No. of Printed Pages : 2

BIMEE-032

DIPLOMA MECHANICAL ENGINEERING (DMEVI)

00633

Term-End Examination

December, 2012

BIMEE-032 : REFRIGERATION SYSTEM

Time : 2 hours *Maximum Marks : 70*

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

1. (a) Distinguish between a heat pump and a refrigirator. 7+7

(b) Derive a relation between the COP of heat pump and that of a refrigerator.

2. (a) Describe in brief the steam jet refrigeration system. 7+7

(b) What is meant by dry and wet compression ? Which is preferred and why ? Explain.

3. (a) Explain the effect of superheat and subcooling on the vapour compression cycle. 7+7

(b) What are the effects of CFCs on the environment ? How do they affect the ozone layer ?

4. (a) Define the term 'air - conditioning'. Enumerate the main parts of the equipment in the air conditioning system. 7+7

(b) Describe in brief the Bell - Coleman cycle.

5. (a) Compare vapour absorption refrigeration and vapour compression refrigeration systems. State merits and demerits of each method. 7+7

(b) Derive an expression for COP of the vapour absorption refrigeration system.

6. (a) A domestic food refrigerator maintains a temperature of $-12°C$. The ambient air temperature is 35°C. If heat leaks into the freezer at the continuous rate of 2 KJ/sec, determine the least power necessary to pump this heat out continuously. 7+7

(b) In a vapour absorption system, heating, cooling and refrigeration take place at the temperature of 100° C, 20°C, and $-50°C$ respectively. Find the maximum COP of the system.

7. (a) List some applications of refrigeration. 7+7

(b) Describe the working of an ice plant.