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8. Earthquakes

EXERCISE

A. Answer the following questions :

1. Describe the distribution of earthquakes in the world.

Ans. Earthquakes have a definite pattern of distribution. There are three

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major belts in the world in which the earthquakes frequently occur.

(i) **The Circum-Pacific Belt:**

- It extends in the west from Alaska to Kurile, Japan, Mariana and the Phillipine trenches. It is divided into two trenches: Indonesian trench and Kermamac-Tongo trench to the north-west of New Zealand.
- On the eastern side of the Pacific the earthquake zone follows the west coast of North America and continues southward along Peru and Chile trenchon the west coast of South America.
- About 66 per cent of the total earthquakes of the world are recorded in this belt.

(ii) **The Mid-Atlantic Belt:**

- It extends along the mid-oceanic ridges and several islands near the ridges of the Atlantic Ocean.
- The sea-floor spreading is the main cause of earthquakes in this belt
- The Rift-valley of East Africa and the Red Sea are considered as an extention of this belt.

(iii) **The Mid-Continental Belt:**

- This belt extends along the Alpine mountain system of Europe, N. America, through Asia Minor, Caucasia, Iran, etc.
- This zone is characterised by larger earthquakes of shallow origin and some of intermediate origin.

(iv) **Interplate Seismicity:**

- Most of the world's seismicity occurs along plate boundaries, the continental platform also experience infrequent and scattered shallow-focus earthquakes.
- E.g., The earthquake which occurred in Latur in India.

2. Name the instrument used to measure an earthquake.

Ans. The instrument used to measure an earthquake is Richter Scale.

3. Give some examples of earthquakes of the world.

Ans. Some examples of the earthquakes of the world are:

- Gujarat earthquake in India.
- The Krakatoa earthquake.
- The earthquake of 1931 in Greece.

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4. What is meant by Richter Scale?

Ans. Richter Scale is an open-ended, logarithmic scale that estimates earthquake magnitude, designed by Charles Richter in 1935.

5. What is an earthquake?

Ans. Any sudden vibration or movement of a part of the Earth's crust caused by natural or man-made stresses, resulting in violent tremors of shaking and the trembling is called an earthquake.

6. What is meant by epicentre?

Ans. Epicentre is the point where the shock waves reach the surface. It is directly above the focus point.

7. What is seismograph used for?

Ans. Seismograph is an instrument used to record the waves generated by an earthquake.

8. State any two causes of earthquakes.

Ans. Two causes of earthquakes:

Volcanic Eruptions:

They are caused by gas explosions.

They are generally of shallow origin and their area of disturbance is small but intensity may be high near the volcano, e.g., Krakatoa volcano.

Anthropogenic factors:

- Human interaction with nature.
- The extraction of minerals, deep underground mining, blasting of rocks, etc.
- Construction of dams and reservoirs.
- E.g., Koyna earthquake of 1967 in Satara district of Maharashtra.

9. Mention any two destructive effects of earthquakes.

Ans. Two destructive effects of earthquakes are:

Building collapse:

- People can be trapped in collapsed buildings or under the rubble.
- It leads to the worst causalities.
- E.g., Loma Prieta earthquake in San Francisco.

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Landslides:

- In the young fold mountains like Andes, Rockies, Alps and the Himalayas, earthquakes result into landslides which damage human settlements and disturb transport system.

10. Mention two constructive effects of earthquakes.

Ans. The two constructive effects of earthquakes :

- They may result in fissure opening causing a geyser of hot spring which are useful from medicinal point of view.
- They may result in the formation of coastal submergence and changing the coastal forms, forming bays and may prove to be helpful in navigation.

11. What is a tsunami?

Ans. Tsunami is a long wavelength shallow water wave caused by rapid displacement of water. Its velocity can reach 800 km per hour.

B. Explain the following terms :

1. Fault

Ans. **A fracture** in a rock along which there has been an observable amount of **displacement** is known as **fault**.

2. Seismic Focus

Ans. **Seismic Focus:** It is a point within the crust or mantle at which a shock or series of shocks are generated due to a sudden movement of crustal rocks.

3. Flash Floods

Ans. **Flash Floods:** Many a time, under the impact of severe earthquakes, the dams and embankments develop fissures which become the cause of Flash Floods.

4. Landslides

Ans. **Landslides :** Buildings can be damaged when the ground gives way beneath them. This can be in the form of a landslide down a hill or liquefaction of soils that can cause severe settling of the ground.

In the young-fold mountains like Andes, Rockies, Alps and the Himalayas, earthquakes result into landslides which damage the human settlements and disturb the transport system.

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C. Give a reason for the following statements:

1. Most earthquakes are caused by tectonic movement..

Ans. Faults & folds are formed when the plates collide each other or diverge or sliding apart, the energy inside the earth crust will be released in the form of vibration or earthquake along the fault line.

2. Earthquake is associated with volcanism.

Ans. Vibration or earthquake may happen due to large scale explosion during the volcanic eruption.

3. Earthquake can be proved to be helpful for Navigation.

Ans. Earthquake results in the formation of coastal submergence and helps in the formation of bays, in this way it is helpful for the navigators.

4. Japan is an earthquake & tsunami prone area.

Ans. Japan is situated in the Pacific Ocean along the subduction zone of the plates; therefore, it is very much disturbed by frequent volcanic eruption which is followed by earthquake & tsunami

D. Choose the correct option.

1. The science of earthquake is known as_____.

(a) Pedology (b) Geology
(c) Seismology (d) Petrology

2. The magnitude of an earthquake is measured by_____.

(a) Mercelli scale (b) Seismograph
(c) Richter scale (d) None of these

3. Which of the following statement related to earthquake focus is not true?

(a) It is situated on the surface of the earth & from here the earthquake waves spread horizontally on the earth surface.
(b) It is the point of origin of earthquake wave.
(c) It is situated below the earth's crust.
(d) Effect of earthquake will be greater if focus is situated near the surface.

4. Which of the following plates are responsible for Nepal earthquake on 25th April, 2015?

(a) Pacific plate & Indian Plate
(b) Nazka Plate & Eurasian Plate

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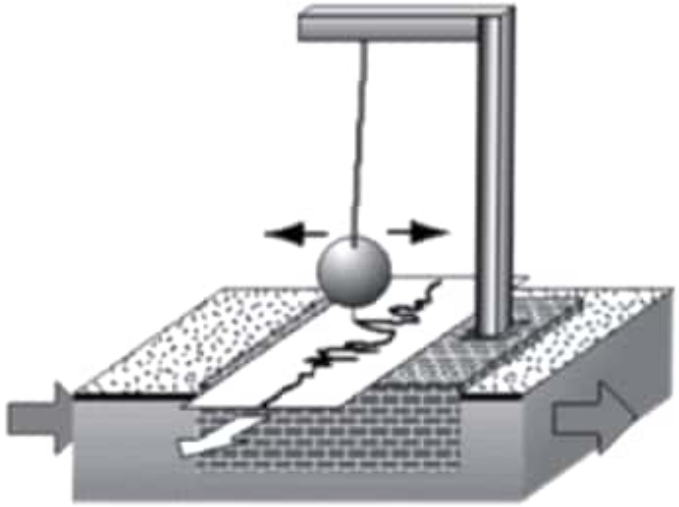
(c) Indo- Australian & Eurasian Plate

(d) Eurasian & Pacific Plate

5. What is the name of this instrument?



(a) Anemometer

(b) Seismometer

(c) Altimeter

(d) Electrometer

6. Which of the following is not a cause of earthquake?

(a) Folding & faulting (b) Volcanism

(c) Deep underground mining (d) Tsunami

Answers

1. c 2. c 3. a 4. c 5. b 6. d

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