Name :
Roll No:

MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666

DEPARTMENT OF MECHANICAL ENGINEERING
FIRST SESSIONAL EXAMINATION, AUGUST 2026
THIRD SEMESTER (ME)

B24ME2T02 MECHANICS OF FLUIDS

Time – 1.5 Hour **Max: 40 Marks**

PART-A

Answer All Questions

1.	State and explain the Newton's law of viscosity. Name the types of non-Newtonian fluids with examples.	**[CO 1]**	**3 Marks**
2.	Describe the following terms: i) Specific Weight; ii) Specific Volume; iii) Specific Gravity.	**[CO 1]**	**3 Marks**
3.	A stationary probe is placed in a fluid flow and measures pressure and temperature as functions of time at one location in the flow. Is this a Lagrangian or a Eulerian measurement? Explain.	**[CO 2]**	**3 Marks**
4.	The diameters of a pipe at sections 1 and 2 are 10 cm and 15 cm respectively. Find the discharge through the pipe if the velocity of water flowing through the pipe at section 1 is 5 m/s. Also determine the velocity of water in section 2.	**[CO 2]**	**3 Marks**

PART-B

Answer All Questions

5.a	Explain the relationship between gauge pressure, vacuum pressure, absolute pressure and atmospheric pressure.	**[CO 1]**	**4 Marks**
5.b	A differential manometer is connected at the two points A and B of two pipes. The pipe A contains a liquid of sp. gr.=1.5 while pipe B contains a liquid of sp. gr.=0.9 The pressures at A and B are 98.10 kN/m^2 and 176.580 kN/m^2 respectively. Find the difference in mercury level in the differential manometer. Pipe A is 3 m above pipe B. The mercury level in the limb connected to pipe A is 2 m below the centre line of pipe B. The level of mercury in the limb connected to pipe B is below the level of mercury (Sp.gr. = 13.6) in the other limb.	**[CO 1]**	**10 Marks**
6. a	How can you classify fluid flow? Name and explain various classifications.	**[CO 2]**	**4 Marks**
6. b	Derive an equation for the centre of pressure and the pressure force acting on a submerged body inclined at an angle with the surface of water	**[CO 2]**	**10 Marks**

VISION

Mentoring to Ensure Excellence

MISSION

- To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices
- To mold disciplined and socially committed engineers capable of assuming professional leadership upholding national integrity