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Subject: Introduction to Earthquake Engineering

Assignment: 1

Submitted to: Engr. Khurshid Alam

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Check by:

Q 1

Earthquakes are usually classified on the following bases of

- **Cause of origin**
- **Depth of focus**
- **Intensity & Magnitude of Earthquake**

(a) Cause of Origin:

On the basis of the causes of earthquake, they are classified as:-

(i) Tectonic and
(ii) Non-tectonic earthquakes.

The non-tectonic earthquakes are mainly of three types due to surface causes, volcanic causes and collapse of cavity roofs. The non-tectonic earthquakes due Volcanic to surface causes Earthquakes or Denudation earthquakes

(b) Depth of focus :

As we know, the instrument designed to detect seismic waves is called seismometer and the seismograph is a seismometer to record the earth vibration. This record of earth vibration is known as seismogram. It has now become possible to estimate the depth of focus of an earthquake by analyzing seismograms. On the basis of the depth of focus, earthquakes are classified as:

(i) Surface-earthquakes
(ii) Shallow-focus earthquakes or normal earthquakes
(iii) Intermediate-focus earthquakes
(iv) Deep-focus earthquakes

(c) Intensity and Magnitude of Earthquakes

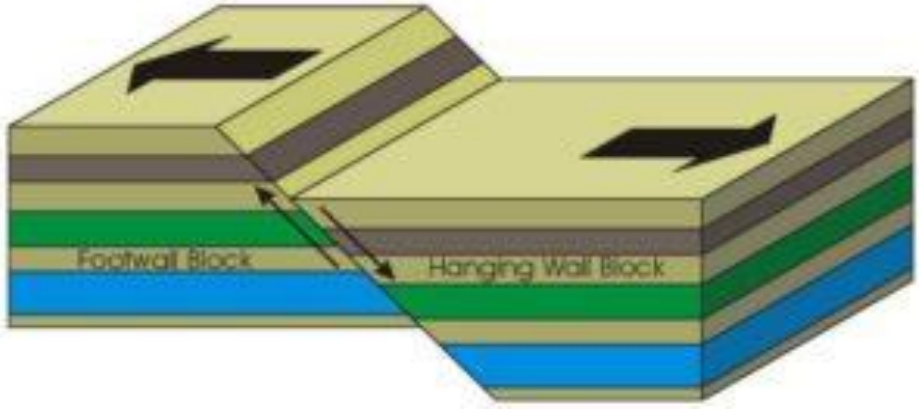
As we know, the tremors caused by earthquake may be so feeble and imperceptible that they can only be registered by highly sensitive instruments and may be so vigorous to cause large scale devastation. The strength of an earthquake can be measured either by its intensity or by its magnitude.

Intensity of an earthquake is a measure of the degree of damage and destruction it can cause. These effects can be observed without the help of any instrument. It is also a fact that intensity of an earthquake diminishes outwards from the epicenter.

Q 2

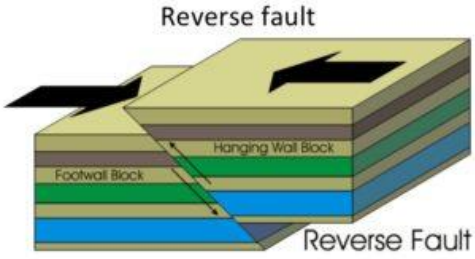
Draw a labeled diagram showing the following terminologies

Normal fault



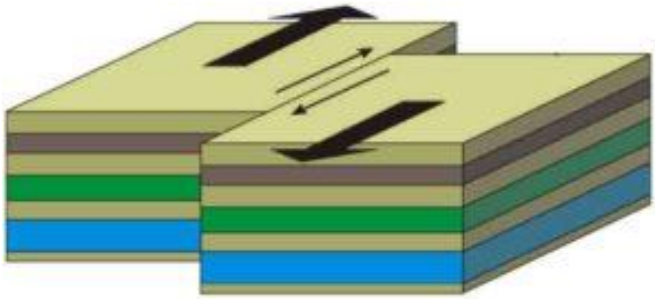
A dip-slip fault in which the block above the fault has moved downward relative to the block below. This type of faulting occurs in response to extension. "Occurs when the "hanging wall" moves down relative to the "foot wall""

Reverse Fault



A dip-slip fault in which the upper block, above the fault plane, moves up and over the lower block. This type of faulting is common in areas of compression, when the dip angle is shallow, a reverse fault is often described as a thrust fault. "Occurs where the "hanging wall" moves up or is thrust over the "foot wall"

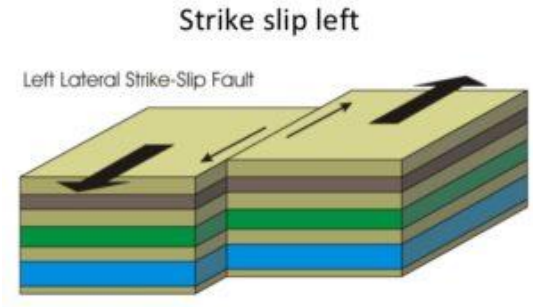
Strike-slip fault



A fault on which the two blocks slide past one another. The San Andreas Fault is an example of a right lateral fault.

Strike-slip Fault types

A left-lateral strike-slip fault is one on which the displacement of the far block is to the left when viewed from either side.



A right-lateral strike-slip fault is one on which the displacement of the far block is to the right when viewed from either side