M.Tech. I[st] Sem. 2025

Roll No.....

Department of Food Technology
School of Interdisciplinary Sciences and Technology
Jamia Hamdard, New Delhi-110062
End Semester Examination, December, 2025. M.Tech I[st] SEM)
Paper Title: Advance Refrigeration And Cryogenics ; Paper Code:MFTC-110

Time Allotted: 2.30 Hrs. **Max Marks: 60**

***Note*: Write to the point. Before answering make sure you have mentioned the Question No.**

Section-A (2 Marks each, Attempt All)

Q1	Write down the expression for the COP of a vapour absorption refrigeration system?	Co1Po3
Q2	Write down the full name of R-717.	Co1Po2
Q3	What is the difference between reversible and irreversible adiabatic process?	Co1Po3
Q4	What do you understand by primary refrigerant?	Co2Po2
Q5	Write down the Clausius inequality.	Co1Po3

Section-B(5 Marks Each, Attempt any 5)

Q6	Discuss Ewing's construction.	Co1Po3
Q7	Explain the Dalton's law of partial pressure with the proof of its statement.	Co2Po2
Q8	Discuss the advantages of VCRS over air refrigeration system	Co2Po3
Q9	What do you understand by Bell Coleman cycle? Explain each and every process with p-v and T-s diagram.	Co2Po2
Q10	A room contains 300 m^3 of air .The atmospheric pressure is 1 bar and the temperature is 25 C. What is the mass of air. Assume air as an ideal gas.	Co2Po3
Q11	What do you understand by refrigerant? Write down the desirable properties of a an ideal refrigerant.	Co2Po2
Q12	Explain the vapour absorption refrigeration cycle with neat sketch.	Co2Po2

Section C (Attempt any 2 , 12.5 Marks Each)

Q13	A vapour compression refrigerator uses methyl chloride (R-40) and operates between temperature limits of -10°C and 45°C. At entry to the compressor, the refrigerant is dry saturated and after compression it acquires a temperature of 60°C. Find the C.O.P. of the refrigerator. The relevant properties of methyl chloride are as follows Saturation Temperature °C | Enthalpy in KJ/Kg (Vapour, Liquid) | Entropy in KJ/Kg (Vapour, Liquid) -10 | 460.7, 45.4 | 0.183, 1.637 45 | 483.7, 133 | 0.485, 1.587	Co3Po4
Q14	Write short notes on I. Specific Humidity II. Dry bulb temperature and dew point temperature.	Co4Po4
Q15	One cubic metre of H_2 at 1 bar and 25°C is mixed with one cubic metre of N_2 at one bar and 25°C . For the mixture at the same conditions find: (a)Mole fractions of the components (b)Partial pressures of the components (c)Mass fractions of the components(d)Molecular weight of the mixture (e)Gas constant of the mixture	Co3Po4
Q16	What do you understand by food preservation? Write down the methods of food preservation	Co4Po4