C16-M–503

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DME - FIFTH SEMESTER EXAMINATION

REFRIGERATION AND AIR CONDITIONING

Time : 3 hours] [*Total Marks* : 80

PART—A

3×10=30

Instructions : (1) Answer all questions.

(2) Each question carries three marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Differentiate between refrigerator and heat pump.
2. Write any three advantages of dry compression over wet compression.
3. State the purpose of flash chamber and accumulator in the vapour compression refrigeration system.
4. What is the function of dehydrator in vapour absorption refrigeration system?
5. List out the different compressors used in refrigeration system.
6. State the function of expansion device in a refrigeration system and classify expansion devices.
7. State any six applications of refrigeration.
8. List out characteristics of good air distribution system.
9. Define *(a)* relative humidity and *(b)* dew point temperature.
10. State the advantages of unitary air conditioning system.

PART—B

10×5=50

Instructions : (1) Answer *any* five questions.

(2) Each question carries ten marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. Describe Bell Coleman cycle with neat sketch and draw P-V and T-S diagrams.

12. Explain the effects of the following factors on COP of vapour compression refrigeration system with help of T-s and P-h diagrams :

(a) Superheating

(b) Subcooling

13. *(a)* Explain why ammonia is used as a common refrigerant in vapour absorption system.

(b) In an absorption system the temperatures of generator, condenser and evaporator are 85 °C, 35 °C and 5 °C. Find COP.

14. Explain the following with neat sketches :

(a) Thermostatic expansion valve

(b) Viscous filter

15. Explain the working of water cooler with a neat sketch.

16. Describe various types of axial fans used in air conditioning with neat sketch.

17. 900 kg/hr of return air at DBT 24 °C and RH 60% mixes with 100 kg/hr of fresh air of DBT 40 °C and RH 30%. Calculate the final condition of this mixture.

18. Explain the working principle of window air conditioning system with neat sketch.

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