Q.P. Code: 20ME3115 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year I Semester Regular Examinations July-2021

AIR CONDITIONING SYSTEM DESIGN

(Thermal Engineering)

Use of Steam Table & Refrigeration Table Permitted.

Time: 3 hours Max. Marks: 60

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

UNIT-I

1		Explain the construction of psychometric chart?	L2	**12M**
		OR		
2		Explain the thermodynamics of human body.	L2	**12M**

UNIT-II

3	**a**	Explain fresh air load with its formula.	L4	**6M**
	b	Define (i) Duct heat gain (ii) Fan load	L1	**6M**
		OR		
4	**a**	Explain summer air conditioning system with neat sketch.	L2	**4M**
	b	Explain winter air conditioning system with neat sketch	L2	**8M**

UNIT-III

5	**a**	Define i) RSHF ii) ADP	L4	**6M**
	b	A room has a sensible heat gain of 24 kW and a latent heat gain of 5.2 KW and it has to be maintained at 26°C DBT and 50% RH. 180m3/min of air is delivered to the room. Determine the state of supply air.	L3	**6M**
		OR		
6		The following data relates to the office air conditioning plant having maximum seating capacity of 25 occupants. Outside design conditions = 340C DBT, 280C WBT, Inside design conditions = 240C DBT, 50 % RH, Solar heat gain = 9120 W, Latent heat gain per occupant = 105 W, Sensible heat gain per occupant = 90 W, Lightening load = 2300 W, Sensible heat load from other sources = 11630 W, Infiltration load = 14 m3/min. Assuming 40 % fresh air and 60% of re circulated air passing through the evaporator coil and the by-pass factor of 0.15. Find the dew point temperature of the coil and capacity of the plant.	L1	**12M**

UNIT-IV

7	**a**	What are the advantages of steam humidifiers?	L1	**6M**
	b	Explain the process of humidification by Air- washing method?	L2	**6M**
		OR		
8	**a**	Explain in detail about fan and its types.	L2	**6M**
	b	Describe the types of blowers based on air flow patterns with sketches?	L1	**6M**

UNIT-V

9		Explain about designs of air conditioning system?	L2	**12M**
		OR		
10		Explain about Air distribution system?	L2	**12M**

*** END ***