

2012 FINAL SOILS – AREA 2 Envirothon Questions

*****YOU CAN write or mark on this single sheet of paper, questions 1-6. Then transfer your answers to the correct SOILS scantron sheet for your team.**

Questions 1-6 to be answered at the soil pit:

1. Soil scientists categorize soils by drainage classes. What is the drainage class of the soil at this pit?
 - A) Well drained
 - B) Moderately well drained
 - C) Somewhat poorly drained
 - D) Poorly drained
2. Redoximorphic features, sometimes referred to as mottling, are an indicator of a soil's seasonal high water table. Where is the seasonal high water table for the soil in the pit?
 - A) Between 0 and 10 inches
 - B) Between 10 and 20 inches
 - C) Between 20 and 30 inches
 - D) Below the pit excavation
3. Soil structure develops as the soil is formed from the parent material. What type of structure does the soil in the pit have between 14 and 24 inches?
 - A) Granular
 - B) Subangular blocky
 - C) Platy
 - D) Massive
4. Slope percentage influences water flow velocities and therefore erosion potential. Estimate the slope percentage at this site.
 - A) Flat, 0 to 2 percent
 - B) Rolling, 2 to 6 percent
 - C) Moderately steep, 6 to 12 percent
 - D) Steep, 12 to 18 percent
5. The parent material in which a soil forms highly influences soil texture. What is the soil texture for the A horizon?
 - A) Silt loam
 - B) Loam
 - C) Silty clay loam
 - D) Clay loam
6. Deep plowing often mixes subsoil into the topsoil which can increase the clay content of the topsoil. Lighter colored subsoil contrasts against the darker topsoil. Choose the percentage that best describes the amount of subsoil mixed into the topsoil.
 - A) 5 to 10 percent mixing
 - B) 10 to 15 percent mixing
 - C) 15 to 20 percent mixing
 - D) 20 to 25 percent mixing

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General Questions 7-18

7. Soil erosion can be reduced by using Best Management Practices (BMP's). Which BMP would reduce soil erosion most effectively at this site?
- A) Plow up and down the hill – against the contour
 - B) Plow across the hill – with the contour
 - C) Install underground tile drainage
 - D) Maintain a cover crop
8. Because of the effects of the five soil forming factors, soils are naturally variable within short distances across the landscape. With this in mind, identify the most correct statement concerning selection of a home site in this county.
- A) The county soil survey has all the information needed when making this type of decision.
 - B) Because of these factors only land with good soils are sold for home site development to limit errors when making this type of decision.
 - C) Most site limitations can be overcome with inexpensive engineering practices making this type of decision less stressful.
 - D) An onsite investigation by a certified soil scientist is the best way to get site specific information when making this type of decision.
9. All farmed fields have experienced erosion in some degree resulting in a loss of organic matter. Where would you expect to find the most organic matter at this site?
- A) At the crest
 - B) At the shoulder
 - C) At the side slope
 - D) At the foot slope
10. Certain soils have limited water storage capacity. Which choice below would have the lowest available water capacity?
- A) Soils with shallow perching horizons
 - B) Poorly drained soils
 - C) Aquatic relief soils
 - D) Lacustrine soils
11. Not all bio-retention structures are successful. Of the following statements select the most common reason for failure.
- A) Compaction of soil material during construction
 - B) Past agricultural practices
 - C) Final plant selection
 - D) Nearby sources of air pollution
12. All soil has formed from what was once parent material as over a long period of time weathering, topography, and biological factors influence soil development. Select the most correct statement applying to parent material.
- A) A soil can only form in one type of parent material.
 - B) All the soils in Ohio formed from glacial material.
 - C) Soils can be formed in more than one type of parent material.
 - D) Most soil in Ohio formed in water moved materials.

13. Construction activities can drastically alter a soil's ability to infiltrate and store rain water. Which soil characteristic is most easily altered by earth moving equipment?

- A) Structure
- B) Texture
- C) Color
- D) Soil development

14. Climate, sometimes referred to as weathering, is one of the five soil forming factors. What change in climate would accelerate soil formation?

- A) Longer winters with less snow
- B) Longer winters with more snow
- C) Longer summers with less rain
- D) Longer summers with more rain

15. Tree mortality is often a result of construction activities placing large amounts of soil material around the base of trees. What is the actual cause of tree deaths?

- A) The weight of the extra soil material bearing down on the root system
- B) A disturbance of the air and water movement relationship of the root system
- C) The movement of harmful bacteria from the fill material to the root system
- D) Severe root damage of the root system from construction equipment

16. By the early 1900s, Ohio's landscape had changed drastically when compared to the date of statehood. Many indigenous species were extirpated when the forested habitat was destroyed to make room for agriculture. Many new species, however, were taking advantage of the new habitat that was more conducive to their needs. Which species listed below proliferated in the early 1900s as a result of Ohio's declining forested habitat?

- A) American bison
- B) Passenger pigeon
- C) Grey fox
- D) Red fox

17. Biological activity is one of the five soil forming factors. Plant growth affects soil development. With this in mind, soils formed under forest environments, like the soils of Ohio, usually have with kind of soil?

- A) acidic
- B) alkaline
- C) neutral
- D) Ionic

18. Which statement below best describes soil compaction?

- A) A loss of pore space (structure) for air and water movement
- B) The topsoil being mixed with the underlying subsoil
- C) A pH change in the upper soil layers
- D) Tire tracks around the construction site

Questions 19-25 using the published Soil Survey:

19. The soil survey contains a legend (the page just before the map section) listing all the soil map units with their abbreviations. Select the correct map unit designation for the pit site from the list.

- A) Canfield silt loam, 2 to 6 percent slopes
- B) Cardington silt loam, 2 to 6 percent slopes
- C) Chili silt loam, 2 to 6 percent slopes
- D) Carlisle silt loam, 2 to 6 percent slopes

20. Table 4 is the Acreege and Proportionate Extent of the Soils. According to this table how many acres are mapped to this soil map unit in Wayne County?

- A) 57,793 acres
- B) 8,452 acres
- C) 7,631 acres
- D) 2,055 acres

21. Table 16 is Physical and Chemical Properties of the Soils. How does this table rate the soil in this map unit for shrink-swell potential?

- A) Low
- B) Moderate
- C) High
- D) It is not rated

22. Table 13 is Wildlife Habitat. The authors of the survey rated the potential for habitat elements. How was the soil in this map unit rated for wetland plants?

- A) Good
- B) Fair
- C) Poor
- D) Very poor

23. The authors of the Soil Survey rated the productivity of all the soils mapped in Wayne County. Using Table 5 Yields Per Acre of Crops and Pasture select the most productive soil for corn production in the county.

- A) Canfield silt loam, 2 to 6 percent slopes
- B) Glenford silt loam, 0 to 2 percent slopes
- C) Linwood silt loam
- D) Luray silty clay loam

24. The authors of the Soil Survey wrote a section classifying and describing each soil series mapped in Wayne County. Using this information select the most important soil characteristic of the soil in this area. (Page 97-98)

- A) This soil is noted for extensive inclusions of sand and gravel deposits
- B) The soils formed in recent alluvium on flood plains
- C) The soils usually have bedrock before 40 inches
- D) The soils typically have a fragipan

25. The authors of the Soil Survey included tables with weather related information. Using the information provided in the Soil Survey indicate the last day for a frost to occur in the spring. (Page 139)

- A) April 21
- B) April 23
- C) May 20
- D) May 26

2012 FINAL SOILS ~ CONTINGENCY TEST QUESTIONS (replace soil pit questions)

CT1. Permeability refers to the rate water moves through the soil profile. Select the statement that best describes water movement through the soil profile.

- A) Water movement is mainly restricted to old and new root channels.
- B) Water movement occurs mainly in root and worm channels and in the cracks between the soil structural units.
- C) Water movement moves uniformly through all of the soil profile.
- D) Water movement is from the saturated zones to drier areas by going through the inside of the soil clods.

CT2. Soil structure is a result of soil formation. Better soil structure aids water movement and root growth. What soils have the best soil structure?

- A) Very young soils
- B) Older more developed soils
- C) All soils have basically the same soil structure
- D) Sandy soils

CT3. Under proper land management the percent content of soil organic matter can be increased through natural processes. How is most topsoil organic matter lost?

- A) Mostly from worm and ground hog activity
- B) Contractors excavating off topsoil before home construction
- C) Wind and water erosion
- D) By oxidation in warm dry weather

CT4. Relief, also known as topography, is one of the five soil forming factors. Which statement is most correct?

- A) Relief influences soils mainly through its effect on drainage and erosion.
- B) Relief accelerates clay movement through the soil profile.
- C) Relief is responsible for moist, south facing slopes to be more productive.
- D) Relief has little influence on depth to water tables.

CT5. Soil organic matter naturally accumulates in the soil. Select the most correct statement below.

- A) Soil organic matter is an end product of natural processes
- B) Soil organic matter is a never ending process of things living, dying, and decomposing.
- C) Soil organic matter is a chemical process resulting in dark inert substances.
- D) Soil organic matter is the end result of physical biological processes.

CT6. Topography or landscape position is one of the soil forming factors. On which of the landscape positions listed below would the youngest soils be found?

- A) Ridge tops
- B) Hill side slopes
- C) Broad flats
- D) Areas that flood