



C09-M-606A

**3784**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**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.

1. Define (a) refrigeration and (b) COP.
2. State the limitations of the reversed Carnot cycle.
3. Differentiate between two-fluid and three-fluid refrigeration systems.
4. What is the function of analyzer and rectifier in a vapour absorption refrigeration system?
5. In an absorption system, the temperature of generator, condenser and evaporator are 95 °C, 25 °C and – 15 °C. Find ideal COP of the cycle.
6. Differentiate between water-cooled and air-cooled condensers.
7. What are the advantages of secondary refrigerants?
8. What is dry ice? State the applications.

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9. List out the characteristics of good air distribution system.
10. Show the following processes on psychrometric chart :
- (a) Sensible heating
  - (b) Humidification

**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. Describe air refrigeration system working on Bell-Coleman cycle with neat sketch.

12. Draw a neat sketch of actual vapour compression refrigeration system and explain its working. Show the cycle on  $T-s$  and  $P-h$  diagrams.

13. Explain the working of Li-Br water vapour absorption refrigeration system with a neat sketch.

14. Draw a neat sketch and explain the working of—

(a) Hermetically sealed reciprocating compressor;

(b) Automatic expansion valve.

5+5

15. Describe the working of cold storage plant with a neat sketch.

16. What are the factors which affects the human comfort?

17.  $40 \text{ m}^3$  per minute of a stream of moist air at  $15^\circ\text{C}$  DBT and  $13^\circ\text{C}$  WBT is mixed with  $10 \text{ m}^3$  per minute of second stream at  $25^\circ\text{C}$  DBT and  $18^\circ\text{C}$  WBT. Determine DBT and WBT of the mixture. Find also the enthalpy and humidity ratio of the mixture.

18. Describe the working of air cooler with a neat sketch.

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