GEOGRAPHY

Chapter 2: INSIDE OUR EARTH

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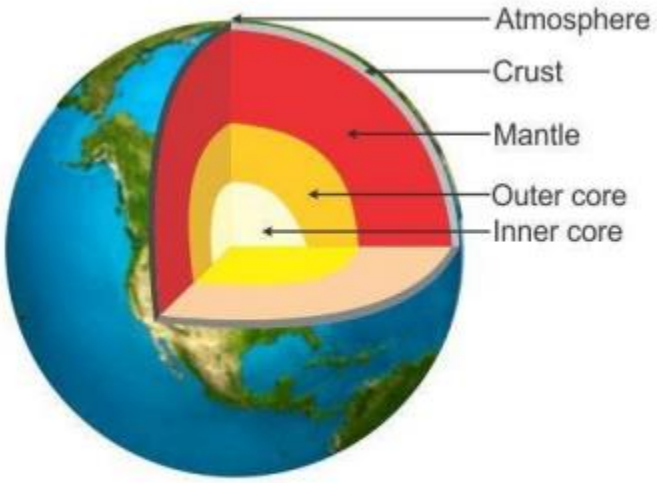
INSIDE OUR EARTH

Inside Our Earth

The Earth is made up of several layers one inside the other, just like an onion. Following are the main layers of the Earth:

Crust :

- The crust is the uppermost layer found on the surface of the Earth.
- It is the thinnest of all the layers and is about 35 km on the continental masses and only about 5 km on the ocean floor.
- Two main mineral constituents of the continental mass are silica and alumina. Therefore, continental crust is also called **sial.**
- The oceanic crust consists mainly of silica and alumina. Therefore, it is known as **sima.**



The interior structure of the Earth

Mantle :

- This layer of the Earth lies underneath the crust.
- It extends up to a depth of 2,900 km below the Earth's crust.

Core :

- It is innermost layer of the Earth with a radius of about 3500 km.
- It is called nife as it is made up of nickel and iron (ni-nickle; fe-ferrous or iron).
- There is very high temperature and pressure inside the Earth's core.

Rocks and Minerals

The crust of the Earth is made up of many rocks. The crust of the Earth is composed of solid natural mass called the rock. Rocks vary in shape, size and colour. There are mainly three types of rocks such as:

Igneous Rocks :

- The word igneous is derived from the Latin word which means 'fire'.
- When hot molten magma (lava) cools down, it becomes solid. Such rocks are known as igneous rocks. They are also called primary rocks.

- There are two types of igneous rocks, intrusive rocks and extrusive rocks.
- When the hot lava coming out of volcanoes cools down on the surface of the Earth, it forms extrusive igneous rocks. These rocks have a fine grained structure. Basalt is an example of this kind of rock.

A piece of basalt rock

- The Deccan plateau is made up of basalt rock.
- When the hot molten lava cools down under the surface of the Earth, it results in the formation of intrusive igneous rocks. Since, these rocks cool down slowly (due to high temperature under the surface of the Earth), they have large grains.
- Granite is an example of an intrusive igneous rock. Stones which are used for grinding and making paste and powder of spices and grains are made up of granite.

Sedimentary Rocks :

- When rocks are broken into small particles, these particles are called sediments. When these sediments are transported and deposited by various forces such as wind and water, they get compressed and form sedimentary rocks.
- Sandstone is an example of a sedimentary rock as it is made from the grains of sand.

Metamorphic Rocks :

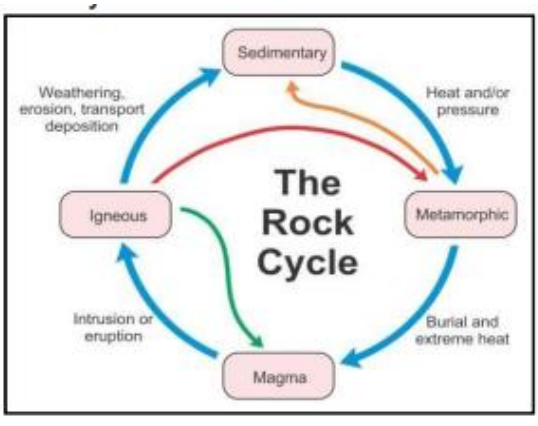
- Igneous and sedimentary rocks change into metamorphic rocks under intense heat and pressure.
- Clay and limestone are examples of metamorphic rocks as clay changes into slate and limestone changes into marble under extreme heat and pressure.

Marble is an example of a metamorphic rock

Rock Cycle :

The process of transformation of rocks from one form to another, in a cyclic manner, is known as the **rock cycle.** The rock cycle includes the following processes:

- Hot lava cools down to form igneous rocks.
- These igneous rocks are then broken down into small particles which are transported and then deposited. This results in the formation of sedimentary rocks.
- When these igneous and sedimentary rocks are



The Rock Cycle

subjected to great heat and pressure, they change into metamorphic rocks.

- These metamorphic rocks under heat and pressure breakdown and form hot lava.
- This hot magma cools down once more to form igneous rocks.

Uses of Rocks :

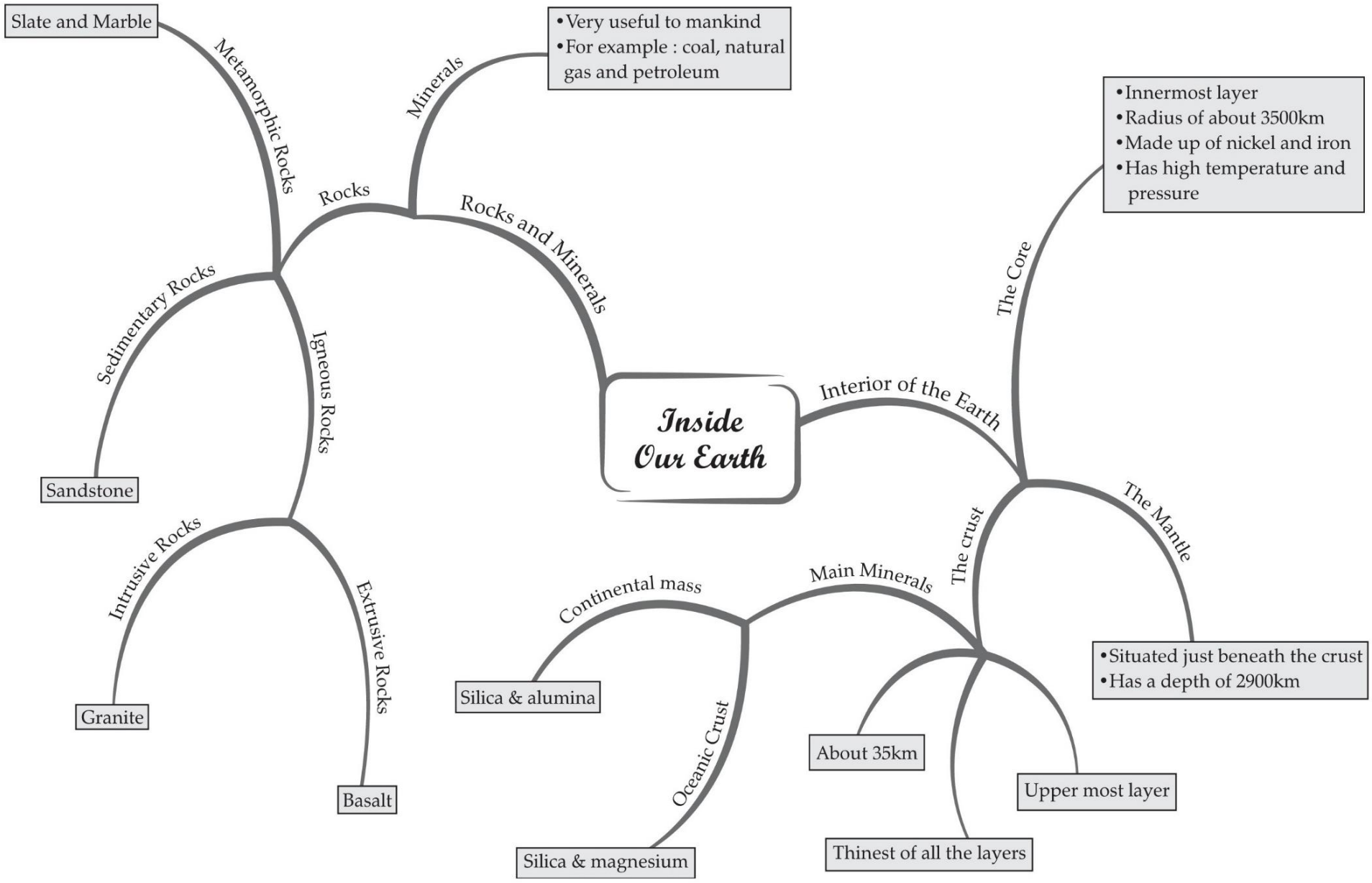
Rocks are very useful to us and are used for the following purposes:

- They are used in the making of roads and houses.
- Rocks are also used for building many structures. For example, the Red Fort is made up of red sandstone and the Taj Mahal is made up of granite.
- Some rocks are also made up of various minerals. For instance, coal and petroleum are used as fuels while iron, gold, aluminum etc. are used in various industries.

The Taj Mahal is made up of granite.

MIND MAP : LEARNING MADE SIMPLE

CHAPTER-5



Important Questions

➢ Multiple Choice Questions :

Question 1. The Deccan plateau is made up of:

(a) Clay

(b) Granite

(c) Basalt

(d) None of the above

Question 2. The depth of deepest mine in South Africa is about:

(a) 3km

(b) 4km

(c) 5 km

(d) 6 km

Question 3. The innermost layer is the core is made of:

(a) Nickel and Iron

(b) Silica and Alumina

(c) Silica and magnesium

(d) a and b both

Question 4. What is meaning of igneous?

(a) Air

(b) Water

(c) Lime

(d) Fire

Question 5. The radius of the earth is:

(a) 6000 km

(b) 6300 km

(c) 6371 km

(d) 6400 km

Question 6. Igneous and sedimentary rocks can change into:

(a) Intrusive igneous rocks

(b) Extrusive igneous rocks

(c) Metamorphic rocks

(d) Igneous rocks

Question 7. Depth of mantle layer of the earth is:

(a) 2900 km

(b) 3000 km

(c) 3100km

(d) 3200 km

Question 8. In search for oil engineers have dug a hole about:

(a) 3km

(b) 4km

(c) 5 km

(d) 6 km

Question 9. Igneous rocks are made when:

(a) The solid magma melts and it becomes solid

(b) The cool magma molten, it becomes solid

(c) The molten magma cools, it becomes solid

(d) Solid magma molten, it becomes solid

Question 10. Igneous rocks are called primary rocks because:

(a) All the other rocks are formed from the igneous rocks.

(b) These are important for human beings.

(c) These rocks produce all the ailments.

(d) None of the above.

Question 11. Gold, Petroleum and Coal are the examples of what?

(a) Rock

(b) Fossils

(c) Minerals

(d) Core

Question 12. What is the Radius of the earth?

(a) 2600 km

(b) 3671km

(c) 7163 km

(d) 6371 km

Question 13. What is the Innermost layer of the earth?

(a) Crust

(b) Mantle

(c) Core

(d) None of these

Question 14. Which rocks are known as primary rocks?

(a) Igneous rocks

(b) Sedimentary rocks

(c) Metamorphic rocks

(d) None of these

Question 15. Where is the deepest mine in the world located?

(a) South America

(b) South Africa

(c) South Australia

(d) South India

➢ Fill in the blanks :

1. Gold, petroleum and coal are examples of _____.
2. The Crust layer of the earth is _____.
3. Red Fort is made of red _____.
4. The Taj Mahal is made of white _____.
5. The remains of the dead plants and animals trapped in the layers of rocks are called ____.

➢ Write true (T) or false (F) :

1. There are two types of igneous rocks: intrusive rocks and extrusive rocks.
2. Rocks which contain fossils are metamorphic rocks.
3. Clay changes into slate and limestone into marble.
4. It is constantly undergoing changes inside and outside.
5. The earth, our homeland is a dynamic planet.

➢ Very Short Questions :

1. What is called the uppermost layer of the earth?

2. What is the special feature of this layer?
3. Name the main mineral constituent of the continental mass.
4. Name the constituents of the oceanic crust.
5. What is the radius of the core?
6. What are the main constituents of the core?
7. What is the earth's crust made of?
8. What are called igneous rocks?
9. What are fossils?
10. What happens when igneous and sedimentary rocks go under great heat and pressure?

➢ Short Questions :

1. What are the uses of rocks?
2. Define fossil.
3. What is mantle?
4. What do you know about the core?
5. What is the importance of outer crust to us?

➢ Long Questions :

1. What are minerals? How are they useful for mankind?
2. Mention various types of rocks.
3. What do you know about the interior of the earth?
4. Sedimentary rocks are formed from sediments. Give reason.
5. How are extrusive and intrusive rocks formed?

ANSWER KEY –

➢ Multiple Choice Answer :

1. (c) Basalt
2. (b) 4km
3. (a) Nickel and Iron
4. (d) Fire
5. (c) 6371 km
6. (c) Metamorphic rocks
7. (a) 2900 km

8. (d) 6 km
9. (c) The molten magma cools, it becomes solid
10. (a) All the other rocks are formed from the igneous rocks.
11. (b) Fossils
12. (d) 6371 km
13. (c) Core
14. (a) Igneous rocks
15. (b) South Africa

➢ Fill in the blanks :

1. minerals
2. thinnest layer
3. sandstone
4. marble
5. fossils

➢ Write true (T) or false (F) :

1. True
2. False
3. True
4. True
5. True

➢ Very Short Answer :

1. It is called the crust.
2. It is the thinnest of all the layers.
3. Silica and alumina.
4. Silica and magnesium.
5. The radius of the core is about 3500 km.
6. The main constituents of the core are nickel and iron. It is usually known as nife (ni – nickel and fe – ferrous i.e. iron).
7. It is made up of different types of rocks.
8. When the molten magma cools, it becomes solid. Rocks formed in this way are called igneous rocks.

9. The remains of the dead plant and animals trapped in the layers of rocks are called fossils.

10. They change into metamorphic rocks.

➢ Short Answer :

1. Rocks are very useful to man, used for making roads, houses and building. Rocks are the source of precious metals like gold, silver, and platinum. We use stone in many games. For example, seven stone, top scotch, five stones.

2. The remains of dead plants and animal beneath the layer of rocks are called fossils.

3. It is an intermediate layer lies between the crust and the core of the earth .Its avg thickness is about 29,00 km. It is believed to consist of solid ultra basic rocks, rich in iron and magnesium.

4. The innermost part of the earth is known as the core. The thickness of whole layer comprising the outer and the inner core is 4671 km. The outer core starts at the depth of 2900 km, rich in iron and nickel.

5. The solidified outer crust of the earth is of great importance to us .This thin crust just like the skin of an apple, forms the stage on which human life and civilization have developed. It has the valuable soil and gives us most of our minerals.

➢ Long Answer :

1. Minerals are naturally occurring substances which have certain physical properties and definite chemical composition.

   Minerals are very useful for mankind. Some minerals like coal, natural gas and petroleum are used as fuels. They are also used in industries. Iron, aluminium, gold, uranium etc. are used in medicine, in Fertilizers etc.

2. **Rocks are of the three types:**

   i. **Igneous rocks:** When the molten magma cools, it becomes solid. Rocks formed in this way are called igneous rocks. They are also called primary rocks. They are of two types—intrusive rocks and extrusive rocks.

      - **Extrusive rocks:** When molten lava comes on the earth's surface, it rapidly cools down and becomes solid. Rocks formed in this way on the crust Eire called extrusive igneous rocks. For example, basalt.
      - **Intrusive rocks:** Sometimes the molten magma cools down deep inside the earth's crust. Solid rocks so formed are called intrusive igneous rocks. Since they cool down slowly they form large grains. For example, granite.

   ii. **Sedimentary rocks:** Small fragments of rocks are called sediments. These sediments are transported and deposited by wind, water, etc. These loose sediments are compressed and hardened to form sedimentary rocks. For example,

sandstone is made from grains of sand.

iii. **Metamorphic rocks:** When igneous and sedimentary rocks Eire subjected to great heat and pressure they change into metamorphic rocks. For example, clay changes into slate and limestone into marble.

3. Our earth is made up of several concentric layers with one inside another. These layers are three in number – crust, mantle and core.

i. **Crust:** It is the uppermost layer over the earth's surface. It is the thinnest of all the layers. It is about 35 km on the continential masses and only 5 km on the ocean floors.

The continental masses are made up of silica and alumina. It is thus called sial (si-silica and al-alumina). The oceanic crust mainly consists of silica and magnesium. It is thus called sima (si-silica and ma-magnesium).

ii. **Mantle:** It is just beneath the crust. It extends up to a depth of 2900 km below the crust

iii. **Core:** It is the innermost layer. Its radius is about 3500 km. It is mainly made up of nickel and iron and is known as nife (ni-nickel and fe-ferrous, Le., iron). The central core has very high temperature and pressure.

4. Rocks roll down, crack, and hit each other and are broken down into small fragments. These smaller particles are called sediments. These sediments are transported and deposited by wind, water, etc. These loose sediments are compressed and hardened to form layers of rocks. These types of rocks are called sedimentary rocks.

5. **Extrusive rock:** When molten lava comes on the earth's surface, it rapidly cools down and becomes solid. Rocks formed in such a way on the crust are called extrusive igneous rocks. They have a very fine grained structure.

Intrusive rocks: Sometimes the molten magma cools down deep inside the earth's crust. Solid rocks so formed are called intrusive igneous.