

PROPERTIES OF SOLIDS AND LIQUIDS

1. The amount of energy required to form a soap bubble of radius 2 cm from a soap solution is nearly: (surface tension of soap solution = 0.03 Nm^{-1})
- (a) 1.4×10^{-2} (b) 0.8×10^{-2}
(c) 1.0×10^{-2} (d) 1.2×10^{-2}
- [NEET (2023)]
- (a) $5.06 \times 10^{-4} \text{ J}$ (b) $3.01 \times 10^{-4} \text{ J}$
(c) $50.1 \times 10^{-4} \text{ J}$ (d) $30.16 \times 10^{-4} \text{ J}$
2. The velocity of a small ball of mass M and density d , when dropped in a container filled with glycerine becomes constant after some time. If the density of glycerine is $\frac{d}{2}$, then the viscous force acting on the ball will be :
- [NEET (2021)]
- (a) $\frac{3}{2}Mg$ (b) $2Mg$
(c) $\frac{Mg}{2}$ (d) Mg
3. A wire of length L , area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is : [NEET (2020)]
- (a) $\frac{MgL}{AL_1}$ (b) $\frac{MgL}{A(L_1 - L)}$
(c) $\frac{MgL_1}{Al}$ (d) $\frac{Mg(L_1 - L)}{AL}$
4. A capillary tube of radius r is immersed in water and water rises in it to a height h . The mass of the water in the capillary is 5gm. Another capillary tube of radius $2r$ is immersed in water. The mass of water that will rise in this tube is :
- [NEET (2020)]
- (a) 10.0 g (b) 20.0 g
(c) 2.5 g (d) 5.0 g
5. A soap bubble, having radius of 1 mm is blown from a detergent solution having a surface tension of $2.5 \times 10^{-2} \text{ N/m}$. The pressure inside the bubble is equal to the pressure at a point Z_0 below the free surface of water in a container. Taking $g = 10 \text{ m/s}^2$, density of water = 10^3 kg/m^3 , the value of Z_0 is: [NEET (2019)]
- (a) 10 cm (b) 1 cm
(c) 0.5 cm (d) 100 cm
6. Two wires are made of the same material and have the same volume. The first wire has cross-sectional area A and the second wire has cross-sectional area $3A$. If the length of the first wire is increased by Δl on applying a force F , how much force is needed to stretch the second wire by the same amount? [NEET (2018)]
- (a) $4F$ (b) $6F$
(c) $9F$ (d) F
7. The approximate depth of an ocean is 2700 m. The compressibility of water is $45.4 \times 10^{-11} \text{ Pa}^{-1}$ and density of water is 10^3 kg/m^3 . "Find fractional change in volume" [NEET (2015)]



ANSWER KEY

1. (b)

2. (c)

3. (b)

4. (a)

5. (b)

6. (c)

7. (d)