marks)**

1. In which component of vapour compression refrigeration system, enthalpy of refrigerant remains constant:
(A) Evaporator (B) Compressor (C) Expansion valve (D) None
2. Select the NOT desirable characteristics of refrigerant:
(A) low latent heat (B) low boiling point (C) high thermal conductivity (D) none
3. If the compressor trips on HP cutout, check for _____.
a) Too much refrigerant in the system b) condenser tubes need cleaning
c) system is starved of cooling water d) All of the above
4. The solenoid valve is controlled by—
a) amount of liquid in the system b) amount of gas in the system
c) temperature of the condenser d) temperature of the evaporator
5. State methods of improving COP of refrigeration system.
6. What is the importance of ODP value for refrigerants?
7. State the requirements for carrying live cargo in reefer containers.
8. Define Wet Bulb Temperature.

PART B - (4 X16 = 64 marks)

09. (a) (i) Explain with diagrams principle of operation of vapour compression refrigeration cycle. (12)

(ii) Briefly discuss on GWP of refrigerants. (4)

(OR)

- (b) Discuss various methods of improving COP of vapour compression refrigeration system (16) with neat sketches.

10. (a) Discuss with neat a sketch automatic operation of a typical Marine refrigeration system. (16)

(OR)

- (b) Discuss in detail selection of marine refrigerants based on thermodynamic, safety, (16) thermophysical and chemical properties.

11. (a) (i) Discuss the identification markings on containers with an example. (12)
(ii) Brief the need of refrigerated container. (4)
- (OR)
- (b) (i) Discuss Partlow chart with a neat sketch and explain its role in reefer containers. (12)
(ii) What is the importance of maintaining oxygen content for live cargo? (4)
12. (a) (i) Discuss comfort zone in Air conditioning and show it on psychrometric chart. (12)
(ii) Brief the uniqueness of Marine Air conditioning system. (4)
- (OR)
- (b) Discuss various troubleshooting methods with respect to refrigeration and air conditioning system on board ships. (16)