

## 6. Earthquakes

- An earthquake is the shaking or trembling of the earth's surface, caused by the sudden movement of a part of the earth's crust resulting in release of energy that creates seismic waves.
- It occurs when the surplus accumulated stress in rocks in the earth's interior is relieved through the weak zones over the earth's surface in form of kinetic energy of wave motion causing vibrations (at times devastating) on the earth's surface.

### 6.1 Terms:

<b>Focus</b>	igneous mound with a dome shaped upper surface
<b>Epicentre</b>	Point on the earth's surface vertically above the focus. Maximum damage is caused at the epicentre.
<b>Isoseismic Line</b>	<ul style="list-style-type: none"> <li>A line connecting all points on the surface of the earth where the intensity is the same.</li> </ul>

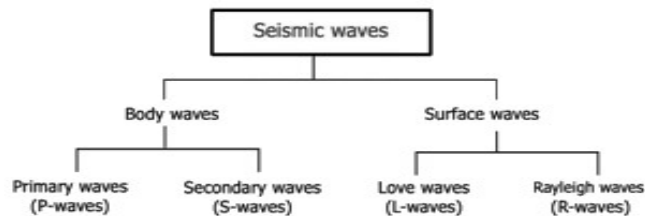
- Wave Velocity** - 5 to 8 km per second through the outer part of the crust but travel faster with depth.
- Earth quake magnitude is measured by **Richter scale**, intensity is measured by **Mercalli**.

### 6.2 Causes:

- Compressional or tensional stresses built up at the margins of the huge moving lithospheric plates.
- Sudden release of stress along a fault, or fracture in the earth's crust.
- Constant change in volume and density of rocks due to intense temperature and pressure in the earth's interior.
- Human induced earth quake

### 6.3 Earthquake Waves:

- Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, due to slipping of land, these waves will travel in all directions.
- Earthquake waves are of two types — **Body waves** and **Surface waves**.



- Body waves** are generated due to the release of energy at the focus and move in all directions travelling through the body of the earth. Hence, the name body waves.
- Body waves interact with the surface rocks and generate new set of waves called **surface waves**, these waves move along the surface and are also more destructive (Rayleigh) than body waves.

#### 6.3.A. Body Waves:

There are **two types of body waves** -

##### 1. Primary waves or P waves (longitudinal)

- Also called as the longitudinal or compressional waves.
- Analogous to sound waves.
- Particles of the medium vibrate along the direction of propagation of the wave.
- P-waves move faster and are the first to arrive at the surface.
- These waves are of high frequency.
- They can travel in **all mediums**.
- Velocity of P waves in Solids > Liquids > Gases.