

Questions 1 through 8 are site-specific. Utilize a ten-factor prism at the marked plot center to take a variable radius plot and answer Questions 1 through 8. You may use the common names of the trees when a question asks for tree species, but please be specific (i.e. 'White oak versus just 'oak').

1. How many merchantable trees are in the plot? **6**
2. Based off this plot how many trees per acre are there? **60**
3. Which tree species are in the plot?
  - a. **Black Cherry**
  - b. **American Elm**
  - c. **Red Maple**
  - d. **Hackberry**
  - e. **Sugar Maple**
4. Which species in the plot produce samaras?
  - a. **American Elm**
  - b. **Red Maple**
  - c. **Sugar Maple**
5. Which species in the plot are oppositely branched?
  - a. **Red Maple**
  - b. **Sugar Maple**
6. Using the Basal Area formula  $0.005454 \times (10)^2 = \text{square feet (ft}^2\text{)}$ , what is the flagged tree's Basal Area (HM in square feet)? **1.48 square feet**
7. Which species in the plot is utilized for making basketball courts and bowling alleys? **Sugar Maple**
8. Which tree species in the plot was utilized as a street tree readily before *Ceratocystis ulmi* was identified as a pathogen that kills the tree? **American Elm**

9. What is basal area?
- Average height of trees in a given area
  - Area of a section of land occupied by the cross section of tree stems at the base**
  - Average diameter of trees remaining in an area after a timber harvest
  - Area of a section of land that is occupied by marked trees for a timber sale
10. What is a cord?
- 4'x4'x8' or 128 cubic feet**
  - 4'x6'x8' or 192 cubic feet
  - 6'x6'x8' or 288 cubic feet
  - 2'x2'x16' or 64 cubic feet
11. What caused the decline of the American chestnut? **Chestnut Blight**
12. What caused the decline of the *Fraxinus* species? **Emerald Ash Borer**
13. What are invasive plant species?
- A plant that is both non-native and able to establish on many sites, grow quickly, and spread to the point of disrupting plant communities or ecosystems**
  - A plant that is native that spreads quickly and takes over an area
  - A non-native plant that does not cause problems
  - A plant that shades out other plants, and has allelopathic capabilities
14. What is the insect vector for thousand canker disease?
- Two-lined chestnut borer
  - Nitidulid beetle
  - Walnut twig beetle**
  - Emerald ash borer
15. This species of oak tree produces acorns in one growing season.
- Northern red oak
  - Shingle oak
  - White oak**
  - Black oak

16. The exotic invasive tree-of-heaven produces an allelopathic chemical that slows the growth of other plants around it. List the scientific and common name of a species of native tree that also does this?

Scientific Name: **Juglans nigra**

Common Name: **Black walnut**

17. This plant is often confused with tree-of-heaven, also known as ailanthus. But this is native and produces a red seed that wildlife eat and is high in vitamin C. What is it?

- a. Cherry
- b. Black walnut
- c. Apple
- d. Sumac**

18. Tree planting of hardwoods is often done at an 8 foot by 8 foot spacing. Given that there are 43,560 square feet per acre, how many trees would be needed to plant a field 6.5 acres in size?

- a. 7,215 trees
- b. 4,000 trees
- c. 6,149 trees
- d. 4,424 trees**

19. Hardwoods are typically bought and sold by the board foot. A board foot is visualized as:

A board **12** inch(es) long by **12** inch(es) wide by **1** inch(es) thick

20. After a clearcut of hardwoods in Ohio;

- a. Trees must be planted to start the next forest
- b. Deer and most other game species leave the area forever
- c. Severe erosion takes place
- d. A new forest begins naturally from seed and stump sprouts**

21. Forest site index is:

- a. A harvest method commonly used in Ohio
- b. The value of the bare land after all the trees have been cut
- c. A measure used to indicate the growing capacity of a forest soil**
- d. A measure of wildlife species diversity

22. You are a forester that is conducting a “timber cruise” for a private landowner. You come across the trees marked in front of you. Using the tree scale stick provided, calculate the merchantable height in 16’ logs, diameter at breast height (DBH), and total volume of board feet in Doyle Rule. Round down to the nearest inch.

**Tree A:**

Common Name **Sugar Maple**

DBH **16 inches**

Merchantable Height in 16’ Logs **½ Log**

Total Volume of Board Feet **72 Board Feet**

**Tree B:**

Common Name **American Elm**

DBH **17 inches**

Merchantable Height in 16’ Logs **1 and ½ Log**

Total Volume of Board Feet **254 Board Feet**

**Tree C:**

Common Name **Sugar Maple**

DBH **15 inches**

Merchantable Height in 16’ Logs **1 Log**

Total Volume of Board Feet **121 Board Feet**

23. After conducting your timber cruise for a private landowner, you calculate the average Basal Area per Acre to be approximately 120, the average trees per acre to be 250, and the average tree diameter to be 10 inches. Using the stocking chart provided, what would you recommend to the landowner?

- a. Not harvesting his timber because it is understocked
- b. Conducting a harvest to lower his stocking**
- c. Plant more trees to raise the stocking amount
- d. Clear cut the timber to plant a more dense stand

24. Forestry Best Management Practices are a common compilation of rules and regulations applied to logging in order to mitigate what issue?
- a. Poor timber management practices
  - b. Non-point source water pollution**
  - c. Endangered species conservation
  - d. The spread of invasive species
25. Which of the following forest pest species is responsible for the loss of Hemlock trees in Ohio?
- a. Southern Pine Beetle
  - b. Gypsy Moth
  - c. Emerald Ash Borer
  - d. Woolly Adelgid**
26. What is the forestry term used when cutting competing trees to allow better trees to increase their diameter growth rate, increase the amount of seed they produce, and improve the health of the canopy:
- Timber Stand Improvement**
27. You are a forest landowner who notices, after a major storm event, you have some trees downed and damaged. You also have quite a few ash trees that appear to be dead. You decide that you need to have a timber sale to clean up your woods. Who do you contact?
- a. A logger that your neighbor recommends
  - b. A private Consulting Forester**
  - c. A firewood producer, because there is no value in downed or dead trees
  - d. A procurement forester/timber buyer from a local sawmill
28. "Girdling" is a common thinning practice that is recommended in many woodlands. Which category of trees listed below, after being girdled, has the biggest impact on tree growth rates, wildlife habitat enhancement, and aesthetics after girdling?
- a. The small saplings and dying pole sized trees in the stand
  - b. The large pole sized trees in the stand
  - c. The poor quality trees competing at the canopy level with better quality trees**
  - d. The poorly formed trees that are underneath the canopy level trees

29. When cutting through a tree with a saw, you would pass through the following tissues in what order?
- Bark, Xylem, Phloem, Cambium, Heartwood
  - Bark, Cambium, Phloem, Heartwood
  - Bark, Cambium, Phloem, Heartwood, Xylem
  - Bark, Phloem, Cambium, Xylem, Heartwood**

30. The landowner of this forested area would like to add shiitake mushroom cultivation to his/her stand management plan. Shiitakes are a fungal crop that grow on the logs of oak, sugar maple, sweet gum, and many other tree species that are often obtained from forest stands in the process of being thinned. One of the challenges of shiitake cultivation is maintaining log moisture – anything under 25% will kill the mycelium of the fungus. Many producers will leave logs inoculated with mushroom spawn under trees that provide adequate shade year-round and prevent water loss from evaporation. Which tree species would be a good option to place logs under?

- Red Maple
- White Oak
- Shagbark Hickory
- Norway Spruce**

Using the soil test summary below and the PawPaw Fact Sheet provided to answer questions 31 – 33.

| SOIL NUTRIENT LEVELS   |         | Below Optimum | Optimum | Above Optimum |
|--|---------|---------------|---------|---------------|
| <sup>1</sup> Soil pH   | 7.0     |               |         |               |
| <sup>2</sup> Phosphorus (P)  | 18 ppm  |               |         |               |
| <sup>2</sup> Potassium (K)   | 105 ppm |               |         |               |
| <sup>2</sup> Magnesium (Mg)  | 319 ppm |               |         |               |
| <b>RECOMMENDATIONS:</b> <i>(See back messages for important information)</i> |         |               |         |               |

**Limestone\*:** NONE

**Magnesium (Mg):** NONE

\*Calcium Carbonate equivalent

| ADDITIONAL RESULTS:        |                                  |                              | Optional Tests:         |      |      | <sup>2</sup> Trace Elements |               |                |                              |            |            |
|----------------------------|----------------------------------|------------------------------|-------------------------|------|------|-----------------------------|---------------|----------------|------------------------------|------------|------------|
| <sup>2</sup> Calcium (ppm) | <sup>3</sup> Acidity (meq/100 g) | <sup>4</sup> CEC (meq/100 g) | % Saturation of the CEC |      |      | Organic Matter %            | Nitrate-N ppm | Salts mmhos/cm | <i>See back for comments</i> |            |            |
|                            |                                  |                              | K                       | Mg   | Ca   |                             |               |                | Zinc ppm                     | Copper ppm | Sulfur ppm |
| 3508                       | 0.0                              | 17.9                         | 1.5                     | 14.8 | 83.7 |                             |               |                | 6.4                          | 3.1        | 20.2       |

Test Methods: <sup>1</sup>1:1 soil:water pH, <sup>2</sup>Mehlich 3 (ICP), <sup>3</sup>Mehlich Buffer pH, <sup>4</sup>Summation of Cations

The high calcium level in this sample indicates the probable presence of soluble calcium. Therefore the CEC and the percent saturations were calculated using a maximum exchangeable calcium level of 15 meq/100 g.

1415

31. Pawpaw trees are going to be planted at this site. Pawpaws are native trees that often grow in forest understory. The fruit produced is valued for its banana or custard flavor, and renewed interest in pawpaw cultivation has occurred in Ohio in recent years. Using the soil test summary above and the accompanying pawpaw factsheet, what soil amendment would be needed to adjust the pH to a level best suited for pawpaws?

- a. **Sulfur**
- b. Calcitic lime
- c. Phosphorous
- d. Nitrogen

32. Which pawpaw cultivar produces fruit with orange flesh?

- a. **Wells**
- b. Sunflower
- c. Overleese
- d. Convis

33. What is needed to increase the likelihood of having good fruit set and maximize pawpaw fruit production? Select the best answer.

- a. Pruning undesirable branches allows for adequate fruit set
- b. Adequate soil fertility will ensure that there are enough nutrients available for fruit set
- c. **At least two cultivars are needed for cross-pollination since pawpaw flowers are self-incompatible**
- d. A regular watering schedule

34. Crown size is important for maple syrup producers – larger crowns will often result in more sap. What factor will best influence crown size in a maple tree?

- a. Pruning dead or dying limbs
- b. Trunk diameter
- c. Leaf size
- d. **Tree spacing**