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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

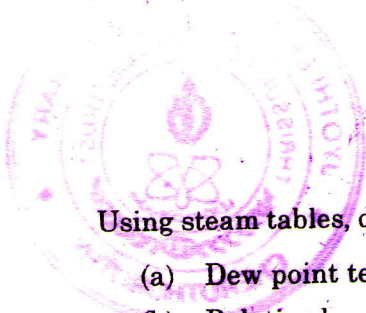
6. Explain the types of evaporators with neat sketches.
7. The readings from a sling psychrometer are as follows :

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)