## NEET UG 2013

**1.** The following four wires are made of the same material. Which of these will have the largest extension when the same tension is applied ?
(1) length = 300cm, diameter = 3mm
(2) length = 50 cm, diameter = 0.5 mm
(3) length = 100 cm, diameter = 1mm
(4) length = 200 cm, diameter = 2mm

**2.** The wettability of a surface by a liquid depends primarily on :-
(1) angle of contact between the surface and the liquid
(2) viscosity
(3) surface tension
(4) density

## AIPMT 2014

**3.** 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 '$\Delta l$. Which of the following graphs is a straight line ?
(1) $\Delta l$ versus $\frac{1}{l}$ (2) $\Delta l$ versus $l^2$
(3) $\Delta l$ versus $\frac{1}{l^2}$ (4) $\Delta l$ versus $l$

**4.** A certain number of sphereical 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 :
(1) energy = $4VT\left(\frac{1}{r}-\frac{1}{R}\right)$ is released
(2) energy = $3VT\left(\frac{1}{r}+\frac{1}{R}\right)$ is absorbed
(3) energy = $3VT\left(\frac{1}{r}-\frac{1}{R}\right)$ is released
(4) Energy is neither released nor absorbed

## AIPMT 2015

**5.** The approximate depth of an ocean is 2700 m. The compressibility of water is $45.4\times10^{-11}$ $Pa^{-1}$ and density of water is $10^3$ $kg/m^3$. What fractional compression of water will be obtained at the bottom of the ocean ?
(1) $1.0\times10^{-2}$ (2) $1.2\times10^{-2}$
(3) $1.4\times10^{-2}$ (4) $0.8\times10^{-2}$

**6.** 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: ($\rho_{air}$ = 1.2 $kg/m^3$)
(1) $4.8\times10^5$ N, upwards
(2) $2.4\times10^5$ N, upwards
(3) $2.4\times10^5$ N, downwards
(4) $4.8\times10^5$ N, downwards

## Re-AIPMT 2015

**7.** 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 :-
(1) $\frac{V^2R}{nr}$ (2) $\frac{VR^2}{n^2r^2}$ (3) $\frac{VR^2}{nr^2}$ (4) $\frac{VR^2}{n^3r^2}$

**8.** The Young's modulus of steel is twice that of brass. Two wires of same lenght and of same area of cross section, one of steel and another of brass are suspended from the same roof. If we want the lowerends of the wires to be at the same level, weights added to the steel and brass wires must be in the ratio of :
(1) 1 : 1 (2) 1 : 2 (3) 2 : 1 (4) 4 : 1

**9.** Water rises to height 'h' in capillary tube. If the length of capillary tube above the surface of water is made less than 'h', then -
(1) water does not rise at all.
(2) water rises upto the tip of capillary tube and then starts overflowing like a fountain.
(3) water rises upto the top of capillary tube and stays there without overflowing.
(4) water rises upto a point a little below the top and stays there.

**10.** The heart of a man pumps 5 litres of blood through the arteries per minute at a pressure of 150 mm of mercury. If the density of mercury be $13.6\times10^3$ $kg/m^3$ and g = 10$m/s^2$ then the power of heart in watt is:
(1) 1.50 (2) 1.70 (3) 2.35 (4) 3.0

**NEET-I 2016**

**11.** Two non-mixing liquids of densities ρ and nρ (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 :-

(1) {1 + (n + 1)p}ρ (2) {2 + (n + 1)p}ρ

(3) {2 + (n − 1)p}ρ (4) {1 + (n − 1)p}ρ

**NEET-II 2016**

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

(1) 0.2 $Nm^{-1}$ (2) 8.0 $Nm^{-1}$

(3) 0.250 $Nm^{-1}$ (4) 0.125 $Nm^{-1}$

**13.** Three liquids of densities $\rho_1$, $\rho_2$ and $\rho_3$ (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 $\theta_1$, $\theta_2$ and $\theta_3$ obey:-

(1) $\frac{\pi}{2} < \theta_1 < \theta_2 < \theta_3 < \pi$ (2) $\pi > \theta_1 > \theta_2 > \theta_3 > \frac{\pi}{2}$

(3) $\frac{\pi}{2} > \theta_1 > \theta_2 > \theta_3 \geq 0$ (4) $0 \leq \theta_1 < \theta_2 < \theta_3 < \frac{\pi}{2}$

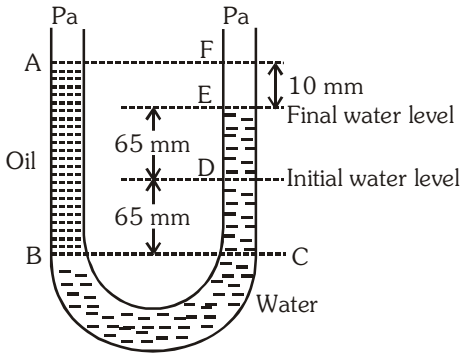
**NEET(UG) 2017**

**14.** The bulk modulus of a spherical object is 'B'. If it is subjected to uniform pressure 'p', the fractional decrease in radius is :-

(1) $\frac{B}{3p}$ (2) $\frac{3p}{B}$

(3) $\frac{p}{3B}$ (4) $\frac{p}{B}$

**15.** 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 10 mm above the water level on the other side. Meanwhile the water rises by 65 mm from its original level (see diagram). The density of the oil is :-




(1) 425 kg $m^{-3}$ (2) 800 kg $m^{-3}$

(3) 928 kg $m^{-3}$ (4) 650 kg $m^{-3}$

**NEET(UG) 2018**

**16.** A small sphere of radius 'r' falls from rest in a viscous liquid. As a result, heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity, is proportional to :-

(1) $r^3$ (2) $r^2$ (3) $r^5$ (4) $r^4$

**17.** 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 $\Delta l$ on applying a force F, how much force is needed to stretch the second wire by the same amount ?

(1) 9F (2) 6F (3) 4F (4) F

**NEET(UG) 2019**

**18.** A soap bubble, having radius of 1 mm, is blown from a detergent solution having a surface tension of $2.5 \times 10^{-2}$ N/m. The pressure inside the bubble equals at a point $Z_0$ below the free surface of water in a container. Taking g = 10 $m/s^2$ density of water = $10^3$ $kg/m^3$, the value of $Z_0$ is :-

(1) 100 cm (2) 10 cm (3) 1 cm (4) 0.5 cm

**19.** When a block of mass M is suspended by a long wire of length L, the length of the wire become (L+*l*). The elastic potential energy stored in the extended wire is :-

(1) Mg*l* (2) MgL (3) $\frac{1}{2}$ Mg*l* (4) $\frac{1}{2}$ MgL

**20.** A small hole of area of cross-section 2 $mm^2$ is present near the bottom of a fully filled open tank of height 2 m. Taking g = 10 $m/s^2$, the rate of flow of water through the open hole would be nearly :

(1) $12.6 \times 10^{-6}$ $m^3/s$

(2) $8.9 \times 10^{-6}$ $m^3/s$

(3) $2.23 \times 10^{-6}$ $m^3/s$

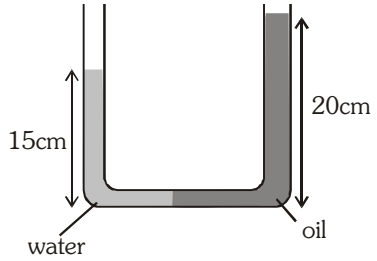
(4) $6.4 \times 10^{-6}$ $m^3/s$

**NEET(UG) 2019 (Odisha)**

**21.** Two small spherical metal balls, having equal masses, are made from materials of densities $\rho_1$ and $\rho_2$($\rho_1 = 8\rho_2$) and have radii of 1mm and 2mm, respectively. They are made to fall vertically (from rest) in a viscous medium whose coefficient of viscosity equals $\eta$ and whose density is 0.1 $\rho_2$. The ratio of their terminal velocities would be :-

(1) $\frac{79}{72}$ (2) $\frac{19}{36}$ (3) $\frac{39}{72}$ (4) $\frac{79}{36}$

**22.** In a U-tube as shown in figure, water and oil are in the left side and right side of the tube respectively. The heights from the bottom for water and oil columns are 15 cm and 20 cm respectively. The density of the oil is :- [take $\rho_{water}$ = 1000 $kg/m^3$]




(1) 1200 $kg/m^3$ (2) 750 $kg/m^3$

(3) 1000 $kg/m^3$ (4) 1333 $kg/m^3$

**23.** The stress-strain curves are drawn for two different materials X and Y. It is observed that the ultimate strength point and the fracture point are close to each other for material X but are far apart for material Y. We can say that materials X and Y are likely to be (respectively)

(1) ductile and brittle (2) brittle and ductile

(3) brittle and plastic (4) plastic and ductile

| Que. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ans. | **2** | **1** | **2** | **3** | **2** | **2** | **3** | **3** | **3** | **2** | **4** | **4** | **4** | **3** | **3** |
| Que. | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | | | | | |
| Ans. | **3** | **1** | **3** | **3** | **1** | **4** | **2** | **2** | | | | | | | |