* 3 7 8 4 *

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.

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 m^3 per minute of a stream of moist air at 15 °C DBT and 13 °C WBT is mixed with 10 m^3 per minute of second stream at 25 °C DBT and 18 °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.

★ ★ ★