

**SWCD Area 1 Envirothon
Camp Clay, Van Wert, OH**

Soils

Do not write answers on this paper.

- ***Indicate the one best answer for each question on the “Soils” Scantron answer card.***
- ***Use a No. 2 pencil***
- ***Erase completely to change***

Examine the soil pit to answer questions no. 1 through no. 8.

1. The biodiversity of plants is directly related to the type of soil that specific plants have adapted to grow in. One of the most important soil characteristics affecting plant growth is the rooting zone of the topsoil. What is the depth of topsoil in the soil pit?
 - a. 2 inches
 - b. 4 inches
 - c. 7 inches
 - d. 14 inches

2. The structure of the soil directly affects the ability of a plant to distribute feeder roots evenly throughout the soil. What is the structure of the topsoil (A horizon)?
 - a. columnar
 - b. granular
 - c. platy
 - d. sub angular blocky

3. What is the structure of the subsoil at a depth of 16” in the soil pit?
 - a. columnar
 - b. granular
 - c. platy
 - d. sub angular blocky

4. The texture of the soil affects the ability of a soil to hold and release nutrients and water for plant growth. What is the texture of the topsoil?
 - a. loam
 - b. silt loam
 - c. sandy loam
 - d. silty clay

5. What is the texture of the subsoil at 18” of depth in the soil pit?
 - a. loam
 - b. silty clay loam
 - c. clay
 - d. clay loam

6. Some plants are considered “hydrophytic”, meaning that they are adapted to growing in a soil with a seasonal high water table near the soil surface. These types of soils are often called “Hydric Soils” and may occur in wetland ecosystems. The fluctuating high water table in hydric soils often precipitates bright rusty red iron oxides in the soil when it dries out. How close to the soil surface in the soil pit do these oxides occur?
 - a. 0 inches (up to the soil surface)
 - b. 10 inches below the soil surface
 - c. 20 inches below the soil surface
 - d. 30 inches below the soil surface

7. Based on the depth from the soil surface of the bright rusty red iron oxides colors you found in the soil pit for Question 6, is this soil likely to be considered a hydric soil?
 - a. Yes, there are rusty red oxides within 10 inches or less of the soil surface.
 - b. No, the rusty red iron oxides are 20 inches or greater in depth from the soil surface.

8. Wetlands contain some the greatest “biodiversity” of life forms than all the various ecosystems on the earth, due to nutrient rich soils and shallow water tables that allow various species to utilize the “energy sinks” for survival. Land forms that accumulate nutrients and water drive the natural process to form wetlands. What landform is this soil pit dug into?
 - a. fan/escarpment
 - b. beach ridge/hill
 - c. depression/flat
 - d. disintegration moraine/fan skirt

9. What agency helped provide the Van Wert Co. Soil Survey information?
 - a. Ohio Cooperative Extension Service
 - b. Ohio Department of Natural Resources
 - c. U.S.D.A. Natural Resources Conservation Service
 - d. all of the above

10. Soil survey information can be provided in a variety of formats. Which format would contain the most current and up to date information?
 - a. soil survey books
 - b. the NRCS websites, “Soil Data Mart,” and “Web Soil Survey”
 - c. soil CD’s
 - d. soil DVD’s

11. Ohio soil scientists provide on-site soil investigations thru the federal and state governments, universities and private consulting practices. Many of these soil scientists belong to a professional association in Ohio to promote the wise use of our soil resources and provide continuing education credits to its’ members and others. What is the name of this association?
 - a. The Association of Ohio Pedologists (AOP)
 - b. The Association of Ohio Soil Classifiers (AOSC)
 - c. The Association of Ohio Soil Inspectors (AOSIS)
 - d. The Association of Ohio Geologists (AOG)

12. Jurisdictional wetlands (wetlands protected by law) require positive identification of 3 factors, hydric soils, hydrophytic vegetation and wetland hydrology. What sort of evidence would a soil scientist need to document on site to prove hydric soils exist?
- snail shells
 - field indicators of hydric soils
 - mottles
 - hydric soils lists

Use the Tables provided to answer questions 13 to 22.

13. This Envirothon soil pit site is located on the edge of a soil map unit that has "Pm" for the map symbol. According to "The Map Unit Legend" table, what soil does the symbol, PM, represent?
- Pewamo silty clay loam. 0 to 1% slope
 - Pewamo silty clay loam
 - Pewamo silty clay
 - Pewamo clay
14. According to the "Acreage and Proportionate Extent of the Soils by County" table how many acres of Van Wert County are considered the "Pm" soil map unit?
- 731 acres
 - 7,631 acres
 - 76,031 acres
 - 760,031 acres
15. Some plants require a specific "soil reaction" or "pH" of the soil to obtain nutrients essential to their survival. According to "The Chemical Soil Properties" table what depth in the "Pm" soil map unit would a plant need to grow its roots to find a soil pH range of 7.4 - 8.4?
- 0-2 inches
 - 0-12 inches
 - 12-54 inches
 - 54-70 inches
16. Organic matter is the most reactive portion of the soil in terms of the total number of soil life forms dependant upon it for an energy source. According to "The Physical Soil Properties" table what is the range of percent organic matter for the Pm soil map unit at the 0 -12 inch depth?
- 0.0-1.0
 - 0.5-2.0
 - 3.0-7.0
 - 5.0-9.0
17. Biodiversity is threatened world wide by degradation of our soil resources. Soil erosion is the most common degradation process. The erodibility of a soil horizon by water is measured by the "Kw" value assigned to it. According to "The Physical Soil Properties" table what is the Kw value for the Pm soil map unit at the 0-12 inch depth?
- 0.24
 - 0.28
 - 0.37
 - 0.43

18. The soil pit site is a disturbed meadow that is reverting or restoring its self thru succession to trees. According to “The Forestland Productivity” table what is the “Volume of Wood Fiber” to be expected in cubic feet/ac for pin oaks growing on the Pm soil map unit?
- 43 cubic feet/ac
 - 71 cubic feet/ac
 - 72 cubic feet/ac
 - 90 cubic feet/ac
19. One of the biggest threats to world wide biodiversity is “climate change”. Green alternative fuels can help. Biodiesel made from soybeans is increasing in demand as an alternative fuel. Of the soils, Blount A, Glynwood B, Hoytville, and Pewamo, which soil map unit, according to the “Non-Irrigated Yields” table, has the potential to grow the most soybeans?
- BoA
 - GnB
 - Hv
 - Pm
20. Windbreaks and environmental plantings can significantly reduce heating and cooling energy inputs through green engineering. According to the “Windbreaks and Environmental Plantings” table, what tree will grow the tallest in 20 years on the Pm soil?
- Austrian pine
 - eastern white pine
 - northern white cedar
 - pin oak
21. Walking and biking are still the best ways to save fuel and keep people healthy around the world. According to the “Paths, Trails, and Golf Fairways” table, what is the most limiting feature to installing a path or trail on the Pm soil map unit?
- depth to saturated zone
 - too clayey
 - slope
 - water erosion
22. Urban development (houses, buildings, streets, roads, malls, and parking lots) is a threat to biodiversity. The Clay Center building is located on Blount and Pewamo soils (two “keystone” soils for NW Ohio). What is the most likely soil limitation that had to be overcome to correctly construct this building?
- slope
 - water erosion
 - high water table
 - wind erosion