

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

M.Tech I Year II Semester Regular & Supplementary Examinations July-2025
REFRIGERATION AND CRYOGENICS

(Thermal Engineering)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- 1 a Discuss the effects of evaporator and condenser temperatures on Carnot COP. C01 L2 6M
- b Derive the equation for Carnot COP. C01 L3 6M

OR

- 2 Discuss the standard vapour compression refrigeration system comparing with Carnot cycle and derive the cycle efficiency. C01 L2 12M

UNIT-II

- 3 a Draw and explain P-V and T-S diagrams of a reciprocating compressor. C02 L3 6M
- b Derive an expression for Power required to drive a single stage reciprocating compressor. C02 L2 6M

OR

- 4 Derive an expression for Volumetric efficiency of a Reciprocating compressor. C02 L3 12M

UNIT-III

- 5 Derive the overall heat transfer coefficient for design of a condenser. C03 L3 12M

OR

- 6 With neat sketch explain evaporative condenser function. C03 L2 12M

UNIT-IV

- 7 a What are the desired properties of an ideal insulating material. C05 L1 6M
- b List the advantages of Providing Insulation. C05 L1 6M

OR

- 8 Write short notes on different types of insulation used in cryogenics. C05 L2 12M

UNIT-V

- 9 Discuss the different types of liquefaction methods and explain any one method. C06 L1 12M

OR

- 10 Describe the method adopted for Liquefaction of Hydrogen. C06 L3 12M

*** END ***