Slow Natural Changes: Weathering and Erosion

A. Fill in the Blanks

Complete each sentence with the correct term.

1. The process of breaking down rocks without changing their chemical composition is called _____ weathering.

2. The dropping off of sediments in a new location is called _____.

3. The movement of weathered material by agents like water, wind, and ice is known as _____.

4. Rusting is a common example of _____ weathering.

5. A large mass of ice that moves slowly over land, carving the landscape as it goes, is a _____.

B. Match the Following;

Match the term in Column A with the best description in Column B.

Column A	Column B
1. Weathering	A. The force that pulls rock and soil down a slope.
2. Erosion	B. The process where rocks are worn down by scraping or grinding.
3. Deposition	C. The breakdown of rock into smaller pieces (sediment).
4. Frost Wedging	D. The chemical reaction of oxygen with minerals, like rusting.
5. Abrasion	E. The movement and transportation of sediment.
6. Oxidation	F. The process of water freezing and expanding in rock cracks.
7. Gravity	G. The dropping or settling of sediment in a new location.

C. Practice Problems

These questions require you to explain concepts in more detail.

1. Explain the process of frost wedging (or ice wedging).
2. Why does a fast-moving river cause more erosion than a slow-moving river?
3. Give a real-world example of biological weathering.
4. What is abrasion? Name two agents that can cause abrasion.
5. How does acid rain contribute to the chemical weathering of rocks like limestone?
6. What is the role of gravity in the process of erosion?
7. How do large glaciers cause erosion as they move?
8. Describe the process of oxidation. What visible change does it cause in iron-rich rocks?
9. Why are rocks and pebbles found in a riverbed often smooth and rounded?
10. What is sediment, and where does it come from?

D. Warm-up Questions

Answer the following basic questions to get your brain warmed up!

1. What is the general term for the process that breaks down rocks on Earth's surface?
2. What is the term for the process that moves broken rock and soil from one place to another?
3. Name one natural force that can cause erosion.
4. Is a rock turning reddish-brown due to rust an example of mechanical or chemical weathering?
5. In one sentence, what is the main difference between weathering and erosion?

E. Challenge Questions

Think critically to answer these more difficult questions.

1. Why would a statue made of limestone weather faster in a polluted, industrial city than an identical statue made of granite located in a remote mountain forest?
2. A large boulder sits on a flat plain. Over thousands of years, it breaks into smaller pieces, but the pieces remain in the same spot around the original boulder's location. Has erosion occurred? Explain your reasoning.
3. How can the same agent, like water, be responsible for both weathering and erosion? Provide a specific example for each process.

4. Imagine two identical mountains. One is in a hot, dry desert climate. The other is in a temperate climate with cold winters and wet summers. Which mountain would likely experience more mechanical weathering? Which would experience more chemical weathering? Justify your answers.

5. Describe the complete journey of a small piece of rock from the top of a mountain until it becomes part of a delta at a river's mouth. Use the terms weathering, erosion, and deposition in your description.

F. Word Problems & Application

Apply your knowledge to these real-world scenarios.

1. A farmer notices that the soil on his sloped field is getting thinner every year, and a nearby stream is becoming muddy after it rains. What process is causing this? Suggest one thing the farmer could do to slow it down.

2. The Grand Canyon is a massive canyon carved deep into the Earth. What was the primary agent of erosion responsible for creating it over millions of years?

3. A coastal town is worried because its sandy beach is getting smaller each year. What agent of erosion is likely responsible for carrying the sand away?

4. In a desert, you see a rock formation shaped like a mushroom, with a wide top and a very thin base. How could wind erosion have created this shape?

5. After a week of very heavy rain, a large section of a steep, soil-covered hillside suddenly slides down onto a road below. What is this event called, and what is the main force driving it?

G. True or False

1. Erosion is the process of breaking rocks into smaller pieces. _____

2. Plants and animals can only cause erosion, not weathering. _____

3. A slow-moving river carries more sediment than a fast-moving river. _____

4. Wind is a more powerful agent of erosion in a dense forest than in a dry desert. _____

5. Chemical weathering changes the mineral composition of a rock. _____