

## Hooke's law and Modulus of Elasticity.

According to this law, within the elastic limit, stress is proportional to the strain.

$$\text{i.e. stress} \propto \text{strain or } \frac{\text{stress}}{\text{strain}} = \text{constant} = E$$

The constant  $E$  is called modulus of elasticity.

(1) Its value depends upon the nature of material of the body and the manner in which the body is deformed.

(2) Its value depends upon the temperature of the body.

(3) Its value is independent of the dimensions (length, volume etc.) of the body.

There are three moduli of elasticity namely Young's modulus ( $Y$ ), Bulk modulus ( $K$ ) and modulus of rigidity ( $\eta$ ) corresponding to three types of the strain.

