ASSIGNMENT 1

PROPERTIES OF MATTER

1. Define: coefficient of viscosity.
2. Draw: Stress – Strain diagram with necessary notation. Explain: Elastic Limit and Upper Yield Point in detail.
3. Explain Young's Modulus, shear modulus, bulk modulus and Poisson's ratio.
4. Derive the formula for time period of a torsional pendulum.
5. What force is required to stretch a steel wire to double the length when its area of cross section is 1 cm^2 . Given that Young's modulus of wire is $7\times10^{10} N/m^2$.
6. An elastic rod having diameter of 30 mm, 10 cm long extends by 2.5 cm under tensile load of 28 kN. Find the stress, strain and the Young's modulus for the material of the rod.
7. Discuss elastic behavior of solid materials.
8. A solid disc of 1 kg mass and 0.2 m diameter is suspended in a horizontal plane by a vertical wire attached to its center. The length and diameter of the wire is 1.5 m and 2 mm, respectively. Calculate modulus of rigidity of wire and the time period Torsional oscillations if Torsional rigidity CS = $10\text{-}3\times7.8\ m^2\cdot kg/s^2$.
9. Define: Ductility and Plasticity.
10. Explain Types of Elasticity In detail. Explain Factor affecting on Elasticity.
11. Derive the Expression for Depression of Cantilever.
12. Explain Hook`s Law.