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CONNECTICUT ENVIROTHON 2007 SOILS QUESTIONS

Please select the best response to the following questions. There are 25 questions, each is worth 4 points.

Section 1. Using topographic maps to navigate and recognize geomorphic landforms (Use the provided topographic map for questions 1-2)

- Which site is at the lowest elevation?
 - Site C
 - Site D
 - Site E**
 - Site F
- Site F is on which of the following geomorphic landforms?
 - Drumlin
 - Outwash terrace**
 - Flood plain
 - Tidal marsh
- Which of the following events most affected the present day landforms and soils of Connecticut?
 - Alpine glaciation
 - Continental glaciation**
 - Plate tectonics
 - Hurricane of 1938

Section 2. Assessing the soil and site characteristics (questions 4-12)

Soil Pit #1:

- The following sequences of master horizons can be found in Connecticut. Which of these horizon sequences is found in soil pit 1?
 - A-B-C
 - O-A-B—R
 - A-B-C-R
 - A-C
 - O-A-B-C**

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5. What is the soil texture of the subsoil in pit 1?

- A. Coarse – sand or loamy sand
- B. Moderately coarse – sandy loam or fine sandy loam
- C. Medium – loam, silt loam, sandy clay loam
- D. Moderately fine – silty clay loam or clay loam
- E. Fine – clay, silty clay, or sandy clay

6. What is the parent material of the soil in pit 1?

- A. Glacial outwash
- B. Glacial till
- C. Recent alluvium
- D. Marine sediments

7. What is depth to the seasonal high water table in soil pit 1?

- A. 0 to 10 inches
- B. 10 to 20 inches
- C. 20 to 30 inches
- D. No evidence of high water

8. Three part question:

a) What is the map unit symbol and complete name of the soil mapped at Soil Pit 1?

38C Hinckley gravelly sandy loam, 3 to 15 percent slopes

b) Using the brief map unit descriptions from the *Winding Trails Soil Survey Information* booklet, does the soil profile of the pit fit a typical Hinckley profile?

Yes **No** (circle one)

c) What is the most critical observation you made to support your answer in part b? Explain.

Not gravelly or very gravelly in the A or B horizons, but the texture of the fine earth fraction (sandy loam in the A and loamy sand or sand in the B horizon) is OK for Hinckley.

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Soil Pit #2:

9. How thick is the topsoil layer in soil pit 2?

- A. 0 inches
- B. 1 to 2 inches
- C. 2 to 10 inches
- D. Thicker than 10 inches

Soil in the tray:

10. Two part question:

a) Examine the soil profile in the tray. Now look at the provided topographic map of the Winding Hills area. Which location did this soil profile most likely come from?

- A. Location C
- B. Location D
- C. Location E
- D. Location F

b) Name the most important soil feature or property you used to answer the first part of this question.

Buried A horizon indicates flood plain.

Comparisons:

11. Two part question. Compare the color of the B horizons of Soil Pit 1 and Soil Pit 2.

a) What differences do you see in the soil colors?

Soil pit 2 has redoximorphic features and the color of the matrix of the B horizon is much brighter brown in soil pit 1.

b) What is the cause for the soil color differences?

- A. Carbonate accumulations
- B. Clay accumulations
- C. Oxidation and reduction of iron
- D. Oxidation and reduction of sulfur

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12. Two part question:

a) You are a consultant hired to evaluate sites for a proposed biomass energy plant. Which soil type would be the best choice for the location of the energy plant?

- A. Soil pit 1**
- B. Soil pit 2**
- C. Tray sample**

b) Why did you exclude the other two soils from consideration as building sites for the energy plant?

Soil is too wet in Soil pit 2 and tray sample. Also tray sample is subject to flooding.

Section 3. Using the Web Soil Survey (questions 13-14)

13. Circle the correct answers to the following statements about the Web Soil Survey:

a) Users can make soil maps for locations in all 50 states

True or False

b) In order to set the scale of your map in web soil survey, you must measure a known distance on your computer screen with a ruler

True or False

c) The soil maps never show special point features (such as wet spots and rock outcrops)

True or **False**

d) Users must define an “Area of Interest” after viewing the soil map

True or **False**

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14. The maps in the CT soil survey were made originally at a scale of 1:12,000. If an area on one of the soil maps was displayed at a scale of 1:6000:
- A. The new map would show twice as many soil map units as the original
 - B. The new map would show half as many soil map units as the original
 - C. **The new map would show the same number of soil map units as the original**
 - D. None of the above

Section 4. Using the information from the Custom Soil Resource Report for Winding Trails (questions 15-17)

15. Two part question:

- a) Is the map unit in which Soil Pit 2 pit is located considered a State of Connecticut Inland Wetland?
Yes
- b) Where did you find your answer (be specific)?
Map unit 107 is listed as CT wetland in the soil report on page 45.

16. Name all of the major and minor components of the “Limerick and Lim soils” map unit and list the percent of the map unit for each component.

Limerick 50%
Lim 30%
Saco 8%
Rippowam 5%
Winooski 3%
Bash 2%
Hadley 2%

17. There are camp sites at Winding Trails in the area shown as “C” on the topographic map.

- a) What does the soil survey report list as the rating class (and limiting features) for camp areas, paths and trails, and picnic areas at location C?

29B – Not limited for camp areas, paths and trails, and picnic areas

29C – Somewhat limited for camp areas (slope), not limited for paths and trails, Somewhat limited for picnic areas (slope)

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- b) Winding Trails would like to create a new area of campsites within 250 feet of Soil Pit 1. Discuss the suitability of this area for campsites. Be specific with your answer and cite the information you used from the soil survey report.

All three of the map units within 250 feet have limitations:

38C – somewhat limited (gravel content, slope)

107 – very limited for Limerick and Lim (depth to saturated zone, flooding)

23A – somewhat limited for Sudbury (depth to saturated zone)

Info from table p. 42 and 43 of the Winding Trails Soil Survey Report.

Section 5. Soil properties and characteristics (questions 18-25)

18. Two of the five soil forming factors are parent material and climate. Name two of the other factors:

Topography

Time

Organisms

19. Which of the following is characteristic of a typical soil in an urban area?

- A. Good soil structure
- B. Soil compaction**
- C. High organic matter content
- D. Lower soil temperature

20. Soil that has more _____ is generally more erodible?

- A. Sand
- B. Silt**
- C. Clay
- D. Organic matter

21. Which of the following may be agricultural nonpoint source pollutants?

- A. Manure
- B. Pesticides
- C. Nitrogen
- D. Soil
- E. All of the above**

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22. Organic matter is an essential component of soils because it:

Carbon and energy source for microbes, holds soil particles together, improves soils ability to store and transmit air and water, stores and supplies nutrients, lowers bulk density, maintains soil in uncompacted condition, makes soil more friable, less sticky and easier to work, retains carbon from the atmosphere and other sources, reduces negative environmental effects of pesticides, heavy metals, and other pollutants, improves tilth, reduces crusting, increases rate of water infiltration, reduces runoff, facilitates penetration of plant roots. (one of these)

23. Which of the following is the best source to find out what kinds of soil are on a 1 acre piece of property?

- A. Soils map from the USDA web soil survey website
- B. On-site investigation**
- C. Topographic map
- D. Soils map from one of the CT county soil survey reports

24. A slope of 10% means 10 foot change in elevation in 100 feet on the ground.

25. You recently had a soil sample analyzed from your garden. The soil lab report indicates that the pH of the soil was 5.2. What is the best way to increase the pH?

- A. Add ground limestone**
- B. Add sulfur
- C. Add nitrogen fertilizer
- D. Add water

WAIT ... Don't Stop Here

SPECIAL BONUS QUESTION...

YAY SOILS !!!

After consulting with ALL of your team members, please name your favorite soil map unit in Connecticut. Also, WHY is it your favorite map unit? (2 points)

ANY map unit and (almost) any reason will get the extra credit