

ME 801
Change to 8th Sem
703 - ME 04

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Name.....

Reg. No.....

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

ME 04 703—REFRIGERATION AND AIR-CONDITIONING

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. Explain the term "ton of refrigeration".
2. Describe the Carnot refrigeration cycle.
3. Describe the mechanism of a simple vapour compression refrigeration system.
4. What is the function of a flash intercooler provided in a compound vapour compression refrigeration system ?
5. What is the effect of a clearance volume in a reciprocating compressor ?
6. What are the points to be considered for selecting a condenser for a refrigeration system ?
7. Explain about a summer air-conditioning system.
8. Define the term "effective temperature".

(8 × 5 = 40 marks)



9. A Carnot refrigeration system works a temperature of -30°C and 40°C . What is the maximum C.O.P. ? If the actual COP is 75 % of the maximum, calculate the actual refrigerating effect produced per kilowatt hour.

Or

10. Prove that the performance factor of a Bell-Coleman cycle refrigeration system.
11. What is sub-cooling and superheating ? Explain with the help of diagram.

Or

12. Explain a three-stage compression with multiple expansion valve and flash intercooler.
13. Compare and contrast the performance of reciprocating and centrifugal compressors.

Or

14. Draw a neat sketch of a hand operated expansion valve and explain its working.
15. 1 kg. of air at 20°C dry bulb temperature and 40 % relative humidity is mixed adiabatically with 2 kg. of air at 40°C dry bulb temperature and 40 % relative humidity. Determine the dry bulb temperature and wet bulb temperature of the regulating mixture.

Or

16. Explain about psychrometric properties and processes

(4 × 15 = 60 marks)