

Department of Food Technology
School of Interdisciplinary Sciences and Technology
Jamia Hamdard, New Delhi-110062
 End Semester Examination, December, 2024, B.Tech IIIrd
 SEM)
 Paper Title: Thermodynamics; Paper Code: BFTC-303

2024
3rd Sem

Time Allotted: 3Hrs.**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 thermal efficiency for Diesel cycle?	Co1Po3
Q2	What is Clausius inequality?	Co1Po2
Q3	What is PMMI	Co1Po3
Q4	What is the unit of specific heat at constant pressure?	Co2Po2
Q5	What do you understand by steady flow processes?	Co1Po3

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

Q6	What do you understand by heat pump? Explain with neat diagram.	Co1Po3
Q7	What is first law of thermodynamics? Explain the statements for the same.	Co2Po2
Q8	Determine the dryness fraction of steam if 1 kg of water is in suspension with 39 kg of dry steam	Co2Po3
Q9	What do you understand by thermodynamic work transfer. Derive the expression for non-flow work during isothermal process?	Co2Po2
Q10	What do you understand by Carnot cycle? Explain each and every process with p-v and T-s diagram.	Co2Po3
Q11	What do you understand by enthalpy? Prove that the heat transferred at constant pressure increases the enthalpy of the system.	Co2Po2
Q12	Prove that $R = \bar{R}/M$.	Co2Po2

Section C (Attempt any 2) (12.5 Marks Each)

Q13	What do you understand by Otto cycle. Prove that the efficiency of Otto cycle is the function of compression ratio only.	Co3Po4
Q14	What do you understand by pure substance. Derive the relation $v = v_f + x v_{fg}$.	Co4Po4
Q15	A stationary mass of gas is compressed without friction from an initial state of 0.30 m ³ and 0.105 MPa to a final state of 0.15 m ³ and 0.105 MPa, the pressure remaining constant during the process. There is transfer of 37.6 KJ of heat from the gas during the process. How much does the internal energy of the gas change?	Co3Po4
Q16	Show that the adiabatic mixing of two fluids is irreversible.	Co4Po4