

OREGON ENVIROTHON 2023
FOREST ECOLOGY

TEAM # _____
Test Total: _____ / 50

Part I: Tree Identification and Forest Products

1. Given the tree samples on the table, write in the correct species of tree or shrub using both common and scientific names. (Spelling and capitalization MUST be exact!) [6 points, 0.5 point each]

	Common Name [0.5 point each]	Scientific Name [0.5 point each]
i)	Engelmann spruce	Picea engelmannii
ii)	western juniper	Juniperus occidentalis
iii)	ponderosa pine	Pinus ponderosa
iv)	Oregon white oak	Quercus garryana
v)	Pacific madrone	Arbutus menziesii
vi)	western hemlock	Tsuga heterophylla

2. The total forestland in Oregon is 29,656,000 acres. What percent is owned by the federal government? [2 points] 61%
3. Many Oregonians are employed in forest sector jobs, such as forestry, logging, millwork, and engineering. How many Oregonians were employed in forest-related jobs in 2021? [2 points] 61,970

____ / 10 points

Part II: Forest Practices and Forest Ecology

Answer the following questions related to the Oregon Forest Practices Act and forest ecology.

4. The Forest Practices Act lists several types of stream crossing structures. List 3 types. [3 points, 1 point each]

a. Any of: ford, round culvert, squash culvert, bottomless arch culvert, bridge

b.

c.

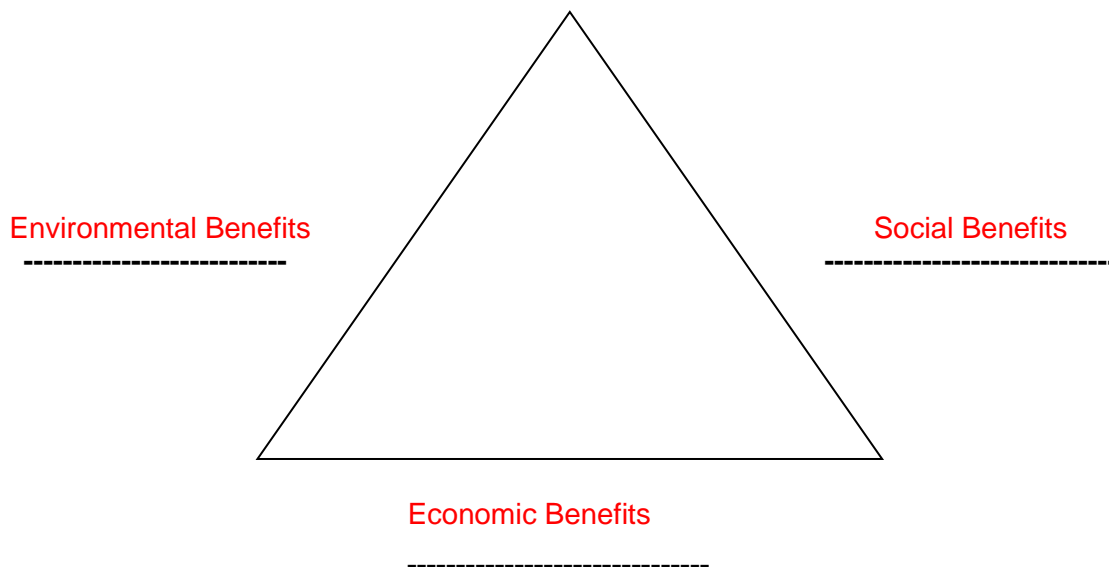
5. Oregon's Forest Practices Act (FPA) was the first in the nation. What year did the Oregon legislature pass the FPA? [1 point]

1971

6. Define the term "operation" as used in the Oregon Forest Practices Act? [1 point]

Any commercial activity relating to the establishment, management or harvesting of forest tree species.

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



Sustainable Forestry Triangle

____/ 8 points

8. On June 30, 2022, the emerald ash borer (EAB), an exotic beetle that infests some species of trees, was **discovered in Forest Grove, Oregon**, marking the first confirmation of this invasive pest on the West Coast.

Name the Oregon tree species that will be impacted by this insect. [2 points].

Oregon Ash

Part III: Tree Measurements

Directions: There are four trees marked with the letters A, B, C, D. By using the tools and information specified below, answer the following questions.

9. Using the Woodland Stick, what is the diameter (DBH) of **Tree A**?

____14 Range 13-15____ (inches) [3 points]

Answers to be filled in when trees are chosen.

10. Using a Diameter or Loggers Tape, what is the diameter (DBH) of **Tree B**?

____13 Range 12-14____ (inches) [3 points]

11. Using the Woodland Stick, what is the total height of **Tree C**, given you are 100 feet from the base of the tree?

____75 Range 72-78____ (feet) [3 points]

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

____79 range 76-82____ (feet) [3 points]

____/ 12 points

Part IV: Forest Succession and Growth

Using the “tree cookie” sample provided, answer the following questions. [5 points]

13. How old was this tree? ____27 Range 25-29____ [2 points]

Answers to be filled in when tree is chosen.

14. From the tree cookie sample, were there any indicators that this tree was stressed?
Explain briefly your answer. [1 point]

Multiple options- Slow growth in outer rings

15. Describe a forest management activity and/or silvicultural technique that could have improved the health of this tree. [1 point]

Multiple options- Thinning last 10 years would improve tree growth

16. Looking at the first 10 years of growth, describe what the forest surrounding this tree looked like at 10 years of age. [1 point]

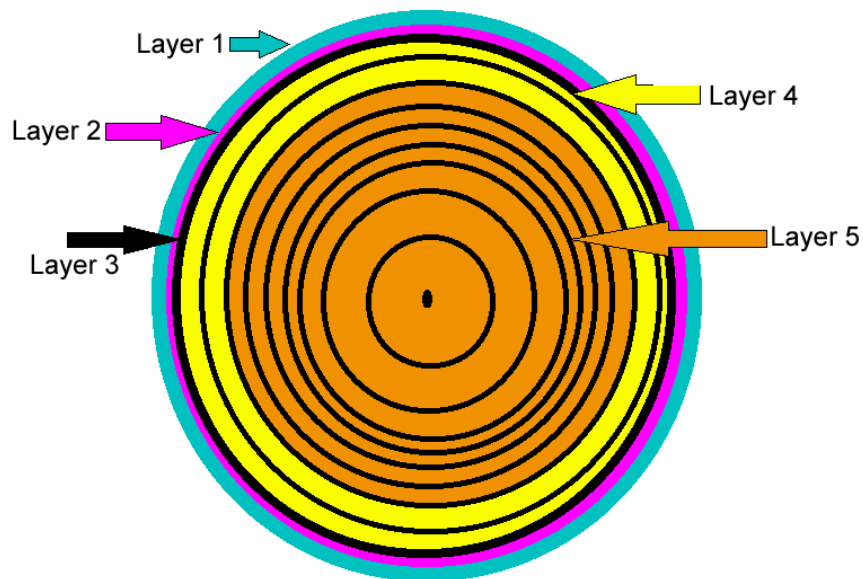
Multiple options- Well spaced as growth rings are wide

____/ 10 points

17. Identify the points on the tree cross-section (below). Write in the correct name of the part and its function. [5 points, 0.5 point for each answer]

	Name:	Function:
Layer 1	bark	protects
Layer 2	phloem	moves nutrients from leaves/needles
Layer 3	cambium	where new growth occurs
Layer 4-	xylem or sapwood	transports water from roots
Layer 5	heartwood	provides structure

Cross-section of a Tree



____/ 5 points

Part V: Climate Change – Adapting to a Changing Climate

18. Oregon's forests are already being affected by changes in climate. List two impacts of climate change on Oregon's forests. [2 points]

Longer, more intense fire seasons
Increased insect and disease outbreaks

19. Climate change can have a big impact on forest fires. What are two ways climate change can affect forest fires in Oregon's forests? [4 points]

Frequency
Severity
Size
Longer fire seasons

20. Name two forest management strategies that can help forests adapt to climate change. [2 points]

Any two of these:

Planting drought tolerant trees
Insect and disease tolerant trees
Plant trees in a slightly higher elevation
Fuels management to prepare for more intense wildfires
Leave some forest for carbon storage for carbon markets

____/ 8 points