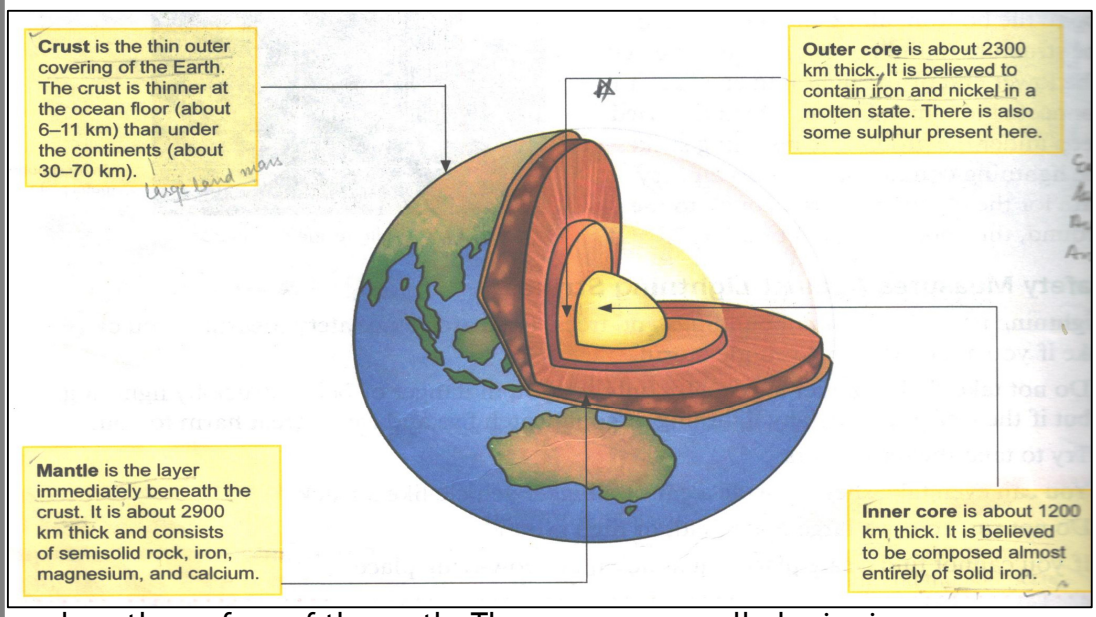
8th – SOME NATURAL PHENOMENON - II

Earthquakes:-An earthquake is a sudden movement or a fracture in crust and the upper layer of the mantle. The branch of science concerned with earthquakes and related phenomena is called **seismology**.

Plate Tectonics: Earth's lithosphere is not one continuous piece, but is broken into many pieces called plates. The earth is divided into se3ven large plates and several smaller plates. These plates move with respect to one another by about a few inches every year. The theory that the surface of the earth is made of plates that move with respect to one another is called plate tectonics.

How an Earthquake occurs: Earthquake generally occurs at plate boundaries (also called seismic zones or fault zones). Here is a simplified description of how an earthquake happens.

1. The plates rub against each other as they move. Pressure builds up against these rough edges.
2. As the pressure build-up continues, the edges give way. The resulting sudden movement of the plates causes an earthquake. The point where the edges give way is called the focus. The point vertically above the focus on the surface of the earth is called the epicentre.
3. Vibrations caused by an earthquake travel in the form of waves within the earth



or along the surface of the earth. These waves are called seismic waves.

Measurement of seismic waves: The instrument used to measure seismic waves is called a seismograph. A typical seismological output, called a seismogram, looks like a series of waves as shown in figure. Scientists who study the behavior of earthquake are called **seismologists**.

Magnitude of an Earthquake: The most common scale used to measure the magnitude of an earthquake is the Richter scale. An earthquake of magnitude 2.0-4.0 on the Richter scale is not too damaging. One of magnitude 4-8 is considered a moderate to severe earthquake. An earthquake of magnitude greater than 8-9

would be very severe. **On 26 January 2001, there was a major earthquake of magnitude 7.6-8.1 in Gujarat.**

Magnitude	Effect of quake
2.5	Generally not felt, but recorded on seismometer.
3.5	Can be felt by many people
4.5	Some local damage(cracks in the building and dams may occur
6.0	A destructive quake
7.0	A great quake, capable of destroying entire population
8.0 and above	

Earthquake Hazards: An earthquake hazard may be defined as any event or process associated with an earthquake that may adversely affect people or property.

- Ground failure due to liquefaction.
- Damage to buildings, roads, dams, bridges, etc.
- Deformation of the ground surface.
- Fires resulting from breaking of the electrical power or gas lines.
- Occurrence of tsunamis (due to large earthquake under oceans)
- Occurrence of landslides(in hilly areas)

Protection against Earthquakes

- Since most damage to human life is caused by falling of buildings, we should work towards making them earthquake resistant.
- Building in earthquake-prone areas should use lightweight materials.
- Ceiling fans, air conditioners, air coolers, etc., should be secured firmly.
- If you are indoors, take cover under a heavy table or cot. Keep away from heavy objects that might fall.
- If you are indoors in a public place, you should try to take cover under a sturdy object.
- If you are outdoors, move away from buildings, electric poles, and trees, which could fall down.
- If you are in a vehicle, stay inside.

Safety during Earthquakes

- Take shelter under a table and stay there till the shaking stops.
- Stay away from tall and heavy objects that may fall on you.
- Do not get up, if you are in a bed. Protect your head with pillows.
- Stay indoor until shaking stops and it is safe to move outside. Most of injuries occur when people, inside the building.

Safety Precautions after the Earthquake

- Stay calm for a while. Expect aftershocks. These shocks can cause additional damage.
- Beware of possible tsunami, if you live in coastal area.
- Carefully inspect utilities/ supplies.
- Use telephone only in emergency
- Stay away from damaged areas.
- Help the injured ones.

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