



2008 Wisconsin Envirothon Forestry Exam

Answer the following questions using the Tree Identification Key and the species description.

1. This tree has an opposite branching pattern and compound leaves. Each leaf has 5 to 9 leaflets and each leaflet has a petiole and a smile-shaped leaf scar extending up sides of new bud.

What tree is this: _____?

2. This tree has an alternate branching pattern and simple leaves. Leaves are two to six inches long, have a rounded petiole, fine blunt teeth, with veins that are thin and branch often.

What tree is this: _____?

3. This conifer has needles in groups of two and the needles are 3 to 4 inches long.

What tree is this: _____?

4. This tree has an opposite branching pattern with simple leaves, smooth leaf margins, and five lobes per leaf.

What tree is this: _____?

5. This conifer has flat, single needles that $\frac{3}{4}$ inch to $1\frac{1}{4}$ inches long and no petiole.

What tree is this: _____?

6. This tree has an alternate branching pattern and compound leaves that can grow up to two feet long. Each leaf has seven or more leaflets and each leaflet is pointed.

What tree is this: _____?

7. This tree has an alternate branching pattern and simple leaves. Leaves are hairless with five to nine deep, even, rounded lobes and sinuses.

What tree is this: _____?

8. This conifer has hairless twigs. The needles are single, needles that are four-sided, stiff, and sharp and can grow as long as $\frac{3}{4}$ of an inch.

What tree is this: _____?

Team Name: _____

9. Any tree that sheds its leaves or needles in the fall of the year is known as a ...
- a. leaf tree
 - b. coniferous tree
 - c. deciduous tree
 - d. oak tree
10. Although we usually think in term of leaves when identifying trees you can also identify trees using other parts of its anatomy including...
- a. Flowers
 - b. Fruit
 - c. Bark
 - d. None of the above
 - e. All of the above
11. Forest succession is described as the orderly and progressive replacement of one plant community by another.
- a. True
 - b. False
12. Primary succession can best be described as...
- a. Advancing through elementary school grade levels.
 - b. Changes that occur in areas devoid of existing plant communities.
 - c. Moving from pioneer community to a stable climax community.
13. Aspen, which needs full sunlight and relatively warm soils to capture a site, can best be described as a pioneer species. (3 pts)
- a. True
 - b. False

Why? _____

14. The make up of a plant community is directly related to the site's capability. What other factors besides sunlight determines species composition and succession... (3 pts)
- a. _____
 - b. _____
 - c. _____

15. The diversity of plant and animal species dramatically increases as plant communities' change from early successional to late successional (climax) communities. (3 pts)
- a. True
 - b. False

Why? _____

Team Name: _____

16. How does the biological diversity of the pine plantation where the soil pit is located compare to the uneven aged hardwoods stand we where are at right now? (3 pts)
- a. Greater biological diversity
 - b. Less biological diversity

Why? _____

17. What is the difference between a tree growing in the middle of a forest and a tree growing in the middle of a parking lot? (2 pts)

18. What are the three primary functions of the root system? (3 pts)

- a. _____
- b. _____
- c. _____

19. Which of the following are the main macronutrients needed by trees? (please circle all that apply)

- a. Phosphorus (K)
- b. Iron (Fe)
- c. Magnesium (Mg)
- d. Potassium (P)
- e. Nitrogen (N)

20. Meristematic tissues are the places in the tree where growth occurs. Names the two types of meristematic tissues found in a tree. (2 pts)

- a. _____
- b. _____

21. A nail is driven into a tree approximately 5 feet above the ground. If the tree averages 18" of height growth per year how high above the ground will the nail be in 20 years?

- a. 5 feet
- b. 30 feet
- c. 35 feet
- d. Doesn't matter because you won't be able to see it anyway!

Team Name: _____

22. Complete the chemical equation for the process of photosynthesis... (4 pts)

_____ + _____ + Light energy \Rightarrow _____ + _____

23. Photosynthesis produces a chemical compound that is the basic building block used to create all structures in the plant. What is this compound ($C_6H_{12}O_6$)?

24. Is the pine plantation being managed using even aged or uneven aged management practices? (3 pts)

- a. Even-aged
- b. Uneven-aged

How can you tell? _____

25. Would it be appropriate to manage the pine plantation using a clear-cut harvest? (3 pts)

- a. Yes
- b. No

Why? _____

26. Would it be appropriate to manage the hardwood stand using a clear-cut harvest? (3 pts)

- a. Yes
- b. No

Why? _____

27. There are six different greenhouse gases that are largely responsible for global warming. Name which one of these can be sequestered (removed from the atmosphere) by trees?

- a. NO_x
- b. CO_2
- c. SO_x
- d. Methane

Team Name: _____

28. Assuming that global warming is a real and serious threat that will continue to cause increases in average global temperature... (4 pts)

How will this affect trees species currently found in Wisconsin? _____

How will this affect annual growth? _____

29. Strategically placed shade trees can save energy through cooling during the hotter months and reduce air conditioning costs up to 30 percent. (3 pts)

- a. True
- b. False

Why? _____

30. Forest recreation is a major component of Wisconsin's tourism industry.

- a. True
- b. False

31. Wisconsin's public forest lands are highly desired for motorized recreation. Is motorized recreation a compatible use of these forest lands? (3 pts)

- a. Yes
- b. No

Why? _____

32. Not all forms of motorized and non-motorized recreation are competitive. Provide two examples of motorized recreation that are not competitive and explain why. (4 pts)

Example a) _____

Example b) _____

Why? _____

Team Name: _____

33. Foresters use tree cores as one way to determine the age of a tree. Using one of the tree cores provided determine the age of the tree this sample was taken from. How old is this tree?
- 12
 - 14
 - 16
 - 18
34. A dominant red pine in the pine plantation reaches a height of 60 feet in 50 years. What is the site index for this species on this site?
- 30
 - 50
 - 60
 - 12

Questions 35-38 must be answered using the identified trees and available equipment. *Everything that you need to answer these questions has been provided.*

35. For each of the following trees (18 points – 1 point for each correct answer)
- Identify the correct species
 - Use the Biltmore stick to estimate the DBH (to the nearest 2" diameter class) of the designated tree(s).
 - Use a D-tape to estimate the DBH (to the nearest 1" diameter class) of the designated tree(s).
 - Use a clinometer to determine the height of the designated tree(s)
 - Using the Merritt Hypsometer and 100' tape to estimate the number of merchantable 16 foot logs (to the nearest ½ log) in each tree.
 - Use a Biltmore stick to determine the volume of the designated tree. For your calculations you should measure the height of the tree to the nearest 1/2 log.

Tree	Species	DBH Biltmore stick	DBH D-tape	Total Height	Merchantable logs (1/2 log)	Volume
White						
Blue						
Red						

36. Which of the three marked trees is commonly used for pulp? _____

Why? _____

37. Which of the three marked trees is commonly used for lumber? _____

Why? _____

____ / 24

Running Total: 97

Team Name: _____

38. Use the prism to determine if the following trees, marked by a ribbon, are "in" or if they are "out" for the purpose of determining estimates using a point sampling methodology.

- a. White ribbon tree? _____
- b. Blue ribbon tree? _____
- c. Red ribbon tree? _____

TIE BREAKER

All of the forest measurement tools you used are calibrated using equal triangles and require you to be a certain distance away for the tree to make accurate measurements. What happens if you are closer to the tree than required to get an accurate measurement?

____ / 3

Running Total: 100