Reg.No: ☐☐☐☐☐☐☐☐☐

SNS College of Technology, Coimbatore-35
(Autonomous)
B.E/B.Tech- Internal Assessment -I
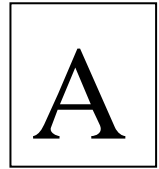**Academic Year 2022-2023 (Odd)**
Third Semester
Mechanical Engineering
19MEB201 – Fluid Mechanics and Machinery
(Common to Mechanical, Agricultural and Food Technology)

A

Time: 1¹ᐟ² Hours   **Maximum Marks: 50**
Answer All Questions

PART - A (5 x 2 = 10 Marks)

		CO	Blooms
1	State Newton's Law of Viscosity	CO1	Und
2	Differentiate between specific volume and relative density	CO1	Ana
3	Discuss shortly; Effect of temperature on Viscosity	CO1	Rem
4	Define Laminar Flow and Turbulent Flow	CO2	Ana
5	How Pascal's law is applied for water and mercury?	CO2	Rem

PART – B (2 x 13 = 26 Marks)

				CO	Blooms
6	(a)	A plate 0.02mm distant from a fixed plate moves 60m/sec and requires a force of 2 N per unit area to maintain this speed. Determine the fluid viscosity between the plates	13	CO1	Ana
		(or)			
	(b)	Derive Bernouli's equation from Euler's equation for incompressible fluids	13	CO2	Ana
7	(a)	Calculate the specific weight, density and specific gravity of two litres of a liquid which weighs 20N	13	CO1	App
		(or)			
	(b)	Water is flowing through a pipe of 100 mm diameter under a pressure of $19 N/cm^2$ and with a velocity of 3 m/sec. Find the total head of water which is 8 m above the datum line	13	CO2	Ana

PART – C (1 x 14 = 14 Marks)

				CO	Blooms
8.	(a)	A tube is made up of two capillaries of diameter 1.5mm and 2 mm respectively. The tube is kept vertically and partially filled with water of surface tension 0.074N/m. Calculate the difference in the level of meniscus caused by capillarity	14	CO1	App
		(or)			
	(b)	Give a case study on Laminar flow and Turbulent flow	14	CO2	App

Where: Und- Understanding; Rem- Remembering; APP-Applying, Ana- Analysing, (Bloom's Taxonomy Action Verbs)

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B

Time: 1¹ᐟ² Hours   **Maximum Marks: 50**
PART - A (5 x 2 = 10 Marks)

	Answer All Questions		**CO**	**Blooms**
1.	Distinguish between mass density and specific weight.		CO1	Und
2.	State Pascal's Law.		CO1	Und
3.	What is the difference between gauge pressure and absolute pressure?		CO1	Rem
4.	Distinguish EGL and HGL		CO2	Ana
5.	Draw the velocity and shear stress distribution for the flow through circular pipes.		CO2	Und

PART – B [(2 x 13)] = 26 Marks)   **CO**   **Blooms**

				CO	**Blooms**
6.	(a)	Derive the Euler's equation of motion and deduce the expression to Bernoulli's equation.	13	CO1	Rem
		(or)			
	(b)	(i) Derive continuity equation from basic principles. (7) (ii) Discuss on the U tube manometer and its types. (6)	13	CO1	Rem
7.	(a)	Derive the expression for Darcy's Weisbach equation, also Discuss frictional losses.	13	CO2	Ana
		(or)			
	(b)	Discuss on (i) Boundary layer concepts (6) (ii) Types of boundary layer thickness (7)	13	CO2	Ana

PART – C (1 x 14 = 14 Marks)

8.	(a)	A 30 cm diameter pipe, conveying water, branches into two pipes of diameters 20 cm and 15 cm respectively. If the average velocity in the 30 cm diameter pipe is 2.5 m/sec. Find the discharge in this pipe. Also determine the velocity in 15 cm pipe if the average velocity in 20 cm diameter pipe is 2 m/sec.	14	CO1	App
		(or)			
	(b)	Give a case study on the HGL and EGL, considering flow through Conduits	14	CO2	App

Where: Und- Understanding; Rem- Remembering; APP-Applying, Ana- Analysing, (Bloom's Taxonomy Action Verbs)