Mechanical Properties

1. Strength:- Ability of material to resist external forces without rupture or fracture.

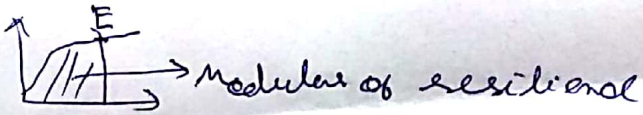
2. Elasticity:- regain shape after application of force.

3. Plasticity:- Ability of material to retain deformation on permanent.

4. Stiffness / Rigidity:- resist deformation due to external load.

Note: Modulus of elasticity is a measure of stiffness.

5. Resilience: absorb energy when deformed elastically & release this energy when load is removed



6. Toughness: Absorb energy before fracture takes place.

7. Malleability: Deform to a better extend before the sign of fail. (when subjected to compressive force)
→ thin sheet
→ Ability of material to be hammered out into thin sheet.

8. Ductility: Deform to a better extent before the sign of fail. (when subjected to tensile force)
→ thin wire
→ Drawn into wire, when subjected to tensile force.

9. Brittleness: shows negligible plastic deformation before fracture.

10. Hardness: resist penetration, indentation & scratches.
Strength ∝ hardness

11. Creep: Deformation of material under a constant stress & load.
(temp↑ ⇒ deformation↑) ? ⇒ Creep↑