



PHYSICS

BOOKS - CENGAGE PHYSICS (HINGLISH)

MECHANICAL PROPERTIES OF SOLIDS

Question Bank

1. The diameter of a brass rod is 4 mm and Young's modulus of brass is $9 \times 10^{10} N/m^2$.

The force required to stretch by 0.1 % of its length is



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2. A thin rod of negligible mass and a cross-section of $2 \times 10^{-6} m^2$ suspended vertically from one end, has a length of $0.5m$ at $200^\circ C$. The rod is cooled at $0^\circ C$, but prevented from contracting by attaching a mass at the lower end. The value of this mass is : (Young's

modulus $= 10^{11} N/m^2$, Coefficient of linear expansion $10^{-5} K^{-1}$ and $g = 10 m/s^2$):



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3. Two identical steel cubes (masses 50g, side 1cm) collide head on face to face with a speed of 10 cm/s each . Find the maximum compression of each. Young's modulus for steel $= Y = 2 \times 10^{11} N/m^2$.



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4. A rubber cord has a cross-sectional area 1mm^2 and total unstretched length 10.0cm . It is stretched to 12.0cm and then released to project a missile of mass 5.0 g . Taking young's modulus Y for rubber as $5.0 \times 10^8 \text{N/m}^2$. Calculate the velocity of projection .



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