

Department of Food Technology
School of Interdisciplinary Sciences and Technology
Jamia Hamdard, New Delhi-110062
End Semester Examination, December.2024.
B.Tech IIIrd SEM)

B.Tech.
3rd Sem
2024

Paper Title: Transfer Process in Foods; Paper Code:BFTC-304

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	What is heat?	Co1Po3
Q2	What is the unit of entropy?	Co1Po2
Q3	Write down the expression for Fourier's law of equation	Co1Po3
Q4	What is the fundamental dimension of force and weight?	Co2Po2
Q5	What do you understand by homogeneous system?	Co1Po3

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

Q6	Differentiate between Thermodynamics and heat transfer.	Co1Po3
Q7	Write down the essential features Fourier's law.	Co2Po2
Q8	The time period t of a pendulum depends upon the length (L) of the pendulum and acceleration due to gravity (g). Derive an expression for the time period.	Co2Po3
Q9	Derive the expression for $\alpha + \rho + \tau = 1$.	Co2Po2
Q10	What do you understand by thermal resistance? Write down the expression for thermal resistance for conduction and convection process.	Co2Po3
Q11	Write down the advantages and limitations of dimensional analysis.	Co2Po2
Q12	Write short note on total emissive power and emissivity.	Co2Po2

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

Q13	Calculate the rate of heat transfer per unit area through a copper plate 45mm thick, whose one face is maintained at 350 C and other face is at 50. $K=370 \text{ W/mC}$	Co3Po4
Q14	Find an expression for the force on a smooth sphere of diameter D , moving with a velocity V in a fluid of density ρ and dynamic viscosity μ by using Buckingham method.	Co4Po4
Q15	A surface having an area of 1.5 m^2 and maintained at 300 C exchanges heat by radiation with another surface at 40 C. if $F=0.52$ then calculate heat lost by radiation and the value of thermal resistance.	Co3Po4
Q16	Derive the expression for general heat conduction equation in Cartesian coordinates.	Co4Po4