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Name.....

Reg. No.....

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION DECEMBER 2008

ME 04 703—REFRIGERATION AND AIR-CONDITIONING

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. Write short notes on Air refrigeration cycle.
2. With neat sketch, explain the working principle of steam jet refrigeration system.
3. Briefly explain the selection criteria of refrigerants.
4. With simple sketch, explain the simple vapour absorption system.
5. What are the factors to be considered for selecting a condenser for a refrigeration system ?
6. List out the various types of compressors used in refrigeration and explain any one of it.
7. Define : Specify humidity, saturation capacity of air DBT.
8. Explain the different types of loads to be considered while designing air conditioning system.

(8 × 5 = 40 marks)

Part B

9. With neat sketch, explain the thermoelectric refrigeration system.

Or

10. The compressor of an air refrigeration system working on Bell-Coleman cycle sucks air at 5°C and 1 bar pressure, the air leaves from the compressor at 6-bar pressure and from the condensor at 22° C. Estimate the COP of the system and refrigeration effect for 1 kg/s mass flow rate of air by assuming compression and expansion are isentropic.
11. With T-S diagram, explain sub-cooling and superheating in vapour power compression system. What is its significance ?

Or

12. Explain the working principle of vapour power compression system with neat sketch.
13. Briefly explain the effect of clearance and effect of intercooling in compressors.

Or

14. List out the various types of condensers used in refrigeration system and explain any two of it.
15. With neat sketch, explain the Summer Air-Conditioning system.

Or

16. Air at 1 bar pressure and 25°C DBT contains 0.015 kg of water vapour per kg of dry air. Calculate (a) Partial pressure of vapour ; (b) Relative humidity ; (c) DPT.

(4 × 15 = 60 marks)