

OREGON ENVIROTHON 2023
SOILS AND LAND USE

TEAM # _____
Test Total: _____ / 50 points

Part I: Soil Properties

1. Complete the list of the five soil formation factors, known by their acronym **CIORPT**. [2 points]

Climate

Organisms

Relief

P _____ **M** _____

T _____

2. What is soil structure? [1 point]

- a) melting point
- b) how much water a soil holds
- c) how soils discipline each other
- d) the shapes which a soil naturally breaks apart into

3. An ice-transported soil parent material is called: [1 point]

- a) glacial deposits
- b) ash
- c) organic material
- d) residuum

4. Where can you expect the sandiest topsoil? [1 point]

- a) lake bottom
- b) base of a mountain
- c) windy dunes
- d) no-till field

5. In soil formation, spreading compost on soil is considered a/an: [1 point]

- a) addition
- b) loss
- c) translocation
- d) transformation

6. When salts are washed deeper into a soil profile, it is considered a/an: [1 point]

- a) addition
- b) loss
- c) translocation
- d) transformation

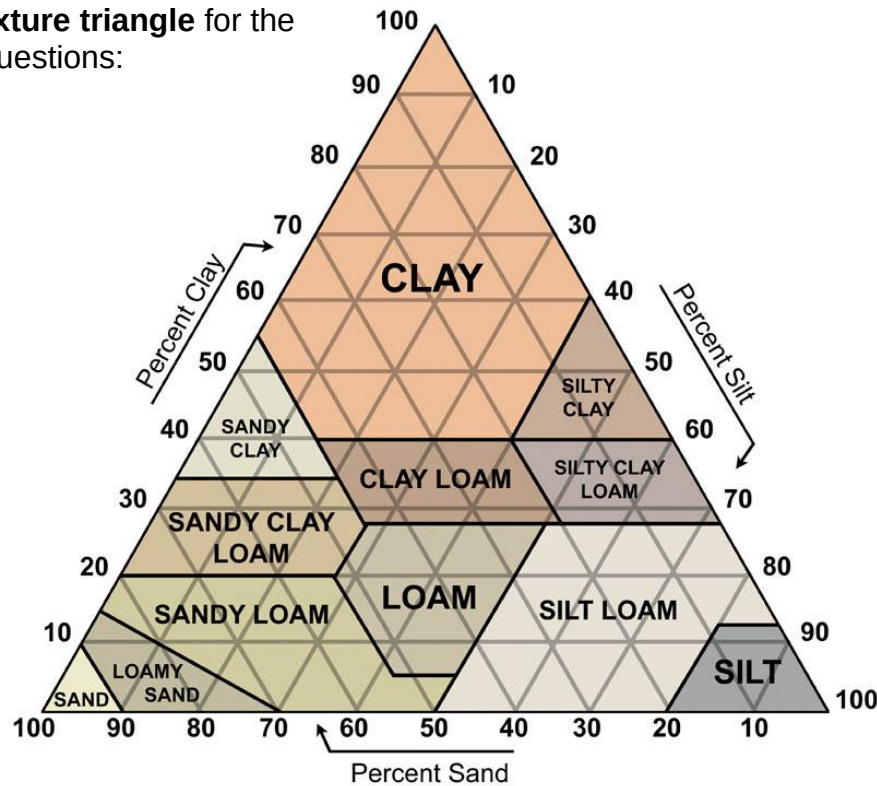
7. Which of the following affect soil texture? Circle all that apply. [2 points]

- a) soil color
- b) fertilizer or lime
- c) landscape position
- d) parent material

____ / 9 points

Part II: Soil Classification

Use the **texture triangle** for the following questions:



8. What is the maximum percentage of sand that can be found in soil classified as silt? [2 points]

_____ %

9. What texture describes a soil that has 60% sand and 30% silt? [2 points]

10. Determine the texture and color of the soil sample. Use **Soil Texture by Feel Flow Chart** and **Munsell Color Book** provided. [6 points]

Texture [3 points]	Munsell Color Notation [moist, 3 points]
_____	_____ / _____

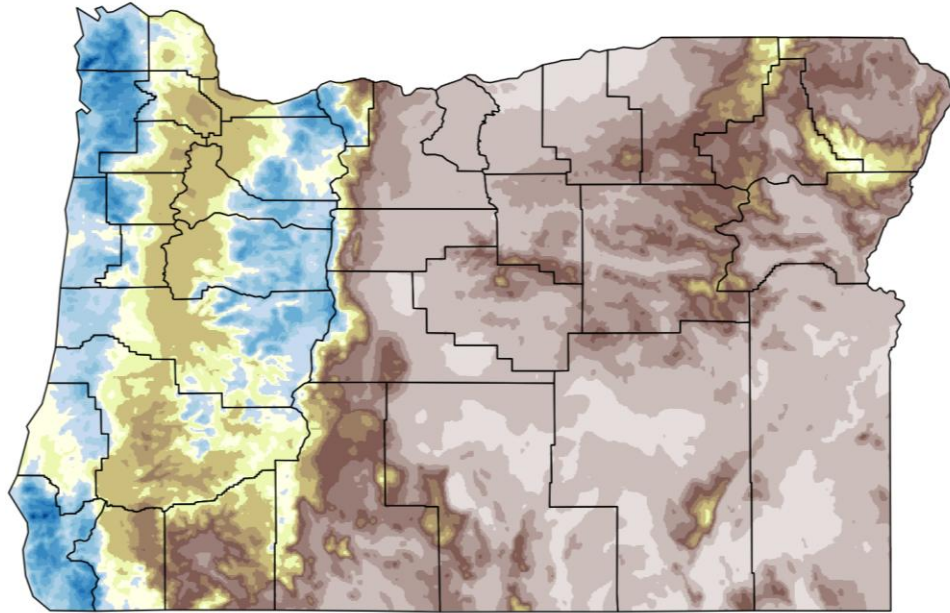
____ / 10 points

Part III: Soils & Land Use Management

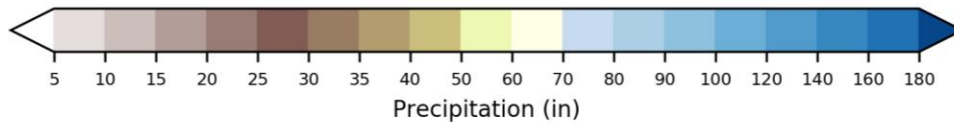
11. Which soil chemical property is most limiting to a home garden? [1 point]
- a) pH of 6.8
 - b) moderate cation exchange capacity
 - c) high salinity
 - d) aerobic soil conditions
12. In which slope class might you find a tidal marsh? [1 point]
- A - $\leq 3\%$ slope
 - B - 4 to 8% slope
 - C - 9 to 15% slope
 - D - 16 to 35% slope
 - E - 36 to 60% slope
 - F - 61 to 80% slope
13. Which soil layer (horizon) is present in healthy forest and wetland soils, but not present in typical agricultural soils? [1 point]
- a) O
 - b) A
 - c) BC
 - d) R
14. In which drainage class might you find a tidal marsh? [1 point]
- a) Excessively drained
 - b) Bestly drained
 - c) Somewhat poorly drained
 - d) Very poorly drained
15. What is the name of the soil tool provided? [1 point]
- a) spade
 - b) Büchner funnel
 - c) bulk density tester
 - d) soil sieve

___ / 5 points

Average Annual Precipitation Oregon



Map created September 2018 at WRCC using
PRISM 800m 30-year normals (1981-2010)
(prism.oregonstate.edu)



16. Based on the rainfall map above, where would you expect the most severe summer droughts to occur? [1 point]

- a) western Oregon
- b) eastern Oregon

17. Which layer (horizon) contains the most soil carbon? [1 point]

- a) A
- b) Bw
- c) Bt
- d) C

18. How can you tell if a soil has carbon in it? [1 point]

- a) it feels neither gritty nor smooth
- b) it has a dark color
- c) it smells of elderberries
- d) it blows away easily

___ / 3 points

19. Which soil characteristic is most important for using soil to address climate change? [1 point]

- a) pH
- b) texture
- c) organic matter content
- d) rock fragment content

20. Discuss one way to capture more precipitation in agricultural soils and explain how it works. [3 points]

Part IV: Soil Survey

Use the **Soil Map** for a portion of The Coos River to answer the following questions:

21. At what scale was this soil survey **mapped**? [1 point]

22. What is the **scale of the printed map**? [1 point]

23. What is the Map Unit Name of map symbol **34**? [1 point]

24. Which map unit has the highest salinity? [1 point]

25. Name 3 limitations to sewage disposal in this floodplain. [3 points, one point each]

___ / 11 points

26. What would happen to the soils in and near this floodplain if sea level rise occurs here? [4 points]

27. Would you build a house here? Why or why not? [4 points]

28. How is soil formation related to climate? [2 points]

29. How is soil carbon related to climate? [2 points]

___ / 12 points