MECHANICAL PROPERTIES OF FLUIDS

***General Instructions*:** Answer all the questions. If you are unable to answer any question, go through the page number that is given against that particular question in the text book. You can find the answer**.**

Test Paper-V

MAX MARKS: 30 **TIME: 90Mts**

1	Derive an expression to find the surface tension of a liquid.	P262	3
2	Define surface tension in terms of surface energy		
3	What can you say about the surface tension of a liquid when it is contact with two other liquids? On what factors does it depends upon?	P262	2
4	What is the effect of temperature on the surface tension of a liquid?	P263	1
5	Under what conditions a fluid will stick to a solid surface? What do you call such a property? How will you measure it	P263	3
6	What is meant by Angle of contact? What is the physical significance of angle of contact	P263	2
7	What is the relationship between angle of contact and S_{la}, S_{sa}, S_{sl} (where S_{la}, S_{sa},S_{sl}) are surface tensions of liquid air interface, solid-air interface and solid-liquid interface respectively) when a drop of liquid is placed on the solid surface. Also state how does it helps in finding the nature of the angle of contact when a liquid is placed on a solid.	P264	3
8	Why liquid drops are spherical in shape? Derive an expression to find the excess pressure inside a liquid drop. How is it different from a soap bubble?	P264	3
9	What is meant by capillary rise of a liquid? On what factors does it depend upon?	P265	2
10	Derive an expression to find the height through which the liquid rises inside a capillary tube.	P265	3
11	Find the height through which water rises inside a capillary tube having radius 0.05cm.Given that the density and surface tension of water are 1gm/cc and $0.073 Nm^{-1}$.	P265	2
12	Explain the detergent action on dirty clothes in comparison to water.	P265	2

13	The lower end of a capillary tube of diameter 2.00 mm is dipped 8.00cm below the surface of water in a beaker. What is the pressure required in the tube in o0rder to blow a hemispherical bubble at its end in water? The surface tension of water at temperature of the experiment is 7.30 X $10^{-2}Nm^{-1}$.1 atmospheric pressure = 1.01 X 10^5Pas. Density of water = 1000kg/m^3, g= 9.80 ms^{-2}. Also calculate the excess pressure.	P266	3
14	What difference do you identify between" ***excess pressure in a bubble of gas in a liquid*** " in comparison to" ***excess pressure in a bubble of liquid in a gas"***?	P266	1