Earthquake Tremors in Rajasthan

Why in News?

Recently the residents of Barmer, Rajasthan, experienced **mild** earthquake **tremors.**

- The tremors led to a brief period of panic, with people vacating buildings and gathering in open spaces.

Key Points

- **Location**: Barmer, Rajasthan
- **Magnitude**: 3.5 on the Richter scale
- **Structural Damage:** No major structural damage has been reported. Some minor cracks in buildings were observed.
- **Emergency Response:** Local authorities quickly responded, ensuring that emergency protocols were followed. They have advised residents to stay alert and follow safety guidelines in case of aftershocks.
- **Seismic Waves:** Seismic waves are the vibrations from earthquakes that travel through the Earth and are recorded on instruments called seismographs.
    - Seismographs record a **zigzag trace** that shows the **varying amplitude** of ground oscillations beneath the instrument.
- **Richter Scale and Mercalli Scale:** The earthquake events are **scaled** either according to the **magnitude** or **intensity** of the shock.
    - The **magnitude scale** is known as the **Richter scale.** The magnitude relates to the energy released during the earthquake which is expressed in absolute numbers, **0-10.**
    - The **intensity scale or Mercalli scale** takes into account the visible damage caused by the event. The range of intensity scale is from **1-12.**

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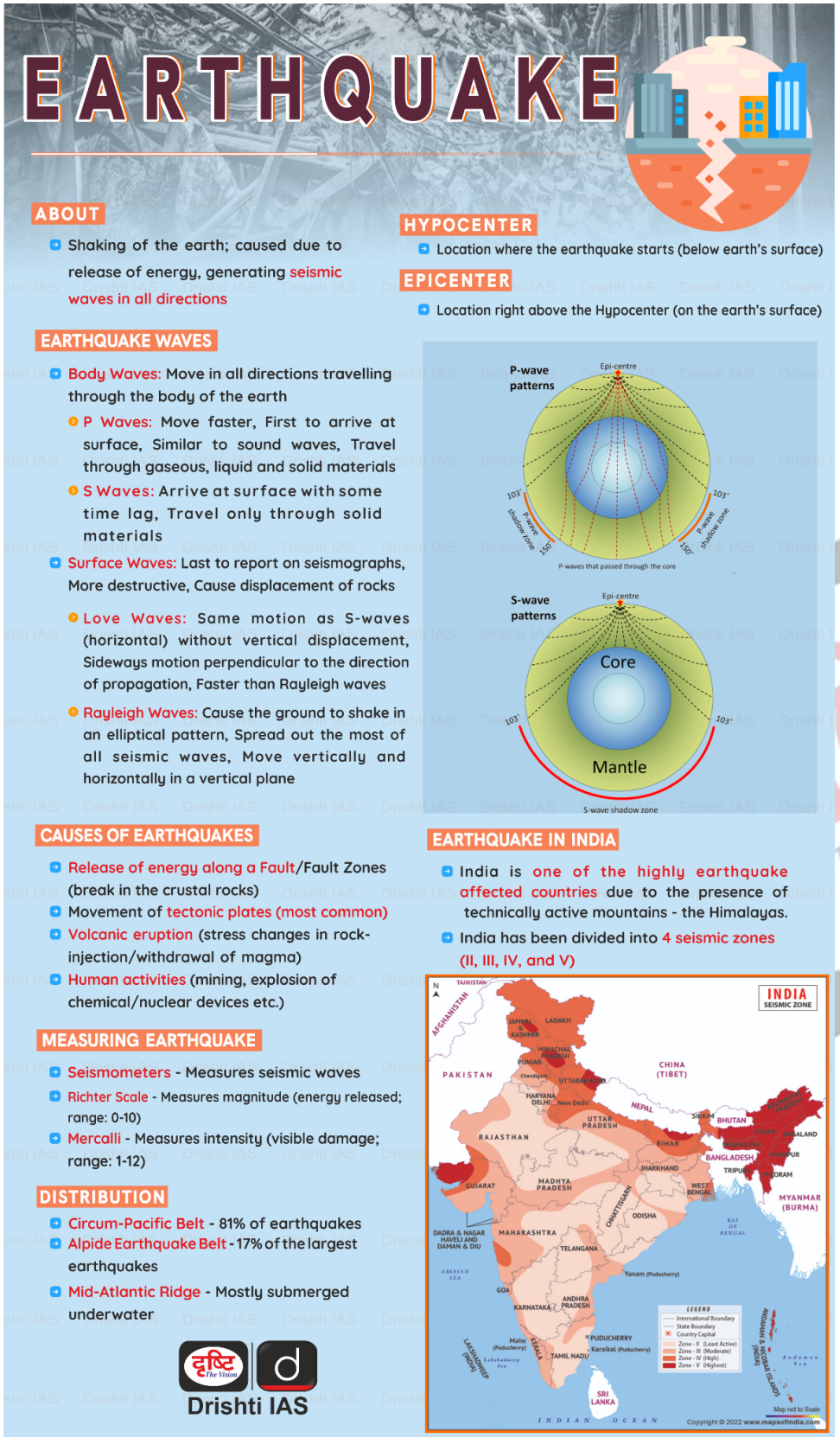

Seismic Zones in India

- There are **four seismic zones (II, III, IV, and V)** in India based on scientific inputs relating to seismicity, earthquakes that occurred in the past and tectonic setup of the region.
    - Previously, earthquake zones were divided into five zones with respect to the severity of the earthquakes but the Bureau of Indian Standards **(BIS)** grouped the country into **four**

seismic zones by unifying the first two zones.

- **BIS** is the **official agency** for publishing the seismic hazard maps and codes.
- **Seismic Zone II:**
    - Area with minor damage earthquakes corresponding to intensities **V to VI of MM scale (MM-Modified Mercalli Intensity scale).**
- **Seismic Zone III:**
    - Moderate damage corresponding to intensity **VII of MM scale.**
- **Seismic Zone IV:**
    - Major damage corresponding to intensity **VII and higher of MM scale.**
- **Seismic Zone V:**
    - The area around **major fault systems** is where seismic activity is concentrated, making it the most **earthquake-prone region.**
    - **Earthquake zone V** is the most vulnerable to **earthquakes**, where historically some of the country's most powerful shocks have occurred.
    - Earthquakes with magnitudes in excess of **7.0** have occured in these areas, and have had intensities higher than 9.