

# 2008 Wisconsin Envirothon **KEY**

## Soils Exam

Answers that are correct but differ strongly from answer key must be initialized by Station Captain as an approved answer prior to delivery to score stewards.

**Use the Shawano County Soil Survey for the following four questions.**

1. You are looking for a soil located in Section 26, Township 27 North, Range 17 East. What is the number of the Soil Survey sheet you will use? (3 pts) 62

2. In the SE  $\frac{1}{4}$  of Section 26 what is the dominate soil? (4 pts)

OeB Onaway fine sandy loam, 2 to 6 percent slopes  
(Map Unit symbol)(2pts) name (include slope) (2pts)

3. What is the drainage class of the Antigo Soil Series? (circle best answer) (4 pts)

- a. well drained
- b. moderately well drained
- c. somewhat poorly drained

4. You are looking for a site to build a playground. It has Antigo silt loam soil. What is the rating for Antigo silt loam (B slope) for playgrounds? (2 pts) will accept moderate OR moderate slope

**The following are general knowledge questions.**

5. What is the soil term for the layer of organic material on the surface of a soil consisting of decaying plant and animal residue is called what? (4 pts) O horizon

6. What three particle size fractions make up the mineral part of a soil? (6 pts)

sand silt clay  
(2 pts) (2 pts) (2 pts)

7. Earthworm populations are likely greater under a recreational trail than under a native forested area. (3 pts) T or F

8. Soil stability serves as an indicator of soil biological activity and nutrient cycling. (3 pts) T or F

\_\_\_\_/29  
Running Total: 29

9. The kind of unconsolidated material from which a soil forms from is called? (3pts)

parent material

10. Which factor is the most significant in the development of hydric soils? (4 pts)

- a. parent material originally limestone
- b. an excess of microbial activity
- c. lack of oxygen from water saturation
- d. rapid decomposition of organic matter

11. What is the percent slope of a field that has a change in elevation of 72 feet and is 550 feet long? (5 pts)

% slope = 13 (rounded to nearest whole number)

12. Shrinking and swelling is dependent on the amount of silt in the soil. (3 pts) T or F

13. In general pH values between 3 and 5.5 are optimum for plant growth. (3 pts) T or F

14. Five major factors largely influence the kinds of soil that develop in the world.

What are the five factors? (10 pts, 2 pts each)

- A. parent material
- B. climate
- C. organisms
- D. time
- E. topography OR landscape position OR relief

**Use the samples in the containers to answer the next series of questions.**

15. What is the soil texture in container 1? (circle one) (3pts)

sand                  silt                  clay

16. What is the soil texture in container 2? (circle one) (3pts)

sand                  silt                  clay

17. What is the soil texture in container 3? (circle one) (3 pts)

sand                      silt                      clay

18. What is the soil structure in container 4? (circle one) (3 pts)

- a. Prismatic
- b. Platy
- c. Sub-angular blocky
- d. Massive

19. Campground sites with excessively drained soils would have slow permeability. (3 pts) T or F

20. Slope aspect is the compass direction (in degrees) that a slope faces, looking upslope. (3 pts) T or F

**Visit the soil pit to answer the following questions.**

21. What is the structure of the lower horizon in the soil pit? (4 pts)

- a. prismatic
- b. loose
- c. subangular blocky
- d. massive

22. The soil in this pit would be considered a well soil. (4 pts)

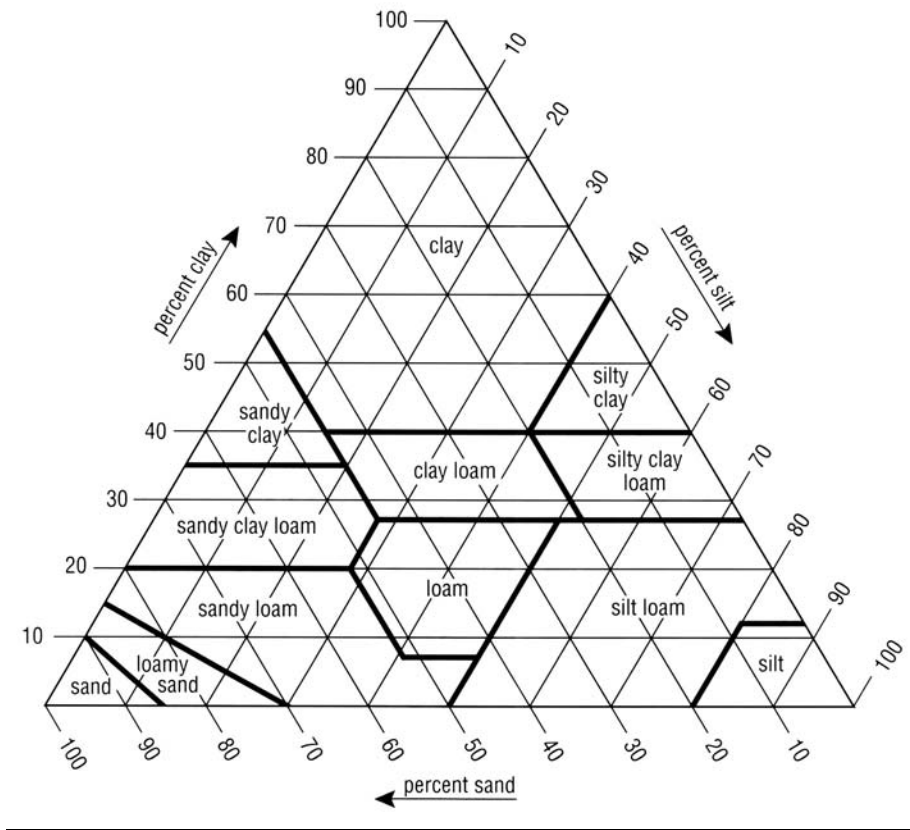
- a. poorly drained
- b. well drained

23. What is the moist color of the horizon labeled I? 10YR 5/4. (4 pts)

24. What soil horizon is represented by the area labeled II? Subsoil or B Horizon. (4 pts)

25. Using the texture triangle, identify the texture of the three soils based on their relative proportions of clay, sand, and silt. (9 pts, 3 pts each)

- a. 50% clay, 35% silt, and 15% sand clay
- b. 11% clay, 24% silt, and 65% sand sandy loam
- c. 12% clay, 56% silt, and 32% sand silt loam



TIE BREAKER

Clay acts as a storage reservoir for both water and nutrients.  
 Must have both answers to be correct.