

# 1999 Missouri Envirothon

## Soils Station

### Soils

S1. List 3 of the 5 factors of soil formation

Parent material, topography, climate, living organisms, time

S2. The particle size distribution of the topsoil horizon (Ap) of this soil profile is most likely:

- a. 60% sand, 30% silt and 10% clay
- b. 10% sand, 30% silt and 60% clay
- c. 40% sand, 40% silt and 40% clay
- d. 30% sand, 60% silt and 10% clay

Using the Textural Triangle, what is the texture of the above horizon?

Silt loam

S3. The slope of the site falls within what range?

- A. 0 to 2 percent
- B. 2 to 5 percent
- C. 5 to 9 percent

S4. Gray colors indicate:

- A. Low available water capacity
- B. A saturated soil condition
- C. Low organic matter content

S5. An appropriate horizon designation for a plowed surface horizon is:

- A. AE
- B. A1
- C. Ap
- D. AB

S6. An appropriate horizon designation for the subsoil:

- A. A
- B. B
- C. C
- D. R

S7. Using the Textural Triangle provided, what would be the texture of a soil sample with 40% sand, 40% silt and 20% clay?

**Loam**

S8. What horizon is missing in this sequence: Ap, E, Bt2, 2C?

- A. D horizon
- B. 3C horizon
- C. Bt1 horizon**
- D. E2 horizon

S9. There are several parent materials you might expect to find on upland settings in this part of Missouri. Name two of them.

**Loess, Glacial Till, Residuum**

S10. Explain what differences you might observe when comparing an A horizon and a B horizon within the same soil profile.

- A – darker color, less clay**
- B – lighter color, more clay**

## Aquatics

A1. What are the relative volumes of mineral matter, organic matter, air and water in a typical A horizon.

- A. 80% mineral matter, 10% organic matter, 5% air and 5% water
- B. 30% mineral matter, 40% organic matter, 20% air and 10% water
- C. 25% mineral matter, 25% organic matter, 25% air and 25% water
- D. 45% mineral matter, 5% organic matter, 25% air and 25% water

A2. Which of the following soil properties would not be a limitation to pond construction

- A. High gravel content
- B. High sand content
- C. High water table level
- D. Shallow bedrock depth

A3. Using the Textural Triangle provided, what would be the texture of a soil sample with 10% sand, 70% silt and 20% clay?

Silt loam

A4. Soil Permeability is a measurement of how fast water moves through the soil. This soil property is typically measured in what units?

- A. Inches per hour
- B. Cm per foot
- C. Inches per inch
- D. Feet per mile

A5. Available water capacity is the amount of water the soil holds that is available to plants. This property is typically measured in what units?

- A. Inches per hour
- B. Cm per foot
- C. Inches per inch
- D. Feet per mile

## Wildlife

W1. Soil texture of a mineral soil is determined by the proportional percentages of what three particle sizes?

Sand, silt and clay

W2. Using the Textural Triangle provided, what would be the texture of a soil sample with 30% sand, 20% silt and 50% clay

Clay

W3. The soil on this site most likely formed in which one of the following parent materials?

- A. Alluvium
- B. Volcanic Ash
- C. Colluvium
- D. Loess

W4. List three soil properties that should be considered when developing wetland wildlife habitat.

Permeability, depth, slope, landscape position, drainage, texture

W5. Alluvium refers to soil material that has been deposited by what source?

- A. Water
- B. Wind
- C. Glacial Ice
- D. Gravity

## **Forestry**

F1. Which type of soil structure would be an indicator of a compacted condition?

- A. Prismatic
- B. Granular
- C. Platy
- D. Blocky

F2. Using the Textural Triangle provided, what would be the texture of a soil sample with 60% sand, 10% silt and 30% clay?

Sandy clay loam

F3. A topsoil with dark brown or black colors indicates that the soil formed under which type of vegetation?

Grassland

F4. List four of the master soil horizons.

O, A, B, C, R

F5. The topsoil of a soil formed under forest vegetation is usually:

- A. Mottled
- B. Light colored
- C. Dark colored
- D. Saturated

F6. What is the aspect of this site?

- A. North
- B. Northeast
- C. Northwest
- D. East