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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**M.Tech I Year II Semester Regular Examinations October-2020****REFRIGERATION AND CRYOGENICS**

(Thermal Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a What are Cryogenic and its necessity in the recent era? **6M**
b Give the applications of Cryogenics in different fields. **6M**

OR

- 2 a Discuss the standard vapor compression refrigeration system comparing with Carnot cycle and derive the cycle efficiency. **6M**
b An ideal refrigeration cycle operates with R134a as the working fluid. The temperature of refrigerant in the condenser and evaporator are 40°C and -20°C respectively. The mass flow rate of refrigerant is 0.1 kg/s. Determine the cooling capacity and COP of the plant. **6M**

UNIT-II

- 3 Describe the different types of screw compressor with neat sketches. **12M**

OR

- 4 a What are the various methods available for controlling the capacity of compressors? **6M**
b With neat sketch explain hot gas by-pass system for controlling the capacity of compressor. **6M**

UNIT-III

- 5 a Give the Classification of fluids used as refrigerants. **6M**
b How can you designate the refrigerants? **6M**

OR

- 6 What is the concept of Wilson's plot and how it is useful to design the condensers and evaporators? **12M**

UNIT-IV

- 7 a Write about composite insulation. **6M**
b How can foam-filled honeycomb insulation improve the effectiveness? **6M**

OR

- 8 Write short notes on heat flows into a cryogenic system. **12M**

UNIT-V

- 9 Discuss the different types of liquification methods and explain any one method. **12M**

OR

- 10 Discuss the super conductors and their cooling requirements. **12M**

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