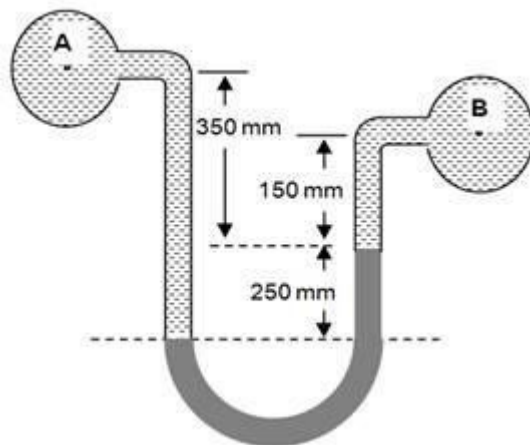


UNIT-I**UNIT NAME: Properties of Fluids**

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define the viscosity with necessary formulae	1	1	1
2	Define mass density, specific weight	1	1	1
3	Define Buoyancy	1	1	1
4	Name the devices that are used to measure the pressure of a fluid	2	1	1
5	Write down the expression for capillary fall in terms of surface tension for mercury		1	1
6	Write down formulae for centre of pressure and total pressure force.	4	1	1
7	Define metacenter and meta centric height	1	1	1
8	Compare the difference between solid state and liquid state	4	1	1
9	Define center of pressure and total pressure force	1	1	1
10	Explain the terms of surface tension and vapor pressure	2	1	1
Part – B (Long Answer Questions)				
11	a) Calculate the capillary rise in a glass tube of 2.5mm diameter when immersed vertically in water and mercury. Take the surface tension 0.07N/m for water and 0.52N/m for mercury. in contact with air, the specific gravity for mercury is 13.6 and angle of contact is 130°	5	1	3
	b) Derive an expression for capillarity rise of the liquid	3	1	2
12	a) Calculate the dynamic viscosity of an oil, which is used to for lubrication between a square plate of size $0.8\text{m} \times 0.8\text{m}$ and an inclined plane with an angle of inclination 30° . The weight of the square plate is 300N and its slides down the inclined plane with a uniform velocity of 0.3m/s. the thickness of the oil film is 1.5mm		1	3
	b) Define kinematic viscosity in terms of stokes.	1	1	1
13	a) Derive an expression for total pressure force and center of pressure when a body is immersed vertically in to containing water in the container	3	1	2
	b) Determine the total pressure force on a circular plane of 1.5 diameter which is placed vertically in water in such way that center of plane is 3m below the free water surface. Find the position of center of pressure also	3	1	2
14	a) The space between two square flat parallel plates is filled with oil. Each side of the plate is 60cms. the thickness of the oil film is 12.5mm. the upper plate which moves at 2.5m/sec requires a force of 98.1N to maintain the speed. Determine i) dynamic viscosity of the oil in poise ii) if kinematic viscosity of the oil in stokes, if specific gravity of the oil is 0.95	5	1	3
	b) What is manometer? state its different types of manometers with the neat sketches	2	1	1
15	a) A U-tube differential manometer is connected to two pipes at A and B. Pipe A Contains oil of Specific Gravity 0.92 and pipe B is carrying water. If the pressure at point A is 125 kN/m^2 find the pressure at point B.	5	1	3



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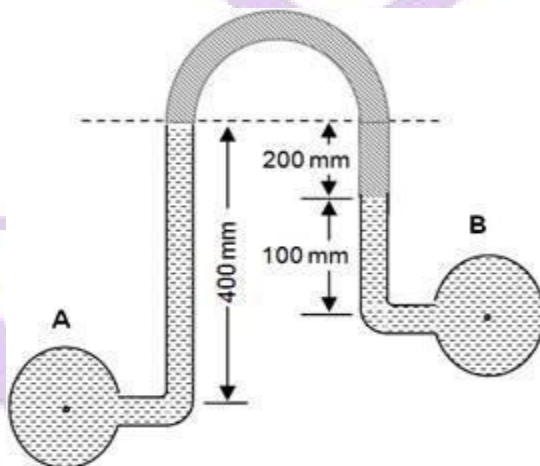
a)

An inverted tube differential manometer having an oil of specific gravity 0.9 is connected to two different pipes carrying water under pressure. Determine the pressure in the pipe B. The pressure in pipe A is 2 m of water.

5

1

3



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