



# SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

**AN AUTONOMOUS INSTITUTION**



Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

## UNIT – I PROPERTIES OF MATTER

### TOPIC – II STRESS STRAIN DIAGRAM AND ITS USES

#### 2.7 ELASTIC LIMIT

The maximum stress up to which a body can recover its original shape and size, after removing the external forces is called as Elastic limit. After elastic limit the body will be in a limit called as plastic limit.

#### 2.8 YIELD POINT

The point at which the body loses its elasticity is called as Yield point.

#### 2.9 ELASTIC FATIGUE

If a body is continuously subjected to stress or strain, it gets fatigued(weak) called as elastic fatigue.

#### 2.10 STRESS – STRAIN DIAGRAM

Let us consider a body which is subjected to an uniformly increasing stress. Due to the application of the stress, the change in dimension of the body take place; the strain is developed.

If we plot a graph between stress and strain we get a curve as shown in Fig 2.7 and is called as STRESS-STRAIN Diagram.

- From the fig (2.7) it is found that the body obeys Hooke's law upto the region **OA** called as **elastic range**.

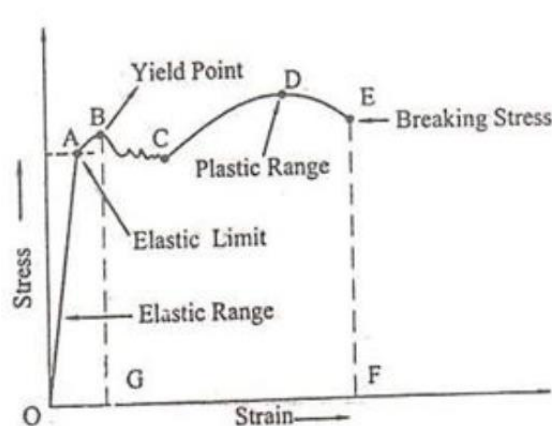


Fig 2.7

- ii. As soon as the maximum elastic limit, yield point B is crossed, the strain increases rapidly than the stress.
- iii. At this stage the body remains **partly elastic** and **partly plastic** which is represented by the curve **BC**.
- iv. Now, even if a small external force is applied, the body will take a new path **CD** and remains as plastic called as **Plastic range**, where D is called as **ultimate strength**.
- v. After this, the body will not come to its original state and the body acquires a permanent residual strain and it breaks down at a point called as **breaking stress**, indicated by dotted line **EF**.