

Chapter-9**A. Answer the following questions:-**

1. Define weathering? How does it occur?

Ans.1 Weathering describes the breaking down or dissolving of rocks and minerals on the surface of the earth. Weathering happens to processes or sources in the environment including events like wind and objects like that due to plants.

2. Name the three types of weathering.

Ans.2 The three types of weathering are physical, chemical and biological.

3. What do you understand by denudation?

Ans.3 Denudation:-A general term that refers to all processes that cause degradation of landscape, weathering, mass movement, erosion and transport.

4. How does frost cause weathering of rocks?

Ans.4 Frost is most common agent of weathering in the temperate regions. When water enters the rocks and turns into ice, the volume increases. During the day the ice thaws and the water enters deep into rocks. When temperature drops during the night, the water again freezes, whitening the crack. This repeated freezing and thawing results in breaking up rocks.

5. In what ways does atmosphere assist in weathering?

Ans.5 They assist in weathering in the following ways:-

Temperature-When the diurnal range of temperature is extremely high, the rocks get disintegrated into fragments. For example when the temperature during nights are extremely low, the **water** which gets percolated into the cracks of the rocks, freezes to form **ice**.

6. What is meant by chemical weathering?

Ans.6 The decomposition of rocks is called chemical weathering. It involves the breaking down of rocks by altering or dissolving the rock minerals due to chemical action or changes.

7. How does biological weathering take place?

Ans.7 Biological weathering combines both mechanical and chemical weathering and is caused by plants or animals. As plants roots grow deeper to find sources of water they push through cracks in rocks,

applying force to push them apart as the roots grow the cracks become larger and break the rocks into smaller pieces.

8. What do you understand by mechanical weathering? How does it take place?

Ans.8 Mechanical weathering is the process of breaking big rocks into little ones. This process usually happens near the surface of the planet. That process occurs when the water inside of rocks freezes and expands. That expansion cracks the rocks from the inside and eventually breaks them apart.

9. How does composition of rock affect mechanical weathering?

Ans.9 The composition of rocks and climate also affect rates of weathering. The rate at which a rock weathers is affected by the amount of the rock's surface that is exposed to chemical weathering processes. As shown below, when a rock is broken into smaller pieces by mechanical weathering, more of its surfaces are exposed.

10. Name the factors responsible for chemical weathering.

Ans.10 There are many causes of chemical weathering, I will list and describe them.

Water- This is the most important cause of chemical weathering. The water weathers the rock by dissolving it into the water.

Oxygen- This is also an important cause of chemical weathering. Do you remember when you were a little kid and you left your bike outside while it was raining and it rusted? Well, iron combines with oxygen in the presence of water. This process is called oxidation. The outcome is rust. Rock that contains iron also oxidizes.

Carbon Dioxide- This dissolves in rainwater, the result a weak acid called carbonic acid, this outcome easily weathers marble and limestone.

Living Organisms- That's right, even living things can weather rocks. What kinds of living things you ask? Yes, trees. When a seed sprouts its roots push into cracks in rocks. As the roots grow they start to produce a weak acid that slowly dissolves the rock around the root.

Acid Rain- The burning of various chemicals for energy can pollute the air with sulfur, carbon, and nitrogen. When these chemicals mix with water vapor to form acid rain, then the acid rain mixes with the raindrops to form acid rain. Acid rain causes very rapid chemical weathering.

11. What is carbonation? Give two examples of the landforms formed by carbonation?

Ans.11 Carbonation:-Carbonation occurs when carbon dioxide from moisture in the air reacts with carbonate minerals found in rock. This creates carbonic acid which breaks down rock. Solution occurs because many minerals are soluble and are removed when they come into contact with water.

The reaction results in calcium bicarbonate which is highly soluble and gets easily washed away in solution as it flows through rocks or seeps below the surface. Weathering of limestone region in this way give rise to various landforms like stalactites and stalagmites.

12. How does chemical weathering take place?

Ans.12 Chemical weathering is caused by rain water reacting with the mineral grains in rocks to form new minerals (clays) and soluble salts. These reactions occur particularly when the water is slightly acidic.

B. Define the following terms:-

1. Oxidation:-When oxygen in the air and water reacts with minerals in the rock oxidation takes place, e.g., most rocks contain a certain amount of iron, which when comes in contact with air and water containing oxygen changes into iron oxide. Iron oxide crumbles easily and is far more easily eroded than original iron. As it is removed the rocks are weakened and thus decomposed.

2. Solution:-When rainwater reacts with the minerals present in the rocks it dissolves them. When it seeps below the ground through joints, gaps and crevices, it further dissolves the soluble minerals by forming a solution and separates the insoluble minerals, causing decomposition of rocks, e.g., rock salt and gypsum are examples of minerals that are separated by solution.

3. Exfoliation:-The changes in temperature during summer and winter and in case of arid region, during day and night cause expansion and contraction in the rock surfaces. This causes the rocks to break up or peel off.

4. Weathering:-Weathering describes the breaking down or dissolving of rocks and minerals on the surface of the earth.

5. Denudation:-A general term that refers to all processes that cause degradation of landscape, weathering mass moment, erosion and transport.

C. Distinguish between following pairs:-

1. Chemical and Mechanical Weathering:-Chemical weathering involves chemicals for the process of rock transformation, while mechanical are more of external participation that includes pressure.

Mechanical weathering on the other hand involves external factors for rocks to be broken down into smaller pieces.

2. Weathering and Denudation:-Weathering is a process in which rocks are divided into or disintegrated or decomposed at or near the surface of the earth, into small fragments. Hence weathering is only one process of denudation and we can say that denudation is a blend of various processes like Weathering, Erosion, and mass wasting.