

TEAM: \_\_\_\_\_

**CONNECTICUT ENVIROTHON 2009  
SOILS QUESTIONS**

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

*Section 1. Judging the soil pit (questions 1- 4)*

1. What is the soil texture of the subsoil of the pit?
  - a) Sand
  - b) Loamy sand or sandy loam**
  - c) Silty clay loam or clay loam
  - d) Clay
  
2. How thick is the A horizon in the soil pit?
  - a) 0 inches
  - b) 1 to 5 inches**
  - c) 5 to 10 inches
  - d) Thicker than 10 inches
  
3. What is the structure of the C horizon in the pit?
  - a) Granular
  - b) Blocky**
  - c) Platy**
  - d) Single grain
  - e) Impossible to tell without a chemical soil test
  
4. What is the parent material of the soil in the pit?
  - a) Glacial outwash
  - b) Alluvium
  - c) Organic deposits
  - d) Glacial till**

*Section 2. Assessing the soil and site characteristics (questions 5 – 10)*

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5. Which of the following events most affected the present day landforms and soils of Connecticut?
- a) Alpine glaciation
  - b) Continental glaciation**
  - c) Plate tectonics
  - d) Hurricane of 1938
6. At Sessions Woods, which site is at the highest elevation? (use topographic map)
- a) Site A
  - b) Site B
  - c) Site C
  - d) Site D**
7. The area within the pink wire flags and pink tape on trees may be converted to community garden plots. Which of the following is a limitation for growing vegetables in this area of Sessions Woods? (circle ALL correct answers)
- a) The site floods regularly
  - b) The site is too flat
  - c) The site is too stony or ledgy**
  - d) None of the above limitations
8. Which of the following is the best source to find out what kind of soil is at the specific location of 20 feet south/20 feet west of this soil pit?
- a) Town wetland commission
  - b) Soil map from the Web Soil Survey
  - c) It will be the same as in the soil pit
  - d) Dig another soil pit at the new location**
  - e) All of the above
9. Two part question:

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A. Would you expect the natural reaction (pH) of the subsoil in the soil pit to be above 7 or below? **Below**

B. What is the depth to bedrock at the pit location?

- a) 0 to 10 inches
- b) 10 to 20 inches
- c) 20 to 30 inches
- d) **More than 30 inches**

10. Four part question:

A. Examine the soil profile in the tray. Now look at the attached topographic map of the Sessions Woods area. Which location did this soil profile most likely come from?

- a) Location A
- b) **Location C**
- c) Location D
- d) None of the above

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

**Redoximorphic features, gray matrix, thick dark A horizon, thickness of 0 horizon**

C. Which of these two soils (pit or tray) is most likely a Connecticut wetland soil?

**Tray**

D. Which of these two soils (pit or tray) has an O horizon?

**Tray**

*Section 3. Using the Web Soil Survey (questions 11 & 12)*

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11. The maps in the CT soil survey were made originally at a scale of 1:12,000. Assume that you made a soil map (on the Web Soil Survey) of the Sessions Woods property at a scale of 1:12,000. Then you made a second soil map of the Sessions Woods property, also on the Web Soil Survey, at a scale of 1:6,000.

- 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

12. 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 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**

#### *Section 4. Using the Soil Survey Report (questions 13 – 16)*

Use the information from Sessions Woods Soil Survey report and the Sessions Woods topographic map.

13. What is the symbol and complete name of one of the soil map units located in the “field” identified on the soil map?

**51B Sutton fine sandy loam, 2 to 8 percent slopes, very stony**

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

14. Four part question:

A. How much of map unit 62C is composed of Charlton soils?

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**35%**

**B. What is the drainage class of Charlton soils?**

**Well drained**

**C. Does the Charlton soil more closely resemble the soil in the pit or in the tray?**

**Pit**

**D. Why did you select “pit” or “tray” in the last part of this question?**

**Glacial till, well drained**

**15. Two part question:**

The park management at Sessions Woods is considering developing a picnic area.

**A. According to the interpretive tables in Sessions Woods Soil Survey, what is the rating class and what are the limiting features for picnic areas for both the 62C map unit and the map unit in the “field” you selected in question 13? Fill in the table below.**

<b>Map Unit Symbol</b>	<b>Rating Class</b>	<b>Limiting Features</b>
<b>62C</b>	<b>Very limited</b>	<b>Large stone content, slope</b>
<b>Symbol of map unit from question 13:</b> <b>51B</b> <b>38C</b>	<b>Somewhat limited</b> <b>Somewhat limited</b>	<b>Large stones content, depth to saturated zone</b> <b>Gravel content, slope</b>

**B. Which of these two map units would you select for the picnic area? Why?**

**Either 51B or 38C because the soils aren't as limiting.**

**16. According to the map legend, what is the map symbol for the following features? Draw the map symbol next to the name of the feature.**

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- a) Rock outcrop
- b) Wet spot
- c) Stream
- d) Gravel pit

*Section 5. Soil properties and characteristics (questions 17 – 25)*

**17. Two part question:**

**A. Soils with dense substrata are common in Connecticut. How does the dense substratum affect the movement of water and available water in the soil?**

**Dense substrata impede the movement of water (lower permeability rate), can lead to poor drainage (perched water), there may be more water available (or too much water) to plant roots above the dense substrata, but the substrata impedes roots and thus limits water to deep rooted plants. Water moves laterally downslope on top of the dense substratum and may seep out to the surface in places where the substratum is near the surface.**

**B. What kind of field test could you perform to determine if compaction is a problem?**

**Use wire flag, perc test, bulk density test, pocket penetrometer.**

**18. What plant cover is most effective in controlling sheet erosion on a disturbed site?**

- a) Trees
- b) Grass**
- c) Corn
- d) Wildflowers

**19. Organic matter is an essential component of soils because it: (two answers)**

**Provides carbon and energy source for microbes, holds soil particles together improves soil's 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**

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**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**

20. Two of the five soil forming factors are parent material and topography. Name two of the other three soil forming factors.

**Time, organisms, climate**

21. Name two ways earthworms improve the agricultural soil ecosystem.

**Improve soil structure, help decompose organic matter, stimulate microbial activity, mix soil, provide channels for root growth, increase infiltration, increase water holding capacity of soil.**

22. There are many stone walls in Connecticut that were built years ago by farmers as they cleared the surface stones from the land for agriculture. Which of the following parent materials is most likely the source of the stones?

- a) Alluvium
- b) Glacial outwash
- c) Glacial till**
- d) Glaciolacustrine sediments

23. A slope of 10% means

- a) 10 foot change in elevation for 10 feet horizontally across the ground
- b) 20 foot change in elevation for 200 feet horizontally across the ground**
- c) 10 foot change in elevation for 1000 feet horizontally across the ground
- d) None of the above

24. Gray colors in the B horizon are an indication of:

- a) Presence of oxygen
- b) Absence of oxygen**
- c) Absence of structure
- d) Clayey texture

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25. Which of the following may be nonpoint source pollutants in a suburban neighborhood?

- a) Nitrogen
- b) Soil
- c) Pesticides
- d) Phosphorus
- e) **All of the above**

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**WAIT ... Don't Stop Here**

**SPECIAL BONUS QUESTION...extra credit**

**YAY SOILS !!!**

After consulting with **ALL** of your team members, please write down what was the **most awesome** thing you learned about soils this year. (two extra points)

**Anything true about soil!!**