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BIMEE-032

DIPLOMA IN MECHANICAL ENGINEERING (DMEVI)

01125

Term-End Examination

June, 2012

BIMEE-032 : REFRIGERATION SYSTEM

Time : 2 hours *Maximum Marks : 70*

Note: *Attempt **any five** questions. All questions are carrying **equal** marks. Use of calculator is permitted.*

1. (a) Define ***any two*** of the following : **2x3½=7**
   (i) One Ton of Refrigeration
   (ii) Refrigerating effect
   (iii) Co-efficient of performance

   (b) A machine working on reversed Carnot cycle operates between + 35°C and −20°C. Determine the COP, if the machine is a refrigerator and a heat pump. **7**

2. (a) Explain the vapour compression refrigeration cycle with the help of block diagram. **7**

   (b) What are the parameters to be considered in the selection of a refrigerant ? **7**

3. (a) Explain air conditioning system and state its applications. **7+7**

   (b) What is the difference between a primary and a secondary refrigerant ?

4. (a) What are the advantages and disadvantages of using air as a refrigerant ? 7+7

(b) Why is it necessary for providing refrigeration in an aircraft ? Name some systems of aircraft refrigeration.

5. (a) Why is vapour compression refrigeration cycle less efficient than reversed Carnot cycle ? 7+7

(b) Discuss the role of generator, absorber, and rectifier in the vapour absorption refrigeration cycle.

6. (a) What are the advantages of multistaging of compressors ? 7+7

(b) What are the factors to be considered for prolonging life of a household refrigerator ?

7. (a) Why is transport refrigeration necessary ? List commodities (items) preserved during transport refrigeration. 7

(b) A domestic food freezer maintains a temperature of $-15°C$. The ambient air temperature is 30°C. If heat leaks into the freezer at the continuous rate of 1.75 kJ/sec, what is the least power necessary to pump this heat out continuously ? 7