

Reg. No.

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B. E / B. TECH.DEGREE EXAMINATION, MAY 2023

Sixth Semester

OE 18006- REFRIGERATION AND AIR CONDITIONING SYSTEMS*(Common for Chemical/Civil/CSC/ECE/EEE)**(Psychrometric chart permitted)***(Regulation2018A)****TIME:3 HOURS****MAX. MARKS: 100**

- CO1** The students can interpret the basic concepts of Refrigeration
CO2 The students can solve analytical problems in Vapor Compression Refrigeration systems
CO3 The students will be familiar with the various types of Refrigeration systems and its psychrometric processes.
CO4 The students can design and analyze various refrigeration and air conditioning systems
CO5 The students can estimate the loads of Air conditioning systems

PART- A(10x2=20Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. What are the refrigerants used in vapour compression refrigeration system?	1	2
2. Define ODP and GWP.	1	2
3. Name the important components of simple vapour compression refrigeration system.	2	2
4. List out the properties of thermal insulation.	2	2
5. Define Dalton's law of partial pressure.	3	3
6. What is meant by psychrometry?	3	2
7. Which air conditioner is suitable for a small commercial office?	4	2
8. Define RSHF and GSHF.	4	2
9. What are the factors to be considered in designing air conditioning load estimation?	5	2
10. Define the bypass factor.	5	2

PART- B (5x 14=70Marks)

	Marks	CO	RBT LEVEL
11. (a) Draw a neat sketch and explain vapour compression refrigeration system.	(14)	1	2
(OR)			
(b) What is refrigerant? What are the desirable properties of refrigerants?	(14)	1	2

12. (a)	(i) List the different types of compressors. Draw neat sketch and explain any one type of compressor.	(10)	2	2
	(ii) What are the desirable properties of an insulating material?	(4)	2	2
(OR)				
(b)	Draw neat sketch and explain any two types of expansion device used in refrigeration system.	(14)	2	2
13. (a)	(i) Consider a room that contains air at 1atm, 35°C and 40% relative humidity. Using the psychrometric chart, determine: the specific humidity, enthalpy, wet bulb temperature, dew point temperature and specific volume of air.	(7)	3	5
	(ii) With the help of psychrometric chart explain the sensible heating and cooling processes and give its important characteristic features.	(7)	3	2
(OR)				
(b)	(i) A sling psychro meter reads 40°C dry bulb temperature 28°C wet bulb temperature determine: the specific humidity, enthalpy, wet bulb temperature, dew point temperature and specific volume of air.	(7)	3	5
	(ii) With neat sketch explain construction and working of any one type of humidifier.	(7)	3	2
14. (a)	Explain with neat diagram window air conditioning system with advantages and disadvantages.	(14)	4	2
(OR)				
(b)	Explain with neat diagram split air conditioning system with advantages and disadvantages.	(14)	4	2
15. (a)	(i) Write the procedure to design an air conditioning system.	(7)	5	3
	(ii) What are the commercial applications of air conditioning systems?	(7)	5	3
(OR)				
(b)	What are the sources which contribute to the sensible heat gain?	(14)	5	2

PART- C(1x 10=10Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Draw a psychrometric chart and indicate all the psychrometric properties.	(10)	3	3