

Geography Notes

Chapter – 4

Weathering and Soil Formation

Q.1 Define the following

1. **Weathering** – The wearing away or breaking down of rocks by agents present in the atmosphere like temperature, moisture and frost is known as weathering.
2. **Erosion** – Erosion is the wearing away of rocks by agents on the surface of the earth like running water, moving ice, winds and waves.
3. **Denudation** – The process of weathering and erosion are called denudation.
4. **Soil** – Thin upper surface layer of the earth.
5. **Physical weathering** – It is physical breakdown of rocks into smaller pieces.
6. **Rock cycle** – The Rock cycle is the process by which rocks of one kind change into rocks of another kind.

Q.2 Match the following

Column A

Secondary Rocks

Associated with minerals

Frost

Plants

Primary Rocks

Column B

Sedimentary Rocks

Metamorphic Rock

Physical weathering

Biological weathering

Igneous Rocks

Q.3 Answer in brief

1. Define Rocks.

Answer - A Rock is a naturally occurring solid substance that is normally made of minerals.

2. Name the three types of rocks.

Answer – The three types of rocks are :

- Sedimentary Rocks
- Igneous Rocks
- Metamorphic Rocks

3. Define Magma.

Answer – Due to high temperature in the interior of the earth the rocks are in molten state and this molten material is called magma.

4. What are primary rocks ?

Answer – Igneous rocks are formed through deposition and solidification of volcano material. Since they were the first rocks to be formed so Igneous rocks are also known as primary rocks.

5. Give two examples of sedimentary rocks.

Answer - Limestone and sandstone are two example of sedimentary rocks.

6. Name the type of Rock where fossils are found.

Answer – Sedimentary Rocks are the type of Rock where fossils are found.

7. Name the type of rocks which are considered good for using as building material.

Answer – Igneous and Metamorphic are types of Rock good for using as building material.

8. Define weathering.

Answer - The wearing away or breaking down of Rocks by agent present in the atmosphere live temperature, moisture and frost is called weathering.

9. Name the two agents of chemical weathering.

Answer – Air and what are the two agents of chemical weathering.

10. Define soil.

Answer – Soil is the thin opposite surface layer on the earth comprising mineral particles formed by the breaking down of rocks, weathered mineral particles, decaying organic matter, living organisms, water and air.

11. Define Afforestation.

Answer – Afforestation is the best way to conserve soil to increase area under forest. Indiscriminate felling of trees should be stopped and efforts should be made to plant trees in new areas.

12. Suggest two ways for soil conservation.

Answer – Afforestation and Construction of Dams.

Q.4 Give Reasons

1. Sedimentary rocks are called secondary rocks.

Answer – They are also called secondary or derived rocks as they are derived from other rocks.

2. Igneous rocks are also known as primary rocks.

Answer – Igneous rocks are formed through deposition and solidification of volcanic material and they were the first rocks to be form so igneous rocks are also known as primary rocks.

3. Sedimentary Rocks are called stratified rocks.

Answer – Because sedimentary rocks are found in layers so they are called as stratified rocks.

4. Metamorphic Rocks are considered good for using as building stone.

Answer – These rocks are very hard and have closed banded structure so they are considered good for using as a building stone.

Q.5 Answer in detail

1. Write the main characteristics of sedimentary rocks.

Answer – The main characteristics of sedimentary rocks are :

- Sedimentary rocks are found in layers so they are known as stratified rocks.
- Most of these rocks contain fossils.
- Sedimentary rocks have force in which water can easily enter.
- These do not have any type of crystals.
- These rocks are prone to weathering because these are soft.

2. State any three characteristics of metamorphic rocks.

Answer – The three features of metamorphic rocks are :

- These rocks are very hard and have close banded structure.
- Metamorphic rocks are formed when igneous or sedimentary rocks are transformed by the action of intense heat and pressure.
- The formation of metamorphic rocks take place over a long period of time.

3. Write the main characteristics of igneous rocks.

Answer – The main characteristics of igneous rocks are :

- These rocks are hard, massive and compact.
- These rocks are formed by the cooling and hardening of the earth material.
- All igneous rocks are crystalline in nature and their size depends upon the rate of cooling of Lava and magma.
- Igneous rocks do not have layers and do not contain fossils.
- These rocks are not easily weathered as there are no pores so water cannot easily enter.

4. Explain the process of transformation of rocks from one to another.

Answer – One type of Rock changes to another type under certain conditions in a cyclic manner. This process of transformation of the rock from one to another is

known as Rock cycle. When the molten magma cools; it solidifies to become igneous rock.

These igneous rocks are broken down into small particles that are transported and deposited to form sedimentary rocks.

When the igneous and sedimentary rocks are subjected to heat and pressure they changed into metamorphic rocks. The metamorphic rocks which are still under great heat and pressure meltdown to form molten magma.

This molten magma again can cool down and solidify to igneous rocks.

5. Explain physical weathering.

Answer – Physical weathering refers to mechanical disintegration of rocks without any changes in their chemical composition. Temperature and Frost are two main factors which are responsible for physical weathering.

- **Temperature** – In areas of extreme range of temperature, rock's surface is exposed daily to intense heating during the day and intense cooling during the night.
- **Frost** – In cooler regions water that fills the cracks in rocks, freezes and turns to ice and expands at night. During the day the ice melts and water seeps for the into the cracks. At night the water again freezes, widening the cracks. This continuous widening of the cracks leads to disintegration of rocks.

6. Explain chemical weathering.

Answer – The decomposition and disintegration of rocks due to chemical reaction is known as chemical weathering. Chemical weathering takes place almost in all type of rocks. Chemical reaction breaks down the bonds holding The Rocks together causing them to fall apart forming smaller and smaller pieces. Air and water are the main agents of chemical weathering. Some rocks such as chalk and limestone are more prone to chemical weathering and other rocks such as granite.

7. Explain the process of soil formation.

Answer – Formation of soil can be divided into three stages :

- **Stage 1** :- Soil formation begins with the breakdown of rocks at the surface and the process of breaking down of rock is known as weathering. Weathering may be by chemical or mechanical means.
 - **Stage 2** :- Due to weathering and organic layer develops. Bacteria and other micro organic materials form humus.
 - **Stage 3** :- Humus helps loose soil grains to stay together and also makes the soil more fertile.
- 8. Analyse the importance of soil.**

Answer – Importance of soil :

- Soil is a vital part of the natural environment. It is just as important as plants, animals, rocks landforms and rivers.
 - Soils provide the medium for plant growth and influences the distribution of plant species and provides habitat for a wide range of organisms.
 - It controls the flow of water and chemical substances between the atmosphere and the earth and acts as both a source and store for gases like Oxygen and Carbon dioxide in the atmosphere.
 - Soils not only reflect natural processes but also record human activities both at present and in the past.
- 9. Explain any three methods of soil conservation.**

Answer – Soil conservation includes all those measures which help in protecting the soil from erosion and exhaustion. The methods to conserve soil are :

- **Afforestation** – Afforestation is the best way to conserve soil to increase area under forest. Indiscriminate felling of trees should be stopped and efforts should be made to plant trees in new area.
- **Restricted grazing of animals** – Animals should be moved over different festivals so as to avoid erosion of soil. Fodder crops should be grown in large quantity.
- **Constructing Dams** – Much of the soil erosion by river floods which can be avoided by constructing dams across the rivers. This check the speed of water and save soil from erosion.

Q.6 Assignment – Draw the soil profile and write all the stages of soil formation.