



C14-M-602

**4758**

**BOARD DIPLOMA EXAMINATION, (C-14)**

**OCT/NOV—2017**

**DME—SIXTH 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.

(4) Refrigeration tables and psychrometric chart are permitted.

1. The capacity of a refrigeration machine is 20 TR and COP of the plant is 2. Find the power required to run the machine.
2. Name the important components of a simple vapour compression system.
3. List the desirable properties of refrigerant-absorbent pairs.
4. Distinguish between primary and secondary refrigerants.
5. What is the function of condenser in refrigeration system?

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6. Define the term 'effective temperature'.
7. Define (a) dew point temperature and (b) relative humidity.
8. Define psychrometry. What are the applications of psychrometry?
9. List the components involved in the computation of cooling load.
10. What are the symptoms of gas shortage in the refrigerator?

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.  
 (2) Each question carries **ten** marks.  
 (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Explain the working of Bell-Coleman cycle air refrigeration with  $P$ - $V$  and  $T$ - $S$  diagrams.
12. List the effects of following on the performance of vapour compression refrigeration system with the help of  $P$ - $H$  diagram :
  - (a) Superheating at suction
  - (b) Evaporator pressor
13. (a) What is the use of analyser and rectifier in a vapour absorption system? 5  
 (b) State any five differences between vapour compression system and vapour absorption system. 5
14. With the help of neat sketch, explain the working of a thermostatic expansion valve.
15. Draw the neat sketch of water-cooler and explain its working.

16. (a) State the functions of air outlets and air filters in air conditioning system. 5
- (b) State the use of heating and cooling coils in air-conditioning system. 5
17. (a) For a sample of air having 30 °C DBT, and 10 °C WBT, find (i) humidity ratio and (ii) relative humidity. Use psychrometric chart. Represent above on the psychrometric chart. 5
- (b) Show the sensible cooling process on psychrometric chart and explain in detail. 5
18. Explain the working of window air-conditioner with a neat sketch.

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