

15. Structure of Earth

Exercise Questions

1. Question

It is not name of the Earth.

- A. Bhoomi
- B. Gaia
- C. Bhanu
- D. Terra

Answer

Some uncommon name of the Earth are Bhoomi, Gaia (Earth goddess who gave birth to several deities in ancient Greek religion) and Terra (Mother Earth).

2. Question

How much portion of the Earth is covered with water at present?

- A. 70%
- B. 30%
- C. 50%
- D. Infinite

Answer

About 70% of Earth surface cover with water and rest is Land.

3. Question

The element which has maximum amount in the Earth is-

- A. Silicon
- B. Gold
- C. Oxygen
- D. Iron

Answer

Iron - 34.6%, Oxygen – 29.5%, Silicon – 15.2%, Gold less than 0.05%

4. Question

The biggest harbor city of Harappan civilization was discovered at which place?

- A. Dwarikia
- B. Dholavira
- C. Surat
- D. Karnavati

Answer

Dholavira in Gujarat is the biggest harbor city of Harappan civilization which submerged in the sea.

5. Question

The Cause of tides is-

- A. Sun
- B. Moon
- C. Both
- D. Sun and Moon in a line

Answer

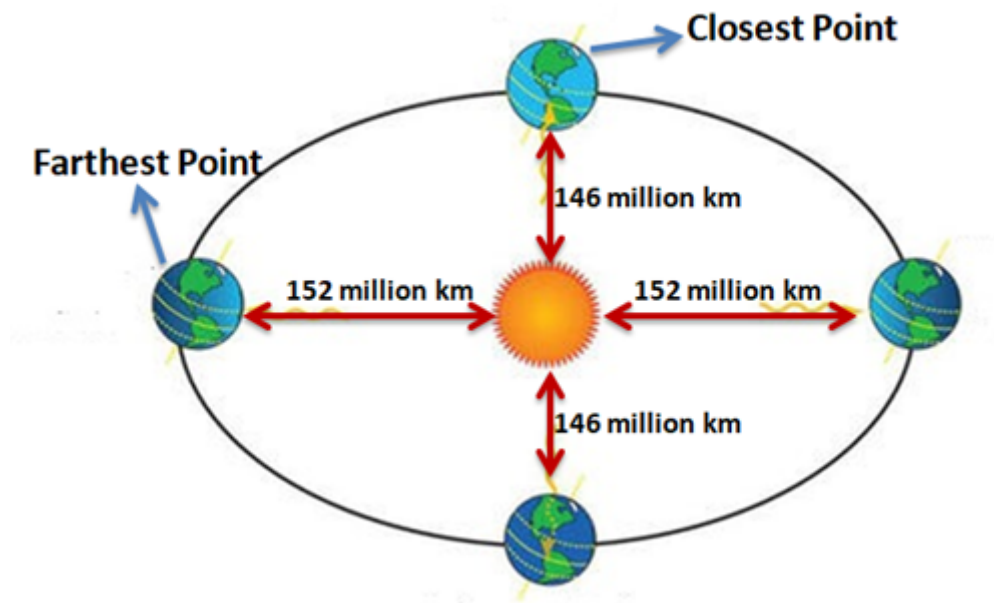
Tides result from the gravitational attraction of the sun and moon on the oceans of the earth. So both sun and moon cause tides.

6. Question

What is the cause of Uttarayan (summer solstice) and Dakshinayan (winter solstice) of the Sun on the Earth?

Answer

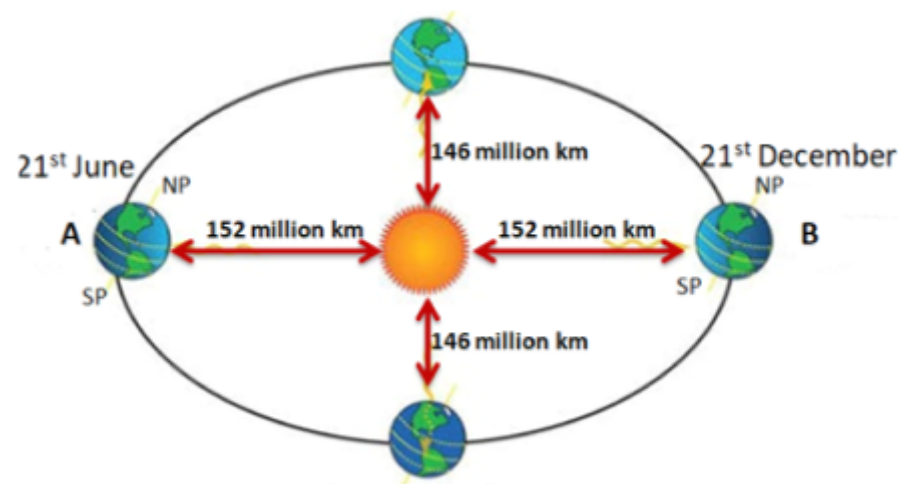
As we all know Earth revolves around the sun in an elliptical orbit. So there exist two such places where the earth is the farthest distance from the sun and two other places where the distance from earth and sun is minimum. Here is the big picture:



From the above figure, it is clear that Earth is closest and farthest point to Sun at exactly two times in a year. At the farthest point, Sun ray travels the longest path through the sky as a result northern/southern hemisphere receives the longest daylight. This is called **summer solstice** (also known as midsummer).

The **winter solstice** is the day of shortest day period of daylight and the longest night.

Addition Information:



● For northern hemisphere **summer solstice** (longest daylight and shortest night) is happening at point **A**.

And **winter solstice** (longest night and shortest daylight) happen at point **B**.

● For southern hemisphere **summer solstice** (longest daylight and shortest night) is happening at point **B**.

And **winter solstice** (longest night and shortest daylight) happen at point **A**.

7. Question

What is the unit of measuring earthquakes?

Answer

Earthquakes are measured by the seismometer. The intensity of an earthquake is expressed on the Richter scale.

Addition information: It is a logarithm unit means if you say that the earthquake of 3 intensity is actually 10^3 . Richter scale rates an earthquake by the size of its seismic waves (the shockwaves of released energy that shake the Earth) on a scale from 1 to 10. Each number on this scale is 10 times stronger than the number before it, so a 2 is 10 times stronger than a 1, a 3 is 100 times stronger, a 4 is 1,000 times stronger and so on.

8. Question

Where are the tectonic plates found?

Answer

The earth crust was thin and in uniform up to few lacs of years at the beginning of its formation. It changed into the big rock along with its cooling. These rock pieces are called tectonic plates. All the continents are located over these tectonic plates.

9. Question

What is the cause of tsunami?

Answer

The main cause of tsunami is the occurrence of an earthquake inside the ocean and with the intensity of 7 units on the Richter Scale.

10. Question

What type of winds are produced due to low air pressure at the center?

Answer

Low air pressure formed when hot air expands and become lighter than cold air. It rises up to create an area of low air pressure. Now the air from the area of high pressure flows into the area of low pressure causing **wind**.

11. Question

What will be the condition of a place, after the earthquake of 7 Richter?

Answer

When the earthquake of 7 Richter hit a place the whole area is completely ruined. It will damage the whole infrastructure, can bring a landslide. If this scale earthquake occurs in the ocean it leads to the formation of a long ocean wave.

12. Question

What are oceanic currents?

Answer

Ocean current is also called river flowing into the ocean. In the oceanic currents, the water flowing into these current may be hot or cold. The cause of oceanic current is the temperature difference or density difference and not the slope or difference in level.

13. Question

What is the benefit of weathering forces in agriculture?

Answer

Weathering is best described as a general process by which rocks are broken down at the Earth's surface. Weathering force breaks large rock into a smaller piece which forms soil.

It also helps in the formation of plain area.

14. Question

Write any four causes which help in weathering.

Answer

The four causes which help in weathering are as follow:

- a) Oxidation, carbonatization, hydration, solutionization etc are some of the chemical reaction which continuously weaken the rock and helps in breaking of rock.
- b) Wind break the rocks physically. Heat from the sun helps in expansion of rock during day time and in the night its contract due to cooling. Repeated expansion and contraction the rock become weak and start to break.
- c) Rainwater too helps in weathering of rock. Rain water gets into the cracks of the rocks. When this water freezes, the crack become wide.
- d) A man-made machine such as manufacturing equipment for construction, dynamite helps in breaking of rocks. Some living organism release different types of a chemical substance in nature which also helps in the weathering of rock.

15. Question

How would have the moon originated?

Answer

The moon was formed due to the collision of a celestial body with the earth, which was similar to the planet Mars in size.

Additional information:

There are three theories that answer the creation of the moon: the giant impact hypothesis, the fission theory, and the capture theory.

1) Giant impact hypothesis

According to this theory the Mars-sized body collided with Earth as a result large scattered pieces thrown into space eventually collected into a single natural satellite.

2) The Fission Theory

This theory proposes that the Moon spun off from Earth early in the history of the solar system. The Pacific basin was the scar left by the tearing away of the Moon.

3) Capture theory

This theory proposes that the Moon was created somewhere else in the solar system and captured by Earth's gravitational field as it wandered too close to the planet.

16. Question

Explain the internal structure of the Earth. Also, draw a labeled diagram.

Answer

Structure of the earth is layered in spherical hell like an onion. The distance between surface and center is 6371 km. The internal structure of the earth is composed of three type of layers. The thickness of these layers is estimated on the basis of their chemical or mechanical characteristics.

a) Crust: It is the outermost layer of the earth which is solid. Its thickness is not the same at all the places. Due to this difference in the **thickness of the crust, mountains and oceans are formed**. The surface further subdivided into 2 groups:-

i) Lithosphere

ii) Hydrosphere

Atmosphere included in the lithosphere. The lithosphere is mainly made up of soil.

b) Mantle: It is the **thickest** layer. It is mainly made of hot and molten rocks. The amount of iron and magnesium in these silicate rocks is more than the

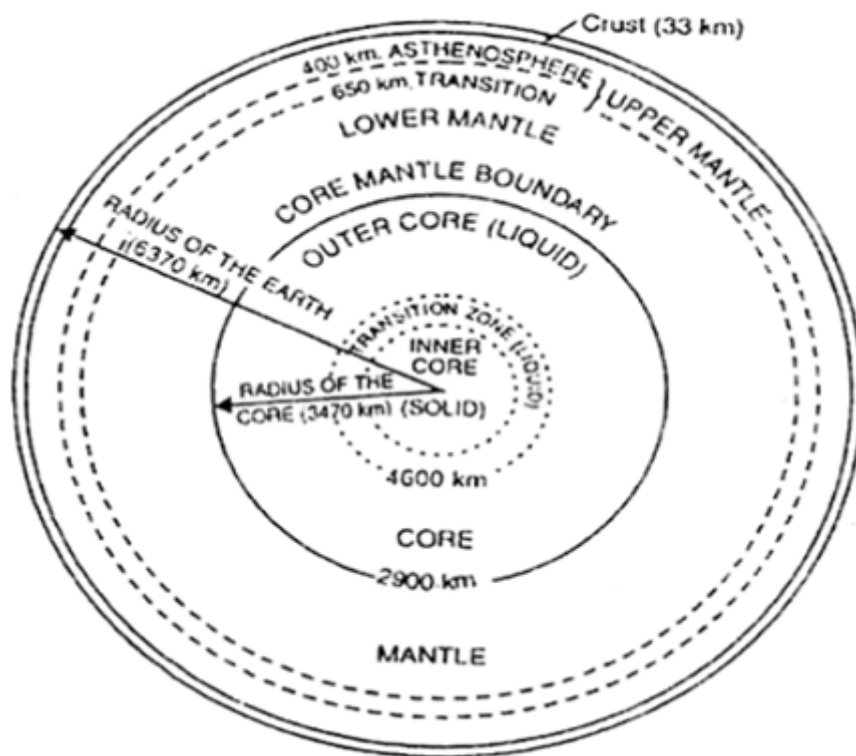
rocks of the crust. The mantle is **subdivided into upper mantle and lower mantle**.

c) Core: The **innermost** layer of the earth is called the core. It is the deepest layer of the earth hence it has the highest temperature (7000°C). The real cause of the hotness of the core is the heat left inside it during the formation of the earth. The core is divided into two part –

i) Solid Inner core

ii) Liquid Outer core

The inner core is made up of pure iron. Whereas the outer core composed of iron and nickel. **Core density is higher than the density of crust**. The main cause of this is the presence of magnesium.



17. Question

What is the meaning of internal molding forces of the Earth? Explain any two.

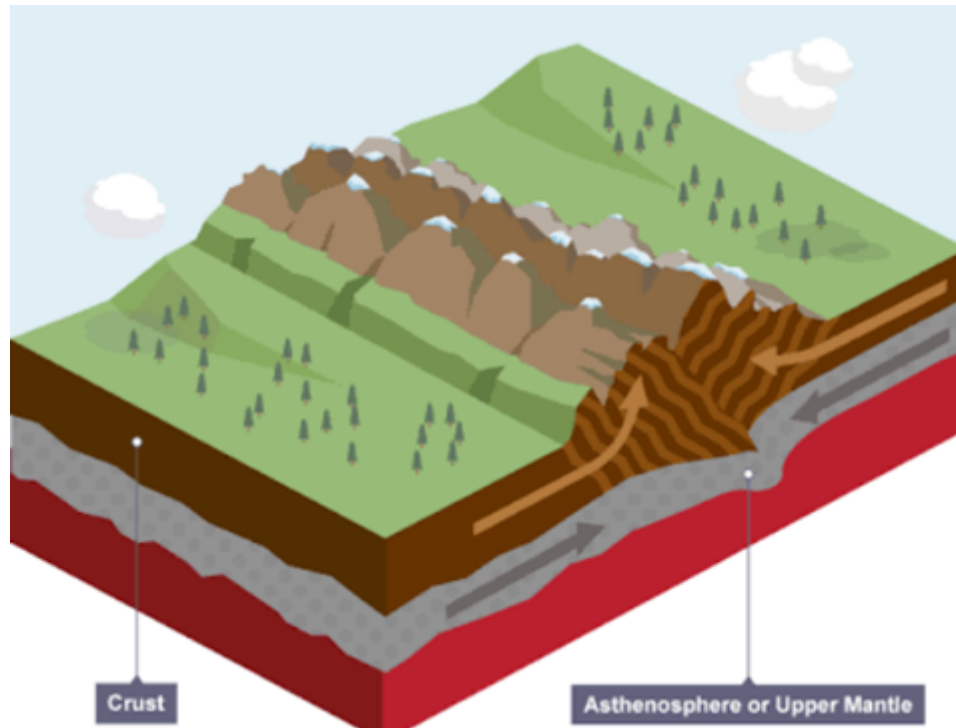
Answer

These forces act inside the earth and cannot be seen externally. These are produced by the contraction and expansion of the rocks due to the temperature in the depth under the earth's surface by the convection currents produced in the mantle present inside the earth.

- When internal molding forces act perpendicular to the earth's crust, one portion of the Earth's surface gets elevated and one portion gets depressed. This leads to the formation of continents, islands, plateaus, seas, etc.
- When internal moulding forces act horizontal to the earth's crust, waves are produced. As a result, folds, faults, and snaps are produced on the surface and

valley and mountain are formed. The best example is, Mount Everest (fold mountain).

In the given figure shows the formation of fold mountain by horizontal internal moulding forces.



18. Question

What is the meaning of erosion? Explain the important of any erosion forces in human life.

Answer

Erosion is the process by which the surface of the Earth gets worn down. Weathering and erosion are two different, but related processes. Weathering is the breakdown of materials through physical or chemical actions. Erosion occurs when weathered materials such as soil and rock fragments are carried away by wind, water or ice.

Important of any erosion forces in human life –

Air, water, and ice are the three substance found on the Earth which go on flowing from one place to another place in very large quantity. Their flow has the very large amount of energy. All the small and the big substance in the route of their flow break and move in the direction of the flow. Air, water, ice also plays an important role in the process of weathering. These substances get deposited at the places and form plain surface.