Test Paper 6

1.	What is terminal velocity? What is the terminal velocity of a body in a freely falling system	1
2.	The diameter of ball A is half that of ball B. What will be their ratio of their terminal velocities in water?	1
3.	Find out the dimensions of co-efficient of viscosity?	1
4.	What is the cause of viscosity in a fluid? How does the flow of fluid depend on viscosity? What is the cause of viscosity in a fluid? How does the flow of fluid depend on viscosity?	2
5.	If eight rain drops each of radius 1 mm are falling through air at a terminal velocity of 5 cms^{-1}. If they coalesce to form a bigger drop, what is the terminal velocity of bigger drop? If eight rain drops each of radius 1 mm are falling through air at a terminal velocity of 5 cms^{-1}. If they coalesce to form a bigger drop, what is the terminal velocity of bigger drop?	3
6.	Why does the cloud seem floating in the sky?	1
7.	A metal plate 5 cm × 5 cm rests on a layer of castor oil 1 mm thick whose coefficient of viscosity is 1.55 Nsm^{-2}. What is the horizontal force required to more the plate with a speed of 2 cms^{-1}?	2
8.	A small ball of mass 'm' and density 'd' dropped in a viscous liquid of density 'd'. After some time, the ball falls with a constant velocity. What is the viscous force on the ball? A small ball of mass 'm' and density 'd' dropped in a viscous liquid of density 'd'. After some time, the ball falls with a constant velocity. What is the viscous force on the ball?	3
9.	Two capillary tubes of length 15 cm and 5 cm and radii 0.06 cm and 0.02 cm respectively are connected in series. If the pressure difference a cross the end faces is equal to the pressure of 15 cm high water column, then find the pressure difference across the : → 1) first tube 2) Second tube.	2
10.	A metallic sphere of radius 1×10^{-3} m and density 1×10^{4} kgm^{-3} enters a tank of water after a free fall through a high 'h' in earth's gravitational field. If its velocity remains unchanged after entering water, determine the value of h. Given: co-efficient of viscosity of water = 1×10^{-3} Nsm^{-2}; g = 10 ms^{-2}; density of water = 1×10^{3} kgm^{-3}?	3