(12) PM 13/11/2025

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination-Nov-2025

COURSE CODE (CREDITS): 25B11CE313 (4) MAX. MARKS: 25

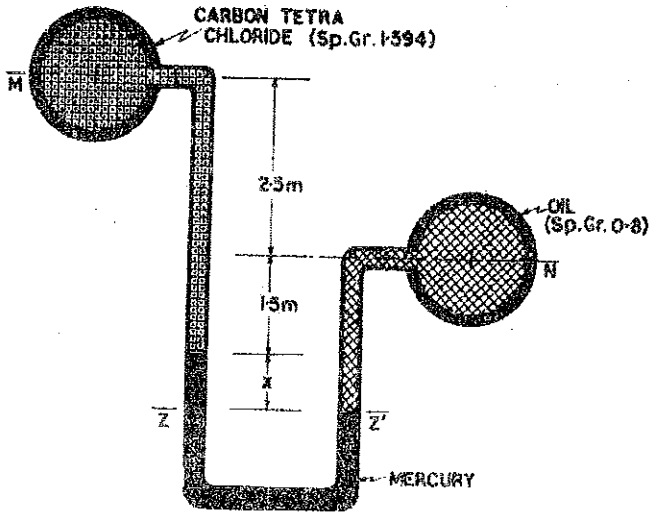
COURSE NAME: Fluid Mechanics

COURSE INSTRUCTORS: Ashish Kumar MAX. TIME: 1 Hour 30 Minutes

Note: Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of Calculator is allowed

Q.No	Question	CO	Marks
Q1(a)	Explain Newtonian and Non-Newtonian fluid with suitable example.	1	2
Q1 (b)	A flat plate of area 2.0 m^2 is pulled with a speed of 0.4 m/s relative to another plate located at a distance of 0.25 mm from it. Find the force required to maintain this speed, if the fluid separating them is having viscosity as 1.5 poise.	1	4
Q2 (a)	How do we measure the pressure of fluid? Differentiate between simple manometer and differential manometers.	2	2
Q2 (b)	As shown in the figure 1, pipe M contains carbon tetrachloride of specific gravity 1.59 under a pressure of 1.5 x 10^4 N/m^2 and pipe N contains oil of specific gravity 0.8. If the pressure in the pipe N is 1.8 x 10^4 N/m^2 and the manometric fluid is mercury, find the difference x between the levels of mercury. 	2	4
Q3	An orifice meter with orifice diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure difference measured by a mercury manometer fitted on the two sides of the orifice meter gives a reading of 50 cm of mercury.	4	4

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	Find the rate of flow of water when the co-efficient of discharge of the meter = 0.6.		
Q4	A circular plate 3.0 m diameter is immersed in water in such a way that its greatest and least depth below the free surface are 4 m and 1.5 m respectively. Determine the total pressure on one surface of the plate and position of the centre of the pressure.	2	4
Q 5	The velocity vector in a fluid flow is given by $V = 2x^3\mathbf{i} - 5x^2y\mathbf{i} + 4t\mathbf{k}$ Find the velocity and acceleration of a fluid particle at (1,2,3) at time $t = 1$	3	5