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**Subject: Physics Topic:-FLUID MECHANICS**

1. If two liquids of same masses but densities  and  respectively are mixed, then density of mixture is given by

(a)  (b) 

(c)  (d) 

1. If two liquids of same volume but different densities  and  are mixed, then density of mixture is given by

(a)  (b) 

(c)  (d) 

1. The density  of water of bulk modulus *B* at a depth *y* in the ocean is related to the density at surface  by the relation

(a)  (b) 

(c)  (d) 

1. With rise in temperature, density of a given body changes according to one of the following relations

(a)  (b) 

(c)  (d) 

1. Three liquids of densities  and  are mixed in equal volumes. Then the density of the mixture is

(a) *d* (b) 2*d*

(c) 3*d* (d) 5*d*

1. Three liquids of densities  and  are mixed in equal proportions of weights. The relative density of the mixture is

(a)  (b) 

(c)  (d) 

1. From the adjacent figure, the correct observation is

Water

Water

(a)

(b)

(a) The pressure on the bottom of tank (a) is greater than at the bottom of (b).

(b) The pressure on the bottom of the tank (a) is smaller than at the bottom of (b)

(c) The pressure depend on the shape of the container

(d) The pressure on the bottom of (a) and (b) is the same

1. A given shaped glass tube having uniform cross section is filled with water and is mounted on a rotatable shaft as shown in figure. If the tube is rotated with a constant angular velocity then

2*L*

*L*

*A*

*B*

(a) Water levels in both sections *A* and *B* go up

(b) Water level in Section *A* goes up and that in *B* comes down

(c) Water level in Section *A* comes down and that in *B* it goes up

(d) Water levels remains same in both sections

1. Why the dam of water reservoir is thick at the bottom

(a) Quantity of water increases with depth

(b) Density of water increases with depth

(c) Pressure of water increases with depth

(d) Temperature of water increases with depth

1. Air is blown through a hole on a closed pipe containing liquid. Then the pressure will

(a) Increase on sides

(b) Increase downwards

(c) Increase in all directions

(d) Never increases

1. A cylinder of height 20 *m* is completely filled with water. The velocity of efflux of water (in *m/s*) through a small hole on the side wall of the cylinder near its bottom is

(a) 10 (b) 20

(c) 25.5 (d) 5

1. There is a hole in the bottom of tank having water. If total pressure at bottom is 3 *atm* (1 *atm* = 105*N/m*2) then the velocity of water flowing from hole is

(a)  (b) 

(c)  (d) None of these

1. There is a hole of area *A* at the bottom of cylindrical vessel. Water is filled up to a height *h* and water flows out in *t* second. If water is filled to a height 4*h*, it will flow out in time equal to

(a) *t* (b) 4*t*

(c) 2 *t* (d) *t/*4

1. A cylindrical tank has a hole of 1 *cm*2 in its bottom. If the water is allowed to flow into the tank from a tube above it at the rate of 70 *cm3*/*sec*. then the maximum height up to which water can rise in the tank is

(a) 2.5 *cm* (b) 5 *cm*

(c) 10 *cm* (d) 0.25 *cm*

1. A square plate of 0.1 *m* side moves parallel to a second plate with a velocity of 0.1 *m*/*s*, both plates being immersed in water. If the viscous force is 0.002 *N* and the coefficient of viscosity is 0.01 *poise*, distance between the plates in *m* is

(a) 0.1 (b) 0.05

(c) 0.005 (d) 0.0005

1. Spherical balls of radius '*r*' are falling in a viscous fluid of viscosity '*η*' with a velocity '*v*'. The retarding viscous force acting on the spherical ball is

(a) Inversely proportional to '*r*' but directly proportional to velocity '*v*'

(b) Directly proportional to both radius '*r*' and velocity '*v*'

(c) Inversely proportional to both radius '*r*' and velocity '*v*'

(d) Directly proportional to '*r*' but inversely proportional to '*v*'

1. A small sphere of mass *m* is dropped from a great height. After it has fallen 100 *m*, it has attained its terminal velocity and continues to fall at that speed. The work done by air friction against the sphere during the first 100 *m* of fall is

(a) Greater than the work done by air friction in the second 100 *m*

(b) Less than the work done by air friction in the second 100 *m*

(c) Equal to 100 *mg*

(d) Greater than 100 *mg*

1. Two drops of the same radius are falling through air with a steady velocity of 5 *cm* per *sec*. If the two drops coalesce, the terminal velocity would be

(a) 10 *cm* per *sec* (b) 2.5 *cm* per *sec*

(c)  per *sec* (d)  per sec

1. A ball of radius *r* and density *ρ* falls freely under gravity through a distance *h* before entering water. Velocity of ball does not change even on entering water. If viscosity of water is *η*, the value of *h* is given by

(a) 

*h*

(b) 

(c) 

(d) 

1. The rate of steady volume flow of water through a capillary tube of length '*l*' and radius '*r*' under a pressure difference of *P* is *V*. This tube is connected with another tube of the same length but half the radius in series. Then the rate of steady volume flow through them is (The pressure difference across the combination is *P*)

(a)  (b) 

(c)  (d) 

1. An L-shaped glass tube is just immersed in flowing water such that its opening is pointing against flowing water. If the speed of water current is *v*, then

*v*

*h*

(a) The water in the tube rises to height 

(b) The water in the tube rises to height 

(c) The water in the tube does not rise at all

(d) None of these

1. A tank is filled with water up to a height *H*. Water is allowed to come out of a hole *P* in one of the walls at a depth *D* below the surface of water. Express the horizontal distance *x* in terms of *H* and *D*

(a) 

*H*

*x*

*D*

(b) 

(c) 

(d) 

1. A cylindrical vessel of 90 *cm* height is kept filled upto the brim. It has four holes 1, 2, 3, 4 which are respectively at heights of 20 *cm*, 30 *cm*, 45 *cm* and 50 *cm* from the horizontal floor *PQ*. The water falling at the maximum horizontal distance from the vessel comes from

*P*

*Q*

1

2

3

4

(a) Hole number 4

(b) Hole number 3

(c) Hole number 2

(d) Hole number 1

1. A rectangular vessel when full of water takes 10 minutes to be emptied through an orifice in its bottom. How much time will it take to be emptied when half filled with water

(a) 9 *minute* (b) 7 *minute*

(c) 5 *minute* (d) 3 *minute*

1. A streamlined body falls through air from a height *h*  on the surface of a liquid. If *d* and *D*(*D* > *d*) represents the densities of the material of the body and liquid respectively, then the time after which the body will be instantaneously at rest, is

(a)  (b) (c) (d) 

1. A large tank is filled with water to a height *H.* A small hole is made at the base of the tank. It takes  time to decrease the height of water to ; and it takes  time to take out the rest of water. If , then the value of  is

(a) 2 (b) 3

(c) 4 (d) 

1. Velocity of water in a river is

(a) Same everywhere

(b) More in the middle and less near its banks

(c) Less in the middle and more near its banks

(d) Increase from one bank to other bank

1. As the temperature of water increases, its viscosity

(a) Remains unchanged

(b) Decreases

(c) Increases

(d) Increases or decreases depending on the external pressure

1. The coefficient of viscosity for hot air is

(a) Greater than the coefficient of viscosity for cold air

(b) Smaller than the coefficient of viscosity for cold air

(c) Same as the coefficient of viscosity for cold air

(d) Increases or decreases depending on the external pressure

1. A good lubricant should have

(a) High viscosity (b) Low viscosity

(c) Moderate viscosity (d) High density