School of Engineering

B.TECH Mechanical Engineering
Semester End Examination - Jun 2024

Duration : 180 Minutes
Max Marks : 100

Sem VI - G3UB601B - BTME3067 Refrigeration and Air Conditioning

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	What is meant by air conditioning?	K1 (2)
2)	Explain the process of heating and humidification.	K2 (4)
3)	Explain the various desirable properties of ideal refrigerants.	K2 (6)
4)	A steam jet refrigeration installation is to deliver chilled water at the rate of 2300 kg per minute at 8 °C from supply water at 18 °C. Condenser saturation temperature is 38 °C, nozzle efficiency is 90%, entrainment efficiency is 68% and diffuser efficiency is 78%. Quality of flashed vapour is 0.97. The steam consumption for the motive jet is 6500 kg/hr. Estimate the pressure of the dry and saturated motive steam.	K3 (9)
5)	Illustrate year round air conditioning?	K3 (9)
6)	Define air-conditioning. Classify air-conditioning system and explain central A/C system.	K5 (10)
7)	Air at 250C WBT 25% RH is to be conditioned to 220C DBT and specific humidity 11 gm/ kg dry air. Determine heat transfer per kg of dry air referring the psychrometric chart. Represent the process on chart by sketch.	K4 (12)
8)	Refrigeration engineers usually presume that if R12 car air conditioner compressor is operated with R 134A, its cooling capacity would fall by 10% examine this assumption by a realistic vapor compression cycle analysis	K5 (15)
9)	Examine the effect of humidity on the density of moist air by computing the vapor density from an air water vapor mixture at 26°C and relative humidity of 0, 50 and 100%. Also for each case compare the value of the degree of saturation to the value of relative humidity.	K5 (15)
10)	Discuss the thermodynamic and chemical requirement in selection of refrigerants	K6 (18)