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Station

2008 Missouri Envirothon
Forestry Ecostation

1. Identify the tree marked with blue flagging. (3 points)

2. What type of seed does this tree produce? (2 points)

3. Using the Biltmore stick, measure the DBH (diameter at breast height) of the tree in inches. (4 points)

4. Assume that there are 1 - 16 foot logs contained in this tree. How many total board feet are present in this tree (use the scale on the Biltmore stick)? (4 points)

5. Give two reasons why it is important to know how many board feet a tree holds? (6 points)
   Estimate of growth, compare to past measurement to determine growth rate, economic implications in determining timing of timber sale, estimating cubic feet for determining C sequestration, be aware of value if harvest is planned, etc. 3pts per correct answer up to 2 correct answers

6. Identify the type of tree that this cross section was cut from. (3 points)

7. Using the cross section from question 6, determine the age of the tree. (4 points)

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8. When looking at the rings in a tree cross section or stump, it is common to find some rings are wider than others. Why is this? (4 points)
   Variation if availability of resources – water, sunlight, nutrients

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9. What can we learn from the study of tree rings (dendrochronology)? (4 points)
Past history of the site, productivity of the site, combine with other data to understast regional weather conditions.

10. Observe the trees surrounding this testing site. Notice that, in general, the stand is fairly homogenous (similar in species composition and tree size). What might be the reason for this (consider past management implications)? (6 points)

This is a mostly even-aged stand. The trees here established after some past disturbance or a change in land use practices. The area was likely farmed or pastured previously and then allowed to grow up in trees starting around the 1930's. Oaks are fairly early successional species and obviously were able to colonize the site very well

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1. It is well-accepted that forested watersheds benefit water quality. Describe specifically how the presence of the stand of trees benefits water quality in the Lake. (9 points)

   Raindrop interception, infiltration favored by litter layer and general forest soil characteristics, uptake of nutrients, stream bank stabilization. (3 pts for each correct answer up to 9 pts)

2. Which would be more effective at trapping sediment in runoff water traveling overland – a 50' wide strip of mature, deciduous trees or a 50' wide strip of tall, stiff-stemmed grasses? (2 points)

   Grass – stiff stemmed grasses do a better job of slowing overland flow and capturing sediment. Trees provide strong anchoring support to the soil, increased infiltration (due to rooting characteristics), and capture large woody debris during floods.

3. How do trees reduce the damaging effects of floods? (4 points)
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   Trunks slow food flow, capture woody debris. Roots stabilize soil (2 pts each correct answer up to 4 pts).

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Aquatics

1. What insect pest currently threatens ash trees in the Great Lakes Region of the U.S.? (3 points)

   Emerald ash borer

2. Does this pest pose a threat to ash trees in Missouri? (2 points)
   If so, how might it get here? (3 points)

   a. *Not currently but likely will.*
   b. *Natural movement/migration, as a guest on firewood, nursery stock, etc.*

3. Seeds of trees and shrubs are often divided into two categories – hard mast and soft mast. Give an example of each and describe the main difference between the two categories. (9 points)

   a. *Hard mast = oak, hickory, walnut, etc. – 2pts for 1 correct answer*
   b. *Soft mast = persimmon, mulberry, cherry, elm, etc. – 2pts for 1 correct answer.*
   c. *Hard mast has "shelf life" – can be stored for extended periods. Soft mast rots fairly quickly and must be consumed when fresh. 3 pts*

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1. In general, would you expect a higher site index for hackberry on an upland or bottomland site? (3 points) Why? (4 points)

    a. *Bottomland.*
    Hackberry is typically a bottomland species (2pts) and bottomlands are typically more productive than uplands (2pts).

2. Define the two terms, slope and aspect. (4pts) Together, slope and aspect can have a strong effect on the vegetation present on a particular site. Why? (4pts)

    a. *Slope = measurement, usually in % of the angle, or steepness of a landform.*
    b. *Aspect = orientation in relation to compass direction; the east side of hill has an east aspect.*
    c. *The amount and intensity of sunlight reaching a site is strongly affected by slope and aspect, particularly on steep slopes. N and E facing slopes tend to be cooler and more moist. S and W facing slopes tend to be hotter and drier. This affects productivity, species composition, fire effects, soil conditions, etc.*

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1. Imagine you are a Forester in charge of a large tract of public forest land. One of the main management objectives for this land is sustainable timber production (planting, thinning, harvesting, and prescribed burning practices are applied). The forest is also used by the public for hiking and camping. Why is it important for the public to understand how and why forest management practices are being applied? (6pts)

    a. *It is best to be proactive and explain, for example, why trees are being cut or why fire is being used rather than trying to defend your actions later. Explain the benefits of the practices as well as any disadvantages. In general, there can be a great deal of misunderstanding between land managers and the public regarding various land management practices. If the reasons behind the actions and the planned outcomes are explained up front, there is usually less opportunity for conflict.*

2. As the Forester for the area described in question 1, what can you do to educate the public about the ongoing management practices in the forest? (6pts)

    a. *Place signs along trails explaining applied and planned management practices, the public to "forestry days" where management practices and their impacts are explained, allow public input, invite local groups to help with trail maintenance, etc. 2 pts for each correct answer up to 3 correct answers.*

3. Equestrian and mountain biking trails are commonly requested trail types on public forest land. What issue or problem might you see with these types of trails/uses? (3pts)

    Incompatibility of users or soil erosion/water quality concerns.

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