Earthquakes

Why in News?

Recently the National Capital Region, Delhi and adjoining regions faces a shallow earthquake of 4.0 magnitude with a focal depth of five kilometres.

- An earthquake is a phenomenon that occurs without warning and involves ***violent shaking of the ground*** and everything over it.
- It results from the release of accumulated stress of the moving lithospheric or crustal plates.
- An earthquake is the sudden movement of Earth's crust at a fault line.
- It is also called as quakes, tremors, or temblors.
- **Epicenter -** The location where an earthquake begins is called the epicenter. An earthquake's most intense shaking is often felt near the epicenter.
- However, the vibrations from an earthquake can still be felt and detected hundreds, or even thousands of miles away from the epicenter.
- The energy from an earthquake travels through Earth in vibrations called seismic waves, measured by seismometer.
- **Types of energy**

P waves or primary waves	• These are the first waves to be detected. • These are compressional waves that push and pull as they move through rock and fluids.
S waves or secondary waves	• These are the second waves to be detected. • These waves move *only through rock.* • They move up and down or side to side, perpendicular to the direction in which the wave is moving.
Surface waves	• It follows P and S waves. • They travel along the surface of the earth and thus cause the most damage. • Surface waves can be characterized as Love waves, which are faster and move the ground from side to side.

- **Types Of Earthquake -** Along with the tectonic earthquakes, there are also 3 types of earthquakes.
  - **Volcanic -** Earthquakes that occur in conjunction with volcanic activity
  - **Collapse -** Smaller-scale earthquakes that result from the subterranean collapse of caverns or mines
  - **Explosion -** Earthquakes caused by underground explosions of nuclear or chemical devices.
- **Depth**
  - **Shallow earthquakes** - 0 to 70 km deep
  - **Intermediate earthquakes** - 70 to 300 km deep.

    - **Deep earthquakes** - 300 to 700 km deep.
- **Scenario in Delhi -** Delhi lies in the ***Aravalli-Delhi Fold Belt***, a seismically-active geological belt extending from southern and eastern Rajasthan to Haryana and Delhi.
- Over the years, the tectonic activity in the region has slowed down considerably, leading to greater geological stability. But some faults still remain, which give rise to occasional mild earthquakes.
- **Medvedev-Sponheuer-Karnik scale –** It is a ***measure of intensity***, rather than strength, or energy released, which is described by magnitude.
- Delhi is classified in ***Zone 4***, the 2nd highest classification of areas based on their susceptibility to shaking experienced during an earthquake.

References

1. The Hindu | What is a shallow earthquake?
2. News 18 | What Is an Earthquake?

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