



TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

PHYSICS

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 2

PHYSICS: Elasticity and Viscosity

DPP No. : 2

- Two identical rods in geometry but of different materials having co-efficients of thermal expansion α_1 and α_2 and Young's moduli Y_1 and Y_2 respectively are fixed between two rigid massive walls. The rods are heated such that they undergo the same increase in temperature. There is no bending of the rods. If $\alpha_1 : \alpha_2 = 2 : 6$ the thermal stresses developed in the two rods are equal provided $Y_1 : Y_2$ is equal to :
 (1) 2 : 3 (2) 1 : 1 (3) 3 : 1 (4) 4 : 9
- If a rubber ball is taken at the depth of 200 m in a pool its volume decreases by 0.1%. If the density of the water is $1 \times 10^3 \text{ kg/m}^3$ and $g = 10 \text{ m/s}^2$, then the volume elasticity in N/m^2 will be :
 (1) 10^8 (2) 2×10^8 (3) 10^9 (4) 2×10^9
- A ball of mass m and radius r is released in a viscous liquid. The value of its terminal velocity is proportional to :
 (1) $\frac{1}{r}$ (2) $\frac{m}{r}$ (3) $\sqrt{\frac{m}{r}}$ (4) m only
- A steel wire of 1 m long and 1 mm^2 cross section area is hang from rigid end. When weight of 1 kg is hung from it then change in length will be (given $Y = 2 \times 10^{11} \text{ N / m}^2$)
 (1) 0.5 mm (2) 0.25 mm (3) 0.05 mm (4) 5 mm
- The mean distance between the atoms of iron is $3 \times 10^{-10} \text{ m}$ and interatomic force constant for iron is 7 N/m. The Yong's modulus of elasticity for iron is
 (1) $2.33 \times 10^5 \text{ N/ m}^2$ (2) $23.3 \times 10^{10} \text{ N/ m}^2$ (3) $233 \times 10^{10} \text{ N/ m}^2$ (4) $2.33 \times 10^{10} \text{ N/ m}^2$
- According to Hooke's law of elasticity, if stress is increased, the ratio of stress to strain
 (1) Increases (2) Decreases (3) Becomes zero (4) Remains constant
- Calculate the work done, if a wire is loaded by ' Mg ' weight and the increase in length is ' ℓ '
 (1) $Mg\ell$ (2) Zero (3) $Mg\ell/2$ (4) $2Mg\ell$

8. If a spring extends by x on loading, then the energy stored by the spring is (if T is tension in the spring and k is spring constant)

(1) $\frac{T^2}{2x}$

(2) $\frac{T^2}{2k}$

(3) $\frac{2x}{T^2}$

(4) $\frac{2T^2}{k}$

9. On stretching a wire, the elastic energy stored per unit volume is

(1) $F\ell/2AL$

(2) $FA/2L$

(3) $FL/2A$

(4) $FL/2$

10. **Assertion** : Steel is more elastic than rubber.

Reason : Under a given deforming force, steel is deformed less than rubber.

Read the assertion and reason carefully to mark the correct option out of the options given below :

(1) If both assertion and reason are true and the reason is the correct explanation of the assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of the assertion.

(3) If both assertion is true but reason is false.

(4) If the assertion and reason both are false.

