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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)****M.Tech I Year I Semester Regular & Supplementary Examinations February 2018****REFRIGERATION & AIR CONDITIONING
(Thermal Engineering)**

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 X 12 =60 Marks)

UNIT-I

- 1 a What is the effect of sub cooling on the performance of VCR system? 6M
b Explain about physical and thermodynamic properties of a refrigerant? 6M

OR

- 2 In a 12 tonnes refrigeration ammonia plant compression is carried out in two stages with water and flash inter-cooling and water sub-cooling. Condenser pressure, vaporator pressure and flash intercooler pressures are 12 bar, 3 bar and 6bar respectively. If the limiting temperature for inter-cooling and sub cooling is 200C, determine the following:
(i) Draw the schematic arrangement with corresponding p-h diagram.
(ii) the COP of the plant
(iii) the power required for each compressor 12M

UNIT-II

- 3 Derive the equation of maximum C.O.P of an ideal vapour absorption refrigeration system? 12M

OR

- 4 Explain aqua ammonia refrigeration system using concentration enthalpy chart? 12M

UNIT-III

- 5 a List out the merits and demerits of vortex tube over other refrigeration system 6M
b What are the advantages of steam jet refrigeration system over other types of refrigeration system? 6M

OR

- 6 a Explain about Thermo electric refrigeration with a neat sketch? 6M
b What are the applications of thermo electric refrigeration? 6M

UNIT-IV

- 7 a Write about the factors affecting optimum effective temperature? 6M
b Explain winter air conditioning system with a neat sketch? 6M

OR

- 8 a Explain the construction of psychometric chart? 6M
b Compare FSK , DPSK and MSK modulation schemes. 6M

UNIT-V

- 9 a What are the advantages of steam humidifiers? 6M
b What is meant by a register? what are the factors affecting grill performance? 6M

OR

- 10 a Describe the types of blowers based on air flow patterns with sketches? 6M
b Explain the process of humidification by Air-washing method? 6M

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