



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?

- * 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 pressure

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.
