Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations August-2021
REFRIGERATION & AIR CONDITIONING
(Agricultural Engineering)

Time: 3 hours
Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Draw PV and TS charts for Regenerative air cooling system.	2M
	b	Differentiate condenser and evaporator	2M
	c	State Peltier effect	2M
	d	Define Absolute Humidity.	2M
	e	Compare Winter and Summer air conditioning system.	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain the working of Bell-coleman cycle air refrigeration system with PV and TS diagrams.	5M
	b	Define the following terms: (i) Heat Engine (ii) Unit of Refrigeration	5M

OR

3	In a refrigeration system working on Bell Coleman cycle, air is compressed to 5.0 bar from 1.0 bar. Its initial temperature is 10^0C. After compression, the air is cooled to 20^0 C in a cooler before expanding to a pressure of 1 bar. Determine the theoretical C.O.P of the system and net refrigerating effect. Take C_p = 1.005 KJ/Kg K and C_v = 0.718 KJ/Kg K.	10M

UNIT-II

4	a	Draw TS chart and PH chart for sub cooling in vapor compression cycle.	3M
	b	State the desirable properties of refrigerants.	7M

OR

5	Sketch and explain a two-stage cascade refrigeration system.	10M

UNIT-III

6	Comparison between two fluid Vapour Absorption Refrigeration system and three fluid Vapour Absorption Refrigeration system.	10M

OR

7	Describe the working of Vortex tube with a neat sketch and its merits and demerits.	10M

UNIT-IV

8	a	Define Sensible heat factor	4M
	b	With help of psychrometric chart, Explain the following processes (i).Sensible hearting (ii) Sensible cooling.	6M

OR

9	a	Define relative humidity, absolute humidity.	5M
	b	With help of psychrometric chart, Explain the cooling and humidification processes.	5M

UNIT-V

10	a	Why the ducts are used in an air conditioning system.	5M
	b	Discuss the materials commonly used for making ducts in air conditioning systems.	5M

OR

11	With neat diagram, explain the working of summer air conditioning system.	10M

END