

The Nature of Soil

► Part One: Matching

Instructions: Match the term with the correct definition.

- a. soil aeration
- b. tilth
- c. organic matter
- d. symbiosis
- e. pore space

- ____ 1. Partially decayed plant and animal matter
- ____ 2. The exchange of gases between the soil and the atmosphere
- ____ 3. The living together of unlike organisms
- ____ 4. The space occupied by air and water
- ____ 5. The ease with which soil can be worked

► Part Two: Multiple Choice

Instructions: Write the letter of the correct answer.

- ____ 1. What resource is utilized in the form of organic matter in the soil?
 - a. air
 - b. carbon
 - c. temperature
 - d. water
- ____ 2. Which soil component accounts for about 5 percent of the soil?
 - a. air
 - b. mineral matter
 - c. organic matter
 - d. water
- ____ 3. What effect do organisms have on soil?
 - a. Soil organisms actually have little effect on soil.
 - b. Their activities increase the available mineral matter.
 - c. Their activities enhance drainage and improve air exchange.
 - d. They deplete the soil of essential elements for plant growth.

Soil Formation

► Part One: Matching

Instructions: Match the term with the correct definition.

- | | |
|------------------------|----------------------|
| a. glacial till | f. timber soil |
| b. alluvium | g. loess |
| c. topography | h. native vegetation |
| d. prairie soil | i. climate |
| e. physical weathering | j. outwash |

- ____ 1. Water-borne parent material deposited on bottomlands
- ____ 2. Soil in the area of native vegetation that has less organic-matter accumulation and is lighter in color when tilled
- ____ 3. Plants that originally grew on the land and contributed to the development of the soil
- ____ 4. The effects of climatic factors that act to break down mineral matter
- ____ 5. Parent material that was physically moved and deposited by the glacier itself
- ____ 6. Soil in the area of native vegetation that has a dark and deep surface layer
- ____ 7. The slope characteristics of a soil
- ____ 8. Parent material of glacial origin that was deposited by wind
- ____ 9. Materials carried away and deposited by melted glacial waters
- ____ 10. Freezing, thawing, rainfall, wind, and sunlight

► Part Two: Multiple Choice

Instructions: Write the letter of the correct answer.

- ____ 1. Changes that affect the elemental makeup of rock and help to break it down are referred to as ____.
- a. chemical weathering
 - b. developing
 - c. glaciation
 - d. physical weathering
- ____ 2. What is a large, long-lasting river of ice that is formed on land and moves in response to gravity?
- a. alluvium
 - b. glacier
 - c. loess
 - d. outwash

- _____ 3. Which type of soil occurs where formerly shallow ponds supported swamp vegetation?
- sandy
 - organic
 - prairie
 - timber
- _____ 4. Which living organisms have the greatest effect on soil formation?
- ants
 - earthworms
 - burrowing mammals
 - plants
- _____ 5. What gives a soil a dark color and is found primarily in the surface layer of the soil?
- alluvium
 - loess
 - organic matter
 - sand

► **Part Three: Short Answer**

Instructions: Complete the following.

- Weathering causes soils to develop, mature, and age. Describe what is taking place in soil and/or how the soil is changing as it does each of the following:
 - Develop—
 - Mature—
 - Age—
- What three elements of climate act to break down rock and minerals during the development of soils?
- Explain why soils in northern Illinois are generally considered younger and more productive than those in southern Illinois.
- Soil formation and development can be attributed to five primary factors. Name three of those factors.

Soil Profile

► Part One: Matching

Instructions: Match the term with the correct definition.

- | | |
|------------------|---------------|
| a. soil profile | f. subsoil |
| b. translocation | g. eluviation |
| c. substratum | h. topsoil |
| d. solum | i. losses |
| e. illuviation | j. additions |

- ____ 1. Area where most plant roots grow
- ____ 2. Horizon that is usually composed of the parent material of the soil and that has had little soil-forming activity
- ____ 3. A vertical cross section of the soil
- ____ 4. The process of materials moving within the soil horizons
- ____ 5. The accumulation of chemicals, clay, iron, and other materials in the B horizon
- ____ 6. Area often referred to the B horizon
- ____ 7. Materials such as fallen leaves, windblown dust, or chemicals from air pollution that accumulate in the soil
- ____ 8. Materials that leach or erode from the soil
- ____ 9. The loss of clay, iron, and other materials over time due to leaching
- ____ 10. The surface layer where organic matter accumulates

► Part Two: Multiple Choice

Instructions: Write the letter of the correct answer.

- ____ 1. Organic matter and minerals being altered in the soil are called ____.
- a. additions
 - b. losses
 - c. translocations
 - d. transformations
- ____ 2. What is a term sometimes used for the A horizon?
- a. illuviation
 - b. subsoil
 - c. substratum
 - d. topsoil

- _____ 3. What is the primary composition of the O horizon?
- a. clay
 - b. iron
 - c. organic matter
 - d. silt
- _____ 4. Which horizon is underlying bedrock, such as limestone, sandstone, or granite?
- a. O
 - b. B
 - c. C
 - d. R
- _____ 5. Which horizon is best suited for growth of plant roots?
- a. A
 - b. B
 - c. C
 - d. R

► **Part Three: Short Answer**

Instructions: Complete the following.

1. Draw a soil profile and label each of the three major horizons.
2. Explain how losses might occur that will cause a change in the soil profile.

3. Explain how the A horizon is different from the C horizon in terms of color, content, and texture.