PHYSICS

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

PROPERTIES OF MATTER

Others

1. The bulk modulus of a spherical object is B if it is subjected to uniform pressure p, the

fractional decrease in radius is:

A. $\dfrac{p}{B}$

B. $\dfrac{B}{3p}$
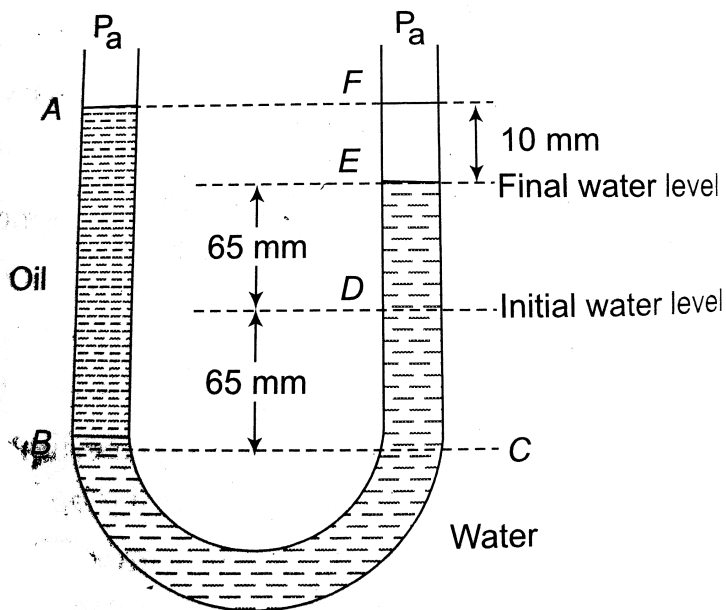
C. $\dfrac{3p}{B}$

D. $\dfrac{p}{3B}$

Answer: D

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2. A U-tube with both ends open to the atmosphere is partially filled with water. Oil, which is immiscible with water. Is poured into one side until it stands at a distance of $10mm$ above the water level on the other side. Meanwhile the water rises by $65mm$ from its original level (see diagram). The density of the

oil is:

A. $650 kgm^{-3}$

B. $425 kgm^{-3}$

C. $800 kgm^{-3}$

D. $928 kgm^{-3}$

Answer: d

3. Two non-mixing liquids of densities ρ and $(n > 1)$ are put in a container. The height of each liquid is h. A solid cylinder of length L and density d is put in this container. The cylinder floats with its axis vertical and length $pL(p < 1)$ in the denser liquid. The density d is equal to :

A. $\{2 + (n+1)p\}\rho$

B. $\{2 + (n-1)p\}\rho$

C. $\{1 + (n-1)p\}\rho$

D. $\{1 + (n+1)p\}\rho$

Answer: c

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4. Coefficient of linear expansion of brass and steel rods are α_1 and α_2. Length of brass and steel rods are l_1 and l_2 respectively. If $(l_2 - l_1)$

is maintained same at all temperature, which one of the following relations holds good?

A. $\alpha_1 l_2^2 = \alpha_2 l_1^2$

B. $\alpha_1^2 l_2 = \alpha_2^2 l_1$

C. $\alpha_1 l_1 = \alpha_2 l_2$

D. $\alpha_1 l_2 = \alpha_2 l_1$

Answer: c

5. The molecules of a given mass of a gas have rms velocity of $200m/s$ at $27°C$ and $1.0 \times 10^5 N/m_2$ pressure. When the temperature and pressure of the gas are respectively $127°C$ and $0.05 \times 10^5 Nm^{-2}$, the rms velocity of its molecules in ms^{-1} is

A. $\dfrac{400}{\sqrt{3}}$

B. $\dfrac{100\sqrt{2}}{3}$

C. $\dfrac{100}{3}$

D. $100\sqrt{2}$

Answer: a

6. A rectangular film of liquid is extended from $(4cm \times 2cm)$ to $(5cm \times 4 \times cm)$. If the work done is $3 \times 10^{-4}J$, the value of the surface tension of the liquid is

A. $0.250Nm^{-1}$

B. $0.125 Nm^{-1}$

C. $0.2 Nm^{-1}$

D. $8.0 Nm^{-1}$

Answer: b

7. Three liquids of densities ρ_1, ρ_2 and ρ_3 (with $\rho_1 > \rho_2 > \rho_3$), having the same value of surface tension T, rise to the same height in

three identical capillaries. The angles of

contact θ_1, θ_2 and θ_3 obey

A. $\dfrac{\pi}{2} > \theta_1 > \theta_2 > \theta_3 \geq 0$

B. $0 \leq \theta_1 < \theta_2 < \theta_3 < \dfrac{\pi}{2}$

C. $\dfrac{\pi}{2} < \theta_1 < \theta_2 < \theta_3 < \pi$

D. $\pi > \theta_1 > \theta_2 > \theta_3 > \dfrac{\pi}{2}$

Answer: b

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8. A rod of weight w is supported by two parallel knife edges A and B and is in equilibrium in a horizontal position. The knives are at a distance d from each other. The centre of mass of the rod is at distance x from A. The normal reaction on A is.. And on B is......

A. $\dfrac{wx}{d}$

B. $\dfrac{wd}{x}$

C. $\dfrac{w(d-x)}{x}$

D. $\dfrac{w(d-x)}{d}$

Answer:

9. The approximate depth of an ocean is $2700m$. The compressibility of water is $45.4 \times 10^{-11} Pa^{-1}$ and density of water is $10^3 \dfrac{kg}{m^3}$. What fractional compression of water will be obtained at the bottom of the ocean?

    A. 0.8×10^{-2}

    B. 1.0×10^{-2}

C. 1.2×10^{-2}

D. 1.4×10^{-2}

Answer: c

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10. A wind with speed $40 m/s$ blows parallel to the roof of a house. The area of the roof is $250 m^2$. Assuming that the pressure inside the house is atmospheric pressure, the force exerted by the wind on the roof and the

direction of the force will be

$$\left(P_{air} = 1.2 kg/m^3\right)$$

A. $4.8 \times 10^5 N$, downwards

B. $4.8 \times 10^5 N$, upwards

C. $2.4 \times 10^5 N$, upwards

D. $2.4 \times 10^5 N$, downwards

Answer: c

11. The cylindrical tube of a spray pump has radius R, one end of which has n fine holes, each of radius r. If the speed of the liquid in the tube is V, the speed of the ejection of the liquid through the holes is:

A. $\dfrac{vR^2}{n^2r^2}$

B. $\dfrac{vR^2}{nr^2}$

C. $\dfrac{vR^2}{n^3r^2}$

D. $\dfrac{v^2R}{nr}$

Answer: b

12. Copper of fixed volume V is drawn into wire of length l. When this wire is subjected to a constant force F, the extension produced in the wire is $\triangle l$. Which of the following graphs is a straight line?

A. Δl versus $\dfrac{1}{l}$

B. Δl versus l^2

C. Δl versus $\dfrac{1}{l^2}$

D. Δl versus l

Answer: b

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13. A certain number of spherical drops of a liquid of radius r coalesce to form a single drop of radius R and volume V. If T is the surface tension of the liquid, then

A. energy $= 4VT\left(\dfrac{1}{r} - \dfrac{1}{R}\right)$ is released

B. energy $= 3VT\left(\dfrac{1}{r} + \dfrac{1}{R}\right)$ is absorbed

C. energy $= 3VT\left(\dfrac{1}{r} - \dfrac{1}{R}\right)$ is released

D. energy is neither released nor absorbed

Answer: c

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14. The following four wires are made of same material. Which of these will have the largest extension when the same tension is applied?

A. Length $= 50cm$, diameter $= 0.5mm$

B. Length $= 100cm$, diameter $= 1mm$

C. Length $= 200cm$, diameter $= 2mm$

D. Length $= 300cm$, diameter $= 3mm$

Answer: a

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15. The wattability of a surface by a liquid depends primarily on

A. viscosity

B. surface tension

C. density

D. angle of contact between the surface and the liquid

Answer: d

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