Name _____

Erosion & Soil Conservation

I. Weathering

1. **Define the term mechanical weathering.**

   Mechanical Weathering – weathering in which rocks are broken into smaller pieces, but no chemical change occurs

2. **List three types of mechanical weathering.**

   1. Abrasion (particle suspension in air/water) 2. Ice-Wedging 3. Plants 4. Heating/Cooling

3. **Define the term chemical weathering.**

   Chemical Weathering – weathering in which rock is broken down because of chemical reactions in the environment

   Oxidation – substance exposed to oxygen + water → produces rust

4. **What forms when carbon dioxide reacts with rainwater?**

   Carbonic Acid

5. **Define the term hydrolysis.**

   Hydrolysis – change in the composition of minerals when they react chemically with water Ex Aluminum ores

6. **How does acid precipitation form?**

   - When fossil fuels are burned, sulfur dioxide + nitrogen oxides are released + react with water in clouds (sulfuric acid, nitric acid)

   Clean Air Act – 1970

7. **Why have some companies installed scrubbers in their factories?**

   - Remove sulfur dioxide before it reaches the air

III. Erosion

1. **Define the term erosion.**

   Erosion – removal + transportation of weathered + non-weathered materials

2. **What is the sustainable rate of erosion in Iowa according to the Agriculture Department?**

   5.0 tons per acre per year

3. **What is the actual average soil erosion in Iowa?**

   5.2 tons per acre per year

4. **The most effective form of erosion is caused by water.**

   Circle One : True False

   Spragueville Bridge

5. **How does running water cause erosion?**

   1. Water scrapes riverbanks + bottoms
   2. Collects sediments

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6. **Define the term deposition.**

Deposition – Sediment moved by erosion is dropped + comes to a rest (Deltas, Alluvial Fans)

7. **How do glaciers cause erosion?**

Glacial Plucking, Glacial Grooving

Large mass of ice carves the surface it "rests" on

8. **How does abrasion cause wind erosion?**

Natural form of sandblasting as fine particles blow through the air

Sphinx, pyramids

9. **Match the correct type of mass movement with the correct definition.**

1. B.	Creep	A. Loose rocks or soil suddenly falling down a slope. (utility poles, fences)
2. A.	Landslides	B. Slow movement of sediments down a hill. (Bellevue State Park)
3. D.	Mudflows	C. Loose materials slip down a slope; leaves a curved scar. (Riverbanks)
4. C.	Slump	D. Thick mixture of sediments and water flow down a hill.

III. Soil Conservation

1. **Identify how each soil conservation technique is used to reduce erosion and its effects.**

Contour Ploughing - Crops oriented following contour lines of farmland areas (left to right at constant altitude)

Effects - Reduces runoff; Greater soil retention

Crop Rotation - Cash crops rotated with legumes, turnip, + other species (blankets soil year-round)

Effects - "green manure" - replenishes nitrogen

No-Till Farming - farming methods that mimic the biology of barren lands (Plowing/tilling degrades soils)

Effects - Increase soil organic matter

Perimeter Runoff Control - Trees, shrubs, or ground cover planted around edge of cropland

Effects - Decreases surface runoff / Slows water infiltration

Terrace Farming - Planting nearly levels areas in a hillside area (each terrace step is higher than the previous step)

Effects - Protects soils from erosion → STOPS erosion

Windbreaks - Dense row of trees at the windward side of a field (Evergreen species = year-round protection)

Effects - Reduces wind erosion, drifting snow