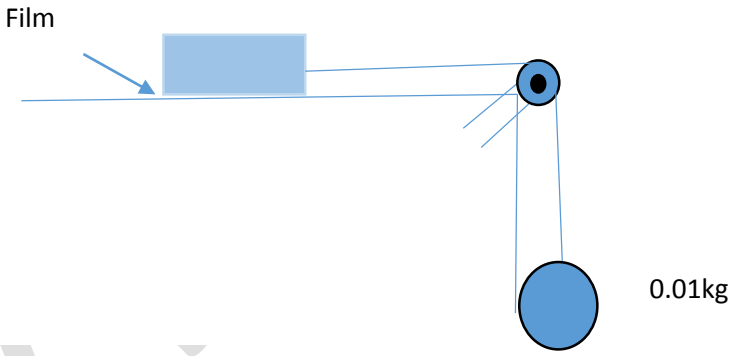
MECHANICAL PROPERTIES OF FLUIDS

***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-IV

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

1	Give the differences between viscosity and friction	P258	2
2	How will you define the coefficient of viscosity? Give the SI unit of measurement of coefficient of viscosity. Also give the dimensional formula of Viscosity.	P259	2
3	What is the effect of temperature on Viscosity of a liquid and a gas?	P259	1
4	A metal block of area 0.10 m^2 is connected to a 0.010 kg mass via a string that passes over an ideal pulley(considered massless and frictionless) as in fig. A liquid with a film thickness of 0.30mm is placed between the block and the table. When released the block moves to the right with a constant speed of 0.085 ms^{-1}. Find the coefficient of viscosity of the liquid.	P259	3



5	What is stokes Law? Give the factors on which viscous drag force on a body depends upon.	260	2
6	Derive an expression to find the terminal velocity of an object as it falls through a viscous medium.	260	3
7	The terminal velocity of a copper ball of radius 2.0 mm falling through a tank of oil at 20°C is 6.5cms^{-1}. Compute the viscosity of the oil at 20°C. Density of oil is 1.5 X $10^3 kgm^{-3}$, density of copper is 8.9 x $10^3 kgm^{-3}$.	260	2

8	Give the differences between the laminar and turbulent flow.	P258 &260	2
9	What is Reynolds Number? Give the formula to find the Reynolds number. Give the physical significance of it.What are dimensions of it?	P260	2
10	What are the uses of Turbulence of a fluid?	P261	1
11	The flow rate of water from a tap of diameter 1.25 cm is 0.48L/min. The coefficient of viscosity of water is 10^{-3}Pas. After some time the flow rate is increased to 3L/min. Characterise the flow for both the flow rates.	P261	3
12	What is meant by surface tension? Why surface tension is associated only with liquids?	P261	2
13	Heat of evaporation of water is 40kJ/mol. Explain what do you understand form this?	P261	2
14	Why liquid do tends to have a least surface area?	P261	2
15	Water wets the glass surface but not mercury. Give reason	P261	1