

# Oregon Envirothon 2024

## Forest Ecology

Team # \_\_\_\_\_ Forest

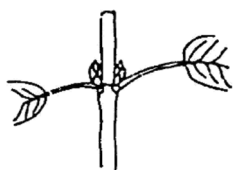
Test Total: \_\_\_\_\_ / 50 points

### Part 1. Tree Identification

1. Using the tree samples on the table, write the correct species of tree/shrub using both the common and scientific names. Spelling and capitalization **MUST** be exact! [6 points, 0.5 points each]

Specimen ID	Common Name	Scientific Name
a.	Pacific madrone	Arbutus menziesii
b.	grand fir	Abies grandis
c.	Sitka spruce	Picea sitchensis
d.	vine maple	Acer circinatum
e.	Douglas fir	Pseudotsuga menziesii
f.	ponderosa pine	Pinus ponderosa

2. Dichotomous keys are essential tools for dendrologists. Please label the following common tree characteristics using the word bank provided. [4 points]



a. opposite



b. alternate

#### WORD BANK

- ☐ compound
- ☐ whirled
- ☐ alternate
- ☐ simple
- ☐ gapped
- ☐ serrated
- ☐ opposite



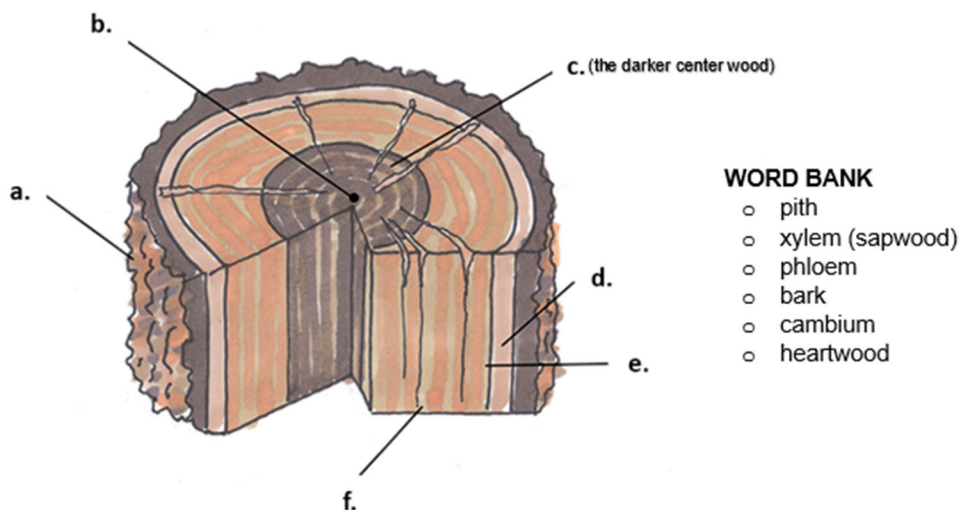
c. simple



d. compound

**Part 2. Tree Physiology and Forest Ecology**

3. Using the diagram below, label each part of the tree and describe its key function or use. [6 points, 0.5 points each]



Indicator:	Name:	Function:
a.	bark	protects
b.	pith	very center of tree helps determine age
c.	heartwood	provides structure
d.	phloem or inner bark	moves nutrients from leaves/needles to other parts of tree
e.	cambium	where new growth occurs
f.	xylem or sapwoods	transports water within the tree

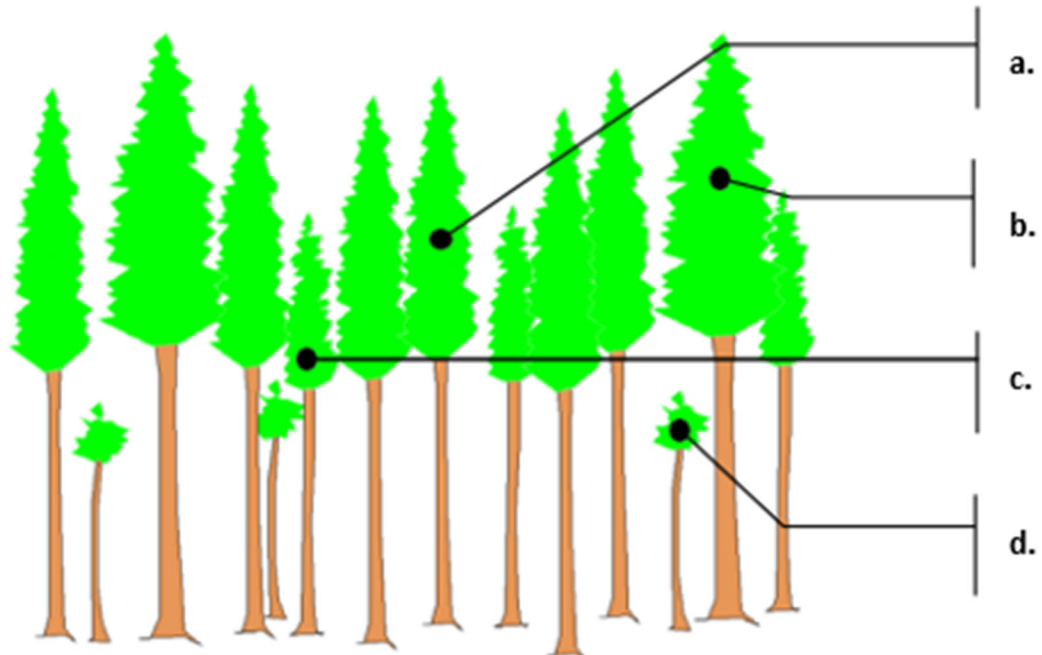
4. What are the two main products of photosynthesis? [1 point]

- a) Oxygen and Carbon Dioxide
- b) Glucose and Oxygen
- c) Water and Carbon Dioxide
- d) Glucose and Water

\_, / 7 points

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5. Label each of the trees below as “dominant,” “co-dominant,” “intermediate”, or “suppressed.” [4 points]



- a. co-dominant
- b. dominant
- c. intermediate
- d. suppressed

6. The term ladder fuels in forest ecology refers to lower vegetation and debris that enable fires to climb from the forest floor into the canopy, intensifying wildfire behavior. [1 point]

7. What are the three elements of the fire triangle, essential for combustion to occur? [3 points, 1 point each]

oxygen, heat, fuel



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### Part 3. Forest Practices Act & Sustainable Forest Management

Using the resources provided, please answer questions 8-13.

8. The Forest Protection Act was established in what year? [1 point]

- a. 1965
- b. 1971**
- c. 1977
- d. 1989

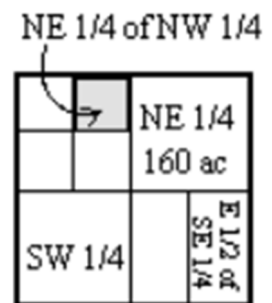
9. How much of Oregon's forestland is managed by state and county governments?)

\_\_\_\_\_ **4%** \_\_\_\_\_ [1 point]

10. A snag is a standing dead tree. [1 point]

11. The legal description of the forested property shown is NE  $\frac{1}{4}$  of NW  $\frac{1}{4}$ , S. 24, Township 3N, Range 4E. How many acres is the property? [1 point]

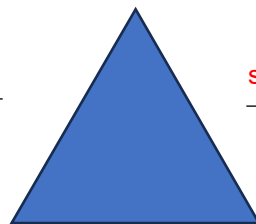
- a. 100
- b. 50
- c. 40**
- d. 640



12. Label each side of the forest sustainability triangle, below. [3 points]

environmental benefits

social benefits



economic benefits

13. Name the three largest forest certification systems operating in Oregon. [3 points]

- I. **American Tree Farm System**
- II. **Forest Stewardship Council**
- III. **Sustainable Forestry Initiative**

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### **Part 4. Biometry & Forest Measurements**

There are four trees marked with the letters A, B, C, and D. There are also 2 identical tree cookies provided, labeled "Cookie." Using the tool and information specified below, answer the following questions on biometry and forest measurements.

**14. Using the Woodland Stick, what is the diameter (DBH) of Tree A? [2 points]**

TBD – I need to go measure the exact tree

**15. Using a Diameter Tape or Logger's Tape, what is the diameter (DBH) of Tree B? [2 points]**

TBD – I need to go measure the exact tree

**16. Using the Woodland Stick, what is the total height of Tree C, given you are 100 feet from the base of the trees? [2 points]**

TBD – I need to go measure the exact tree

**17. Using a Clinometer, what is the total height of Tree D, given you are 100 feet away from the base of the tree? [2 points]**

TBD – I need to go measure the exact tree

**18. What is the age of this cookie specimen? [1 point]**

TBD – I need to go measure the exact cookie

**19. What instrument can inventory foresters use to accurately determine the age of standing live trees? [1 point]**

Increment borer

**20. What is another way to accurately determine the age of a stand? [1 point]**

- a. Locating a stump and counting the growth rings
- b. Guesstimating
- c. Looking at planting records
- d. You must cut down a tree

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### Part 5. Trees as an Important Renewable Resource

**21. What is the primary reason that trees are considered a renewable resource?**

*[1 point]*

- a. They can be genetically modified to grow faster.
- b. They produce oxygen through the process of photosynthesis.
- c. They can regenerate from seeds, sprouts, or stump sprouts after being harvested.
- d. They are unaffected by climate change.

**22. The concept of “carbon neutrality” for wood products means the CO<sub>2</sub> released when wood products are burned or decompose is equal to the CO<sub>2</sub> trees absorb while growing, making wood products a sustainable and climate smart choice. *[1 point]***

**23. What is the primary benefit of strategically planting and managing trees in urban areas? *[1 point]***

- a. Reduction of the urban heat island effect
- b. Increase in local wildlife biodiversity
- c. Stabilizing soils and improve water filtration
- e. Enhancement of recreational spaces
- f. All of the above

**24. What are the benefits described in question 23 collectively referred to as? *[1 point]***  
**Ecosystem services**