

NCERT SOLUTIONS

CLASS - 11th



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Class : 11th

Subject : Geography

Chapter : 3

Chapter Name : Interior of the Earth

Q1 Multiple choice questions.

- (i) Which one of the following earthquake waves is more destructive?
- | | |
|-------------|-----------------------|
| (a) P-waves | (c) Surface waves |
| (b) S-waves | (d) None of the above |
- (ii) Which one of the following is a direct source of information about the interior of the earth?
- | | |
|----------------------|-------------------------|
| (a) Earthquake waves | (c) Gravitational force |
| (b) Volcanoes | (d) Earth magnetism |
- (iii) Which type of volcanic eruptions have caused Deccan Trap formations?
- | | |
|------------|---------------|
| (a) Shield | (c) Composite |
| (b) Flood | (d) Caldera |
- (iv) Which one of the following describes the lithosphere:
- | | |
|----------------------------|---------------------|
| (a) upper and lower mantle | (c) crust and core |
| (b) crust and upper mantle | (d) mantle and core |

Answer.

- (i) (a) P-waves
- (ii) (a) Earthquake waves

(iii) (b) Flood

(iv) (b) Crust and upper mantle

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Q2 Answer the following questions in about 30 words.

(i) What are body waves?

(ii) Name the direct sources of information about the interior of the earth.

(iii) Why do earthquake waves develop shadow zone?

(iv) Briefly explain the indirect sources of information of the interior of the earth other than those of seismic activity.

Answer.

(i) There are two types of earthquake waves- Body waves and surface waves. Body waves are generated due to the release of energy at the focus and move in all directions travelling through the body of the earth.

(ii) The direct sources of information about the interior of the earth are-

→ Mining- It is the process of extraction of valuable minerals or other geological materials from the Earth. The most direct source of information available is surface rock or the rock we get from mining.

→ Drilling- Mining beyond a certain depth is not possible as it get hot. Therefore, scientist resolve to drilling. Scientists world over are working on two major projects such as "Deep Ocean Drilling Project" and "Integrated Ocean Drilling Project. With the analysis of materials collected at different depths provides large volume of information.

→ Volcanic eruption- when the molten material i.e. Magma is thrown onto the surface of the earth at the time of volcanic eruption. It provides direct information about the interior of the Earth.

(iii) The shadow zone exists because the waves are refracted as they pass through the boundary between the mantle and the core and are diverted from their original paths. P and S

waves follow a curved path inside the earth due to increasing capacity The shadow zone of S-wave is much larger than that of P-waves.

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(iv) The indirect sources of information of the interior of the earth are-

→ Temperature, Density and Pressure- The rate in the change of temperature, pressure and density are known. With increasing distance from the surface towards the interior in deeper depths these 3 factors also increases. Knowing the change in the temperature, pressure and density the scientists have estimated the total thickness of the earth.

→ Meteors- . The material and the structure observed in the meteors are similar to that of the earth. They are solid bodies developed out of materials the same as, or similar to, our planet. Hence, this becomes yet another source of information about the interior of the earth.

→ Gravitation Force- the gravitational force is not the same at different latitudes on the surface. It is greater near the poles and less at the equator. This is because the distance from the centre of the earth to the equator is least. Similarly, the Gravitational force differs with the mass of material. Such a difference is called gravity anomaly. Gravity anomalies give us information about the distribution of mass of the material in the crust of the earth.

→ Magnetic Field- Magnetic Survey helps provide information about the distribution of magnetic materials in the crustal portion, and thus, provide information about the distribution of material in this part.

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Q3 Answer the following questions in about 150 words.

(i) What are the effects of propagation of earthquake waves on the rock mass through which they travel?

(ii) What do you understand by intrusive forms? Briefly describe various intrusive forms.

Answer.

(i) Since different types of earthquake waves travel in different manner. As they propagate, they cause vibration in the body of the rocks through which they pass. P-waves vibrate parallel to the direction of the wave. This exerts pressure on the material in the direction of the propagation.

This leads to density difference in the material which subsequently results into stretching and squeezing of material. Other waves that vibrate perpendicular to the wave direction in the vertical plane create troughs and crests in the material through which they pass.

(ii) The lava released during volcanic eruptions on cooling develops into igneous rocks the lava that cools within the crustal portions assumes different forms. These forms are called intrusive forms.

Various intrusive forms are as follows-

→ Batholiths- A large body of magmatic material that cools in the deeper depth of the crust develops in the form of large domes. They appear on the surface only after the denudational processes remove the overlying materials.

→ Laccoliths- These are large dome-shaped intrusive bodies with a level base and connected by a pipe-like conduit from below. It resembles the surface volcanic domes of composite volcano, only these are located at deeper depths

→ Lapolith- As and when the lava moves upwards, a portion of the same may tend to move in a horizontal direction wherever it finds a weak plane. It may get rested in different forms. In case it develops into a saucer shape, concave to the sky body, it is called lapolith.

→ Phacoliths- A wavy mass of intrusive rocks is found at the base of synclines or at the top of anticline in folded igneous country. Such wavy materials have a definite conduit to source beneath in the form of magma chambers.

→ Sills- The near horizontal bodies of intrusive igneous rocks are called sill or sheet, depending on the thickness of the material. The thinner ones are called sheet while the thick horizontal deposits are called sills.

→ Dykes- When the lava makes its way through cracks and fissures developed in the land, it solidifies almost perpendicular to the ground. It gets cooled in the same position to develop a wall-like structure. Such structures are called dykes

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