SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations June-2024
REFRIGERATION & AIR CONDITIONING
(Common to AGE & ME)

Time: 3 Hours   **Max. Marks: 60**

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

UNIT-I

1	a	State the applications of refrigeration.	CO1	L1	6M
	b	Define Unit of Refrigeration.	CO1	L2	6M

OR

2	a	Describe Boot strap air refrigeration system, with a schematic diagram and show the cycle on T-S Diagram.	CO1	L2	6M
	b	Describe with a neat sketch a Reduced ambient air refrigeration system.	CO1	L2	6M

UNIT-II

3	a	State the functions of expansion device.	CO2	L1	6M
	b	Name the different refrigerants generally used.	CO2	L1	6M

OR

4		Sketch and explain a two-stage cascade refrigeration system.	CO2	L5	12M

UNIT-III

5		Differentiate between vapour absorption and vapour compression refrigeration systems.	CO3	L4	12M

OR

6		Explain thermo-electric refrigeration system with sketch.	CO3	L2	12M

UNIT-IV

7		Atmospheric air at 0.965 bar enters the adiabatic saturator. The wet bulb temperature is 200C and dry bulb temperature is 310C during adiabatic saturation process. Determine (i) humidity ratio of the entering air (ii) vapour pressure and relative humidity at 310C and (iii) dew point temperature.	CO4	L4	12M

OR

8	a	With help of psychrometric chart, Explain the cooling and humidification processes.	CO4	L3	6M
	b	Define saturated air, degree of saturation	CO4	L1	6M

UNIT-V

9	a	Why the ducts are used in an air conditioning system.		L1	6M
	b	Which material is commonly used for making ducts in air conditioning systems?	CO5	L1	6M

OR

10		An air conditioning plant is required to supply 60 m3 of air per minute at a DBT of 21°C and 55 % RH. The outside air is at DBT of 28 °C and 60 % RH. Determine the mass of water drained and capacity of the cooling coil. Assume the air conditioning plant first to dehumidify and then to cool the air. Take W1=0.0142, W2=0.0084 kj /kg of dry air, Vs2=0.845 m3 / kg, h1=64.8 kj/kg, h2=42.4 kj/kg.	CO5	L4	12M

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