

C 5471

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Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE

EXAMINATION, JUNE 2010

ME 04 703—REFRIGERATION AND AIR CONDITIONING

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. With P-V and T-S diagram, explain the Carnot refrigeration Cycle.
2. Describe Thermodynamic analysis of Bell-Coleman Cycle.
3. List out the various types of refrigerants and explain its properties.
4. Compare vapour power compression system and vapour absorption system.
5. Explain the effect of intercooling in multi-stage compression.
6. With neat sketch, explain any *one* of the expansion devices.
7. Define : DPT, Degree of Saturation, Relative humidity.
8. Briefly explain the winter air conditioning system.

(8 × 5 = 40 marks)

Part B

9. With neat sketch, explain the working principle of steam jet refrigeration system.

Or

10. A Carnot refrigeration system works between the temperature limits of -25°C and 35°C . Determine its COP. If the actual COP is 70%, calculate the actual refrigerating effect produced per kWhr.
11. Briefly explain the lithium Bromide absorption system.

Or

12. The evaporator and condenser temperature of a vapour compression system with R-12 as refrigerant are 260°K and 295°K respectively. If the capacity of the system is 5 tonnes, find the mass flow rate of refrigerant and COP of the system. Assume the refrigerant is dry at the beginning of compression.
13. Write short notes on different types of rotary compressors.

Or

14. Briefly explain water cooled and Air cooled condensers with neat sketch.

Turn over

15. Briefly explain, the different types of air distribution systems.

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16. Air at 30°C DBT and 20°C WBT is at atmospheric pressure. Determine :

- (a) Relative humidity.
- (b) Humidity Ratio.
- (c) DPT.

100 Marks

Time : Three Hours

Answer all questions

(4 × 15 = 60 marks)

Part A

(8 × 5 = 40 marks)

Part B

Turn over