D 42526 (Pages : 2) Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2007

ME 04 703—REFRIGERATION AND AIR-CONDITIONING

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. Describe jet refrigeration system.
2. Briefly explain a regenerative air cooling system.
3. Mention the advantages of vapour compression over air refrigeration system.
4. Explain a two-stage compression system with liquid intercooler.
5. Describe the function of rotary compressor.
6. Explain any one type of condenser.
7. What is year round air-conditioning system ?
8. Write a short note on bypass factor for cooling coils.

(8 × 5 = 40 marks)

Part B

1. A Carnot cycle operates between the temperature limits of 47° C. – 30° C. Determine C.O.P. when it operates on (i) a refrigerating machine ; (ii) a heat pump ; (iii) a heat engine.

Or

2. What is the difference between a refrigerator and a heat pump ? Derive an expression for the performance factor for both if they are running on reversed Carnot cycle.
3. Establish how an actual cycle differs from a theoretical vapour compression cycle.

Or

4. Discuss the advantages of compound compression with intercooler over single stages compression.
5. Obtain the conditions for the minimum work required for a two-stage reciprocating compressor.

Or

6. Explain the types of evaporators with neat sketches.
7. The readings from a sling psychrometer are as follows :

   Dry bulb temperature = 30° C.

   Wet bulb temperature = 20° C.

   Barometer reading = 740 mm of Hg.

Turn over

Using steam tables, determine :

(a) Dew point temperature.

(b) Relative humidity.

(c) Specific humidity.

(d) Vapour density.

Or

8. Discuss the factors that determine human comfort.

(4 × 15 = 60 marks)