Roll No.....

Department of Food Technology
School of Interdisciplinary Sciences and Technology
Jamia Hamdard, New Delhi-110062
End Semester Examination, December,2024.
B.Tech V SEM)
Paper Title: FM-II; Paper Code: BFTC –503

2024
5th 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	What is HGL?	Co1Po3
Q2	What is the unit of loss of head and pressure head?	Co2Po2
Q3	Write down the fundamental dimension for dynamic viscosity and pressure.	Co2Po3
Q4	Write down the expression of shear velocity?	Co1Po2
Q5	What do you understand by compressible flow?	Co1Po3

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

Q6	Find the speed of the sound wave in air at sea level where the pressure and temperature are 10.1043 N/cm^2(absolute) and 15 C respectively. R=287 J/kg-K,γ=1.4	Co1Po3
Q7	What do you understand by compound pipes. Derive the expression for loss of head when pipes connected in series.	Co2Po2
Q8	An oil of viscosity 0.1 N-s/m^2 flows between two large parallel plates which are 40 mm apart. If the drop of pressure in a length of 2 m is 0.5 kPa ,find the rate of flow of oil if the width of the plate is 30 cm.	Co2Po3
Q9	Find the loss of head when a pipe of diameter 200 mm is suddenly enlarged to a diameter of 400 mm.The rate of flow of water through the pipe is 250 litre/s.	Co2Po2
Q10	What do you understand continuity equation? Derive the expression for the continuity equation in compressible flow in differential form.	Co2Po3
Q11	What is eddy viscosity? Write down the expression for turbulent shear stress	Co2Po2
Q12	What do you understand by loss of head in pipes? Give its classification.	Co2Po2

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

Q13	What do you understand by laminar flow in circular pipes. Show that the ratio of maximum velocity to average velocity is 2.	Co3Po4
Q14	A gas with a velocity of 300 m/s is flowing through a horizontal pipe at a section where pressure is 6*10^4 N/m^2 (abs) and temperature 40 C. The pipe changes in diameter and at this section the pressure is 9*10^4 N/m^2.Find the velocity of gas at this section if the flow of the gas is adiabatic.	Co4Po4
Q15	Derive the expression for Bernoulli's equation for adiabatic compressible flow.	Co3Po4
Q16	Write short notes on the following (any two) a. Chezy's formula b. Turbulent boundary layer c. TEL	Co3Po4