

nkPA FFA FORESTRY QUESTION BANK
Correct answers are highlighted and underlined

1. How many square feet are there in an acre?
A. 40,000 B. 43,522 C. 43,560 D. 10,000
E. none of the above
2. Which tree species has only one leaf shape?
A. sassafras B. white mulberry C. red mulberry D. white ash
E. all of the above
3. Density of trees in a forest stand is normally expressed as:
A. board feet per acre B. cubic feet per acre C. square feet per acre
D. tons per acre E. basal Area of the stand in square feet
4. What is a choker?
A. a wire cable or chain used to move logs
B. an instrument for measuring tree diameters
C. an obstruction in a stream
D. a tree that does not fall after being cut
E. none of the above
5. Which system of measure has been traditionally used to measure saw timber volume in the United States?
A. the Biltmore system B. the metric system
C. the cunit system D. the English system with 3 different log scales
E. none of the above
6. Which of the following is called a softwood species?
A. aspen B. basswood C. hemlock D. red maple
E. none of the above
7. Which of the following plants might be found in a primary state of succession?
A. beech B. white pine C. aspen D. lichen
E. none of the above
8. Which of the following trees is most tolerant to shade?
A. white oak B. hemlock C. ash D. black cherry
E. none of the above
9. Which of the following is most likely to live the longest in a developing forest in Pennsylvania?
A. sassafras or sumac A. black birch or white ash B. fire or pin cherry
C. sassafras or sumac D. aspen E. none of the above
10. Which tree species is most likely to appear first after a forest fire in Pennsylvania?
A. hickory B. red oak C. aspen
D. hemlock E. none of the above
11. Which of the following is the most limiting factor in the growth and development of an individual tree in Pennsylvania?
C. rainfall D. temperature E. none of the above
A. nutrients B. sunlight
12. Foresters recognize which of the following as the basic management unit in a forest?
A. stand B. lot C. section D. district E. none of the above
13. Secondary succession might be considered to start after which of the following?
A. A landslide B. Back filling of a strip mine C. A glacier

D. All of the above

E. none of the above

14. DBH is: A. Diameter at breast height B. 4.5 feet above the ground
C. A standard accepted in forestry worldwide **D. All of the above**
E. None of the above
15. Which is NOT a tree volume scale? A. Scribner **B. Pennsylvania standard**
C. International D. Doyle E. all of the above are tree volume scales
16. Which of the following silvicultural systems is most likely to result in uneven-aged forests? A. Clear cutting B. Shelterwood system C. Seed tree system
D. Selection system E. All of the above would result in uneven-aged forests
17. Intermediate treatments are designed to improve the quality and composition of forests. Which of the following is not an intermediate treatment?
A. Clear cutting B. Thinning C. Weeding D. Release cutting
E. All of the above are intermediate treatments
18. The number of cubic feet in a cord is: A. 100 B. 256 **C. 128**
D. 150 E. none of the above measurements are correct
19. A fire line deprives fire of: A. Air **B. Fuel**
C. Heat D. Oxygen E. none of the above
20. Which of the following trees has opposite branching?
A. Elm **B. Ash** C. Oak D. Gum
E. All of the above trees have opposite branching
21. Which tree has a doubly compound leaf? **A. Honey locust**
B. Black locust C. Sumac D. Hickory
E. All of the trees above have double compound leaves
22. Needles are growing from the trunk of a tree. It is most likely:
A. White pine B. Ponderosa pine C. Red pine
D. Pitch pine E. All of the above may have needles growing from their trunk
23. Needles in groups of five on a pine tree in the east indicates:
A. Red pine **B. White pine** C. Black pine (Austrian)
D. Table mountain pine E. None of the above
24. Many tree species are capable of regeneration through stump sprouts or coppice. Which of the following lacks this capacity?
A. Red maple B. White oak **C. Hemlock**
D. Yellow poplar (tulip) E. All of the above trees produce stump sprouts
25. The word "buck" is often used in the discussion of forest harvesting activities. What does this word mean? A. To put logs in a pile **B. To cut trees into logs**
C. To push a log truck out of the mud
D. To move logs from the stump to the landing
E. all of the above
26. Which of the following tools would NOT be used to determine tree height?
A. Clinometer B. Abney level C. Merritt hypsometer
D. Biltmore stick **E. All of the above are used to measure tree height**
27. The bark of this tree is smooth, leaf simple and serrate, fruit pyramidal:
A. Hickory **B. Beech** C. Birch D. Walnut
E. None of the above is correct

28. _____ is a tree species that develops its best form and quality on **moist** deep well drained soils. **A. Black walnut** B. Maple C. Black gum
D. Birch E. none of the above
29. Most plywood in the west is made from this species:
A. Western red cedar **B. Douglas fir** C. Ponderosa pine
D. Western white pine E. none of the above
30. Site index is a term used by foresters to explain the relationship of _____ in forest stands. **A. Height to age** B. Diameter to age
C. Diameter to height D. Volume to age E. none of the above
31. If you had to evaluate a parcel of forestland for its growth potential without having the opportunity to visit the property, which of the following might prove to be the most useful reference? A. Topographic map B. County road map
C. Soil survey D. An aerial photograph **E. All of the above**
32. The State tree of Pennsylvania is the _____. A. Red maple
B. Eastern hemlock C. White oak D. White pine
E. PA does not have a state tree
33. The basis for establishing a management plan for a forest is:
A. Money B. Access **C. Objectives** D. Time
E. all of the above
34. Within the forest, trees that have tall, well formed crowns or tops that receive light from above and the sides are called: A. suppressed
B. co-dominant **C. dominant** D. intermediate E. none of the above
35. Which is the closest to a hectare?
A. 1 acre **B. 2.5 acres** C. 5.2 acres D. 7 acres
E. none of the above
36. The radius of a one-fifth acre plot is: **A. 52.7 feet** B. 37.2 feet
C. 27.5 feet D. 73.2 feet E. none of the above
37. You visited a woodlot where most of the trees were about 8 inches in diameter. Which of the following terms might be used to describe the trees in this woodlot?
A. saw timber **B. pole timber** C. saplings D. small
E. all of the above
38. How many cubic inches are there in a board foot?
A. 100 **B. 144** C. 12 D. 196 E. none of the above
39. Maple, ash and dogwood have which feature in common? A. persistent leaves
B. poisonous leaves C. alternate leaves **D. opposite leaves**
E. These three trees have nothing in common
40. What is the only legal unit of measure for the sale of firewood in Pennsylvania?
A. cubic meter **B. standard cord** C. face cord D. rick
E. none of the above
41. Of the tools for measuring DBH, which is the most precise? A. caliper
B. Biltmore stick **C. diameter tape** D. carpenter's rule
E. all tools used to measure DBH are inaccurate
42. The scaling diameter for saw logs is normally measured at:
A. the big end inside bark B. the big end outside bark
C. the small end inside bark D. the small end outside bark
E. none of the above

43. The most important step in using a pesticide is: **A. read and understand the label**
 B. have the proper equipment and rate of application
 C. have the proper safety clothing, masks and use the
 D. all the above are equally important E. none of the above
44. The term stumpage refers to: A. stumps left after harvesting
 B. the diameter of trees measured 1 foot off the ground
C. the value of trees standing in a woodlot
 D. a measure of tree volume E. none of the above
45. Which of the following instruments measures angles as well as direction?
 A. clinometer B. abney level C. compass D. relkscope
E. none of the above
46. Which of the following identify the major groups of oak?
A. red, white B. red, pin, scarlet C. red, blue
 D. bur, post E. all of the above
47. Which of the following is represented by two crossed shovels on a map legend?
 A. campground B. cemetery **C. gravel pit** D. quarry mine
 E. none of the above
48. A person who does a lot of hands-on forestry work such as taking measurements, perhaps being in charge of a crew and usually working outdoors is a _____.
 A. logger B. professional forester **C. technician**
 D. researcher E. all of the above
49. Which of the following is not an element of an ecosystem?
 A. mineral matter B. producers C. consumers D. decomposers
E. all of the above are elements of an ecosystem
50. An abandoned field changes into a mature forest over an extended period of time through a process called: **A. succession** B. dominance
 C. recycling D. all of the above E. none of the above
51. Management of forests for multiple uses involves which of the following uses:
 A. timber B. recreation C. water **D. all of the above**
 E. none of the above
52. Nutrients and water absorbed from the soil move up through a tree in the:
A. xylem B. root hairs C. phloem D. all of the above
 E. none of the above
53. Which of the following species are noted as a "pioneer species"?
 A. hemlock **B. hawthorn** C. sugar maple D. all of the above
 E. none of the above
54. Which tree part carries food made in the leaves down to branches, trunk and roots:
A. phloem B. sapwood C. heartwood D. cambium
 E. none of the above
55. In order to "girdle a tree" which of the following must be completely severed?
 A. phloem B. xylem C. cambium **D. phloem and cambium**
 E. none of the above
56. The ability of a tree to withstand shade is called:
 A. intolerance **B. tolerance** C. hardiness D. all of the above
 E. none of the above

57. If a flower lacks either a calyx or corolla, it is called a (n) _____ flower.
A. imperfect B. monoecious C. dioecious D. incomplete
 E. epicormic
58. If the male and female flower parts occur in separate flowers on the same tree, the species is said to be: A. mensuration **B. monoecious**
 C. dioecious D. all of the above E. none of the above
59. Cones of the Jack Pine require which of the following in order to open?
 A. extended soaking in water B. gnawing by squirrels
C. heat from a fire D. all of the above E. none of the above
60. Ovate, deltoid, lanceolate, star shaped are examples of: A. leaf margins
 B. leaf apexes **C. leaf bases** D. all of the above E. none of the above
61. Entire, serrate, dentate, lobed and incised are examples of:
A. leaf margins B. fruit types C. bud types _____
 D. all of the above E. none of the above
62. Major characteristics of twigs used in tree identification are:
 A. buds B. pith C. lenticels **D. all of the above**
 E. none of the above
63. Maple, elm, and ash winged seeds are properly called: A. capsules
 B. nuts C. drupe **D. samara** E. none of the above
64. Which of the following trees can best be described as a deciduous evergreen:
A. Tamarack B. Spruce C. American Holly D. White Pine
 E. none of the above
65. To perform a basal area sample, a forester would use which of the following tools:
 A. diameter tape **B. prism** C. relkscope D. all of the above
 E. none of the above
66. A chain is a unit of land measurement _____ feet in length.
A. 66 B. 0.66 C. 6.6 D. 0006 E. none of the above
67. Surveys of the boundaries of a timber tract are done to:
 A. determine the area of the tract B. mark timber cutting lines
 C. establish exact property locations **D. all of the above**
 E. none of the above
68. The diameter of trees is usually measured at:
 A. breast height B. 4 and 1/2 feet above the ground C. dbh
D. all of the above E. none of the above
69. The basal area or cross-sectional area of trees at breast height is commonly used to determine:
A. the degree (level) of stocking of a stand of trees
 B. the amount of timber to remove in thinning an overstocked forest
 C. timber volume calculations D. all of the above E. none of the above
70. Which of the following is/are an advantage of prisms? A. fast
 B. simple to use properly C. reasonably accurate **D. all of the above**
 E. none of the above
71. The practice of measuring the volume of logs or bolts after they are harvested is called: A. cruising **B. scaling** C. tallying
 D. all of the above E. none of the above

72. A favorable balance between timber growth and harvest (growth equals or exceeds harvest) is referred to as: **A. sustained yield timber growth**
 B. silviculture C. timber stand improvement D. all of the above
 E. none of the above
73. The art of growing and reproducing a forest is called: A. ecology
B. silviculture C. mensuration D. all of the above E. none of the above
74. The most limiting element of all the environmental factors on the growth of trees is: A. carbon dioxide **B. moisture** C. day length
 D. all of the above E. none of the above
75. Coarse textured soils such as sands are _____ in water holding capacity and nutrient content. A. high **B. low** C. texture does not affect these characteristics
76. A forest which has been reproduced through sprouting is called a _____ forest. A. epicormic B. stocked **C. coppice** D. all of the above
 E. none of the above
77. A stand of trees produced after a clear cut is most likely to be: A. uneven aged **B. even aged** C. all aged
 D. all of the above E. none of the above
78. Based on crown classification which of the following is defined as a smaller tree with a crown below the upper level of the forest canopy and receiving only scattered sunlight from above? **A. intermediate** B. co-dominant
 C. dominant D. overtopped E. none of the above
79. Stocking level is best described as: A. closeness of tree crowns
 B. numbers of trees/acre C. percent utilization of the site potential
 D. all of the above **E. B & C**
80. _____ indicates the productive capacity of a specific area of forest land for a particular tree species. A. stand density **B. site quality or index**
 C. tree hardiness D. all of the above E. none of the above
81. Thinnings in young timber allow the timber grower to: A. maintain high rates of growth B. concentrate growth on the better trees
 C. maintain a properly stocked forest **D. all of the above**
 E. none of the above
82. Which actually describes the forests of the United States? A. Harvest exceeds net growth by less than 10%.
 B. Harvest exceeds net growth by less than 5%.
 C. Harvest roughly equals net growth.
D. Net growth exceeds harvest by more than 25%
 E. None of the above
83. The national forest are currently being harvested at a rate of _____ % per year. **A. 1%** B. 5% C. 8% D. 17% E. 25%
84. There are presently _____ acres of existing old growth forests in the western United States. A. more than 15 million B. less than 1/2 million
 C. 2-3 million D. 4 million E. 50 million
85. The three "E's" associated with the Forest Stewardship Program are: **A. environmental, esthetics and economic**
 B. energy, esthetics and economics

- C. esthetics, environmental and energy
- D. everlasting, esthetics and energy
- E. energy, environmental and everlasting

86. The Pennsylvania Bureau of Forestry is found in which state government department?
 A. Department of Environmental Resources
 B. Department of Environmental Protection
 C. Department of Natural Resources and Conservation
 D. Department of Natural Resources
E. Department of Conservation and Natural Resources
87. Technical forestry education began in the US in 1898 with courses offered by which of the following schools?
 A. New York State College of Forestry at Cornell
 B. Biltmore Forestry School, North Carolina
 C. Washington State School of Forestry
D. A and B E. A and C
88. The most important area of the United States for future forestry production is the _____.
 A. northeast **B. south** C. Pacific Northwest
 D. Rocky Mountains E. all of the above
89. The United States pulp and paper industry is dominated by which region of the United States?
 A. northeast **B. south** C. Pacific Northwest
 D. tropical E. none of the above
90. The first government appropriation for timberland purchases by the federal government was in 1799. It was for which of the following purposes?
 A. white pine for ship masts B. cedar for rot resistant planks
C. live oak for timbers and masts D. all of the above
 E. none of the above
91. The first head of the United States Forest Service was _____ from Pennsylvania.
 A. Theodore Roosevelt **B. Gifford Pinchot** C. James Buchanan
 D. William Thornburg E. None of the above
92. Which of the following are federal laws pertaining to forestry?
 A. Weeks Law of 1911 B. Clarke-McNary Law of 1924
 C. McSweeney-McNary Law of 1928 **D. all of the above** E. None of the above
93. Which of the following is forestry products sold in localized areas?
 A. sassafras root B. mistletoe C. pine straw D. basket willows
E. all of the above
94. The Tree Farm System is sponsored by:
 A. USDA B. national Wildlife Institute
C. American Forestry Institute D. all of the above E. none of the above
95. Most pine tree cones require ____ year(s) to mature, while most hardwood tree fruits mature in ____ year(s).
A. 2, 1 B. 3, 1 C. 3, 2
 D. 1, 1 E. none of the above.
96. Which of the following trees can best be described as a broadleaved evergreen?
 A. ironwood B. persimmon **C. American Holly**
 D. white pine E. none of the above
97. Which of the following, particularly in urban areas, may contribute to tree damage or disease?
 A. low soil fertility B. soil compaction
 C. acid precipitation **D. all of the above** E. none of the above
98. A female ginkgo tree is usually not favored as an ornamental due to:
 A. large, dangerous spines on boles
 B. spiny fruits which are dangerous to pets and children

C. noxious odor in fruit

- D. very vulnerable to disease and insect pests
E. none of the above

99. The profession dealing with maintenance of ornamental trees is called:
A. silviculture B. dendrology **C. arboriculture**
D. hydrology E. none of the above
100. Mammals which will eat gypsy moth caterpillars include which of the following?
A. white-footed mouse B. gray squirrel C. short-tail shrew
D. all of the above E. none of the above
101. Reasons certain species of trees are not used in urban forestry include which of the following:
A. deep root systems may clog sewer lines
B. shallow root systems may interfere with sidewalks and streets
C. production of obnoxious fruits **D. all of the above**
E. none of the above
102. The periodic removal of individual trees in order to produce better yields is referred to as:
A. clearcutting B. seed-tree cutting
C. selective cutting D. shelterwood cutting E. none of the above
103. A log rule is a table or formula used to determine tree:
A. age
B. diameter C. height **D. volume** E. none of the above
104. Basal area of a woodlot is given in what units? **A. square feet/acre**
B. cubic feet/acre C. board feet/acre D. number of trees/acre
E. any of the above may be used
105. Merchantable height is:
A. commonly measured with a log scale
B. measured at the first fork in the tree depending on the species
C. measured to the minimum diameter based on products to be taken
D. not normally considered in the volume table
E. both B and C
106. A fire set to destroy fuel in order to check a fire's progress is called a:
A. back fire B. crown fire C. ground fire D. fire line
E. none of the above
107. When measured with a compass, the line of sight that runs midway between due north and due west has a bearing of:
A. N 60 degrees W
B. N 45 degrees W C. S 60 degrees W D. S 45 degrees E
E. none of the above
108. One square mile is equal to:
A. 5280 feet B. 10 sq chains
C. 9 sq feet **D. 1 section** E. none of the above
109. The study of the relationship between organisms and their environment is called:
A. dendrology **B. ecology** C. physiology D. silviculture
E. all of the above
110. The following method of timber harvesting often appears to be the most aesthetically drastic:
A. clear cutting B. seed tree cutting
C. selection cutting D. shelterwood cutting E. none of the above
111. Which conifer is not native to the eastern part of the United States?
A. Douglas fir B. loblolly pine C. longleaf pine
D. slash pine E. all are native to the eastern U.S.
112. Which of the following is not a function of tree roots?

- A. the lack of natural predators B. no insect resistance by most tree species
 C. the moth has prolific reproduction rates **D. all of the above**
 E. none of the above
128. One species of wasp, *Apanteles melanoscelus*, kills gypsy moth caterpillars by:
 A. eating their egg masses B. eating adult moths C. eating the caterpillar
D. laying an egg within the body of the caterpillar E. all of the above
129. The cause of heart rot and Dutch elm disease is _____. A. bacteria
B. fungus C. parasites D. virus E. all of the above
130. Many tree species are capable of regeneration through stump sprouts or coppice.
 Which of the following lacks this capacity? A. red oak B. white ash
C. white pine D. striped maple E. none of the above
131. Insects that attack young twigs, stems or buds are _____. A. bark borers
 B. defoliators C. sap suckers **D. tip feeders**
 E. none of the above
132. The only living part of the tree trunk is the _____. A. heartwood
 B. sapwood **C. cambium layer** D. outer bark
 E. none of the tree trunk is alive
133. Leaves do all of the following during the day except _____.
 A. manufacture plant food B. give beauty C. give off oxygen
D. give off carbon dioxide E. none of the above
134. _____ carries the sap from the roots to the leaves. A. heartwood
B. xylem C. phloem D. cambium layer **E. all of the above**
135. Closely spaced annual rings indicate _____. A. fast growth
B. slow growth C. very tall trees D. very short trees
 E. none of the above
136. _____ carries plant food manufactured in the leaves down to the branches - trunk
 and roots. A. heartwood B. sapwood **C. phloem**
 D. xylem E. none of the above
137. The _____ builds wood tissue in the trunk. **A. cambium layer**
 B. heartwood C. the leaf D. phloem E. none of the above
138. _____ gives support and strength to the tree. A. outer bark B. sapwood
C. heartwood D. cambium layer E. none of the above
139. _____ helps to protect the tree trunk from injury. A. cambium layer
 B. sapwood C. heartwood **D. outer bark** E. none of the above
140. The manufacture of plant food in the leaves of a plant is called _____.
 A. respiration B. transpiration **C. photosynthesis**
 D. perspiration E. none of the above
141. The outside edge of a leaf is called the _____. A. lobe **B. margin**
 C. petiole D. leaflet E. all of the above
142. The leaf stem is also called the _____. **A. petiole** B. attach
 C. joiner D. midrib E. all of the above
143. When a single leaf is attached to the twig it is said to be _____.
 A. truncate B. pinnate C. palmate **D. simple**
 E. none of the above

144. When many small leaflets are attached to the petiole to form a larger leaf - that type of leaf is called _____.
 A. multiple
B. compound C. acute D. oblique E. none of the above
145. Which is not a type of leaf arrangement?
 A. alternate B. opposite
 C. whorled **D. oblique** E. none of the above
146. An example of a family of trees having compound leaves is _____.
A. hickory B. oak C. maple D. elms E. all of the above
147. Which family of trees has the characteristic of deep lobes on the margin?
 A. poplars **B. oaks** C. pines D. spruces
 E. all of the above
148. Which is NOT a common term when referring to coniferous trees?
 A. softwoods
 B. evergreens **C. hardwoods** D. pines E. none of the above
149. Deciduous trees are NOT referred to as _____.
 A. Broadleaf **B. softwood**
 C. hardwood D. all of the above E. none of the above
150. Which group of conifers has its needles in a cluster of from two to five?
A. pines B. spruces C. cedars D. firs E. hemlocks
151. Which are NOT coniferous trees?
 A. pines B. cedars **C. walnuts**
 D. spruces E. hemlocks
152. Which are NOT deciduous trees?
 A. oaks **B. firs** C. ashes
 D. willows E. maples
153. Identification of trees according to species is called _____.
 A. forestry B. Silvics C. ecology **D. dendrology**
 E. none of the above
154. In the United States about _____ per cent of the land is in forests.
 A. 10 **B. 33** C. 50 D. 61 E. none of the above
155. Which tree leaves are least likely to turn red in fall?
A. sugar maple
 B. silver maple C. red maple D. red oak E. aspen
156. When referring to trees as tolerant or intolerant, a tolerant species is one that will withstand _____.
 A. drought B. cold
C. shade D. flooding E. all of the above
157. A tree sprout arising from the root or stump is called a _____.
 A. slash B. bole **C. sucker** D. sapling E. all of the above
158. New terminal growth on pines is called _____.
 A. pinettes
 B. needlettes C. spikes **D. candles** E. all of the above
159. Another term for the trunk of a tree is the _____.
A. bole B. club
 C. skid D. pike E. all of the above
160. An example of a deciduous conifer is the _____.
A. tamarack or larch
 B. aspen and poplar C. eastern white pine D. eastern red cedar
 E. American holly
161. Plant hardiness zone two is farther north than zone five.
A. true B. false

162. _____ leaves may be either singly or doubly compound. **A. honey locust**
 B. horse chestnut C. mimosa D. maple E. oak
163. The center of a twig is called the _____. A. cambium layer
 B. sapwood **C. pith** D. bole E. all of the above
164. Linden is another name for the _____ tree. A. aspen **B. basswood**
 C. catalpa D. dogwood E. royal paulownia
165. Another name for the red pine is the _____ pine. A. eastern white pine
 B. loblolly pine **C. Norway pine** D. table mountain pine
 E. Stone Mountain pine
166. The leaves and branches of a tree are referred to as the _____ of the tree.
 A. dominant B. bole **C. crown** D. diameter
 E. all of the above
167. Overcrowding reduces the _____ of the tree. A. stand density B. height
 C. weeding **D. diameter** E. none of the above
168. The term _____ is defined as the reproduction and management of the forest to
 obtain continuous high yields of forest products.
 A. dendrology B. ecology **C. silviculture** D. diameter breast height
 E. none of the above
169. Which would be the cheapest way to buy seedlings? **A. bare root**
 B. balled and burlapped C. container grown D. from a garden center
 E. none of the above
170. A fungus disease which may cause death or damage to newly emerging
 seedlings is called _____. A. ground rot **B. damping off**
 C. mulching D. powdery mildew E. none of the above
171. Which is usually considered the lowest value tree for planting?
 A. green ash B. white ash **C. box elder** D. silver maple
 E. red oak
172. Austrian pine should not be planted further north than plant hardiness
 zone _____. A. 2 B. 3 **C. 4** D. 5 E. none of the above
173. Which maple produces its seeds in the spring? **A. silver maple**
 B. sugar maple C. neither D. both
174. Under ideal conditions it requires an 8 hour day to plant _____ seedlings by hand
 using a planting bar. A. 50 to 100 B. 200 to 300
C. 500 to 800 D. 2000 to 3000 E. none of the above
175. Dry sandy soils might be suited for _____. A. maples B. ashes
 C. walnuts **D. pines** E. hemlock
176. If you space your rows 6 feet apart and the trees are 6 feet apart in the rows, it
 will take _____ trees to plant an acre. A. 642 B. 988
C. 1210 D. 1860 E. none of the above
177. The best time of the year to plant seedlings is _____. **A. early spring**
 B. early summer C. early fall D. early winter
 E. any time when the ground is not frozen
178. The proper depth to plant seedlings is _____.

- A. the same depth as they were in the nursery
 B. slightly deeper than they were in the nursery
 C. slightly shallower than they were in the nursery
 D. 12 inches E. none of the above
179. The most common cause of dead seedlings is _____. A. poor seedling stock
B. roots have dried out before planting C. diseases D. insects
 E. none of the above
180. Temporary planting of several trees in long narrow rows is called _____.
 A. hedging B. trenching C. heeling-in D. stocking
 E. none of the above
181. Which tree is considered a high value species? A. black willow B. black walnut
 C. black locust D. black birch E. none of the above
182. Which of the following is the most shade tolerant? A. hackberry
 B. pin oak C. honey locust D. white ash E. none are shade tolerant
183. Which evergreen has a pendulous appearance when mature? A. white fir
 B. blue spruce C. scotch pine D. Norway pine E. eastern hemlock
184. _____ and _____ may most easily be planted as cuttings from a parent tree.
 A. maples and oaks B. walnuts and elms C. poplars and willows
 D. pines and spruces E. none of the above
185. After placing a seedling into a hole for planting the soil should be packed as
 loosely as possible so as not to damage the tree roots.
 A. true B. false
186. Plant hardiness zone numbers increase as you go north.
 A. true B. false
187. Another name for the hand planting bar is the _____. A. wedge prism
 B. plunger C. dibble D. increment borer E. none of the above
188. Estimating the amount of board feet, cords, or pieces in a timber stand is called
 _____. A. scaling B. guessing C. browsing D. cruising
 E. none of the above
189. Aggressive reproduction, rapid growth and high quality wood have made the _____ the
 most managed pine of the northern forest. A. loblolly pine B. longleaf pine
 C. red pine D. white pine E. sequoia
190. DBH is measured at the _____ foot height.
 A. 3 B. 4.5 C. 6 D. 7.5 E. none of the above
191. DBH can be measured by all of the following tools except _____. A. diameter tape
 B. Biltmore stick C. merit hypsometer D. calipers
 E. none of the above
192. Which of the following will NOT measure the height of a tree?
 A. meritt hypsometer B. abney level C. clinometer
D. log scale stick E. none of the above
193. Estimating the amount of lumber (board feet) in a log is called?
 A. cruising B. scaling C. incrementing D. tallying
 E. all of the above
194. Which is not a rule commonly used for scaling sawlogs in the U.S.?

- A. international rule B. Scribner rule C. Doyle rule
D. vernier rule E. all are used in the U.S.
195. Which tool is used for timber cruising? A. wedge prism B. increment borer
C. cant hook D. chain saw E. none of the above
196. The haga altimeter will measure _____. A. tree height
B. DBH C. basal area D. board feet E. all of the above
197. The tool commonly used to measure land area is the _____.
A. chain tape B. diameter tape C. calipers D. clinometer
E. all of the above
198. Which tool is NOT found on a cruising stick? A. Biltmore stick
B. meritt hypsometer C. log scale stick D. cruising tape
E. all of the above
199. A tool with a pointed tip used to push logs is the _____. A. cant hook
B. pickaroon C. chaining pin D. tubeling E. none of the above
200. A spud is used to _____. A. dig holes or plant seedlings B. peel bark
C. scrape debris from the soil surface D. prune small trees
E. all of the above
201. An excellent tool for pruning branches less than 1 inch in diameter is the _____.
A. increment borer B. lopping shears C. pruning shears
D. bow saw E. all of the above
202. Most cruising sticks use a _____ inch distance from the user's eye to the tool to
get accurate readings. A. 15 B. 18 C. 22 D. 25
E. any of the above
203. High quality furniture would most likely be made from which of the following woods?
A. silver maple B. White pine C. Black walnut D. Black spruce
E. eastern hemlock
204. A tree which is commonly used for utility poles is _____.
A. red pine B. tamarack C. white pine D. jack pine
E. white oak
205. Douglas fir is most commonly used for which of the following uses?
A. lumber B. veneer C. pulpwood D. Christmas trees
E. all of the above
206. Three woods suitable for tool handles are _____.
A. white pine - red pine - ponderosa pine B. white ash - hickory - white oak
C. American elm - slippery elm - red elm D. aspen - cottonwood - basswood
E. none of the above
207. Toothpicks are made from which of the following woods.
A. aspen B. birch & beech C. cherry D. honey locust
E. red oak
208. Pencils are often made from which of the following woods? A. red pine
B. red oak C. red maple D. eastern red cedar E. all of the above
209. _____ and _____ are woods used for high quality furniture.
A. white cedar and red cedar B. white pine and red pine
C. white walnut and black walnut D. black cherry and black walnut
E. all of the above

210. ____ is a wood used for tight cooperage. **A. white oak**
 B. red oak C. both A and B D. neither A nor B
211. Which wood is often used to make shingles?
 A. red cedar **B. white cedar** C. red pine D. white pine
 E. all of the above
212. Because it bends so easily ____ is quite often used in slack cooperage.
 A. honey locust B. black locust **C. American elm** D. box elder
 E. all of the above
213. A wood prized in the construction of ships and boats is _____.
 A. white pine B. red pine **C. white oak** D. red oak
 E. all of the above
214. ____ and ____ are woods commonly used in the production of baseball bats.
 A. white pine and white oak B. hickory and elm
 C. hickory and white ash D. white ash and white pine
 E. all of the above
215. Which of the following is used in making gun stocks? A. white oak
 B. black oak C. white walnut **D. black walnut**
 E. all of the above
216. Which wood is often used by wood carvers. A. ash **B. basswood**
 C. birch D. white oak E. all of the above
217. Which wood is highly prized for its aroma and resistance to moths?
 A. white oak B. red oak C. white cedar **D. red cedar**
 E. all of the above
218. Which wood is used in fine furniture because of its 'bird's eye' grain?
 A. white oak B. red oak **C. sugar maple** D. cherry
 E. all of the above
219. Sycamore wood would least likely be used for which of the following?
 A. boxes **C. veneer** C. fuel wood D. ties
 E. all of the above
220. Which is considered a soft pine? **A. white pine**
 B. red pine C. loblolly pine D. shortleaf pine
 E. all of the above are soft pines
221. Which is not a characteristic of redwood? A. very durable in contact with the soil
 B. very hard and strong C. used for lumber D. reddish color wood
 E. all are characteristics of redwood
222. Western yellow pine is another name for and description of which of the following woods?
 A. Douglas fir **B. ponderosa pine** C. balsam fir
 D. jack pine E. all of the above
223. Black walnut wood is very hard - strong - heavy and valuable.
 A. true B. false
224. Which is the most durable part of a wooden fence post?
 A. sapwood **B. heartwood** C. both are equally durable
225. Which is an advantage of pressure treatment for fence posts?
 A. very easy to do in a farm shop B. low investment in equipment

- C. a very good penetrations achieved
E. none of the above
- D. all are advantages**
226. Logs to be treated and used as fence posts should have _____.
A. less than 1 inch of sapwood
B. at least 1 inch of sapwood
C. at least 3 inches of sapwood
D. no sapwood
E. none of the above
227. Decay or wood rot is caused by which of which of the following organisms?
A. bacteria
B. fungi
C. soil insects
D. all of the above
E. none of the above
228. For fungi to cause decay which of the following conditions must be present?
A. heat - usually 68 to 95 degrees F.
B. moisture - 20% or more
C. oxygen
D. All of the above
E. none of the above
229. Which of the following would have the shortest life expectancy when used as an untreated, heart wood fence post?
A. white oak
B. red oak
C. eastern red cedar
D. northern white cedar
E. all of the above
230. Maple sap begins to run in late winter during which condition?
A. cold nights and warm days
B. warm nights and cold days
C. cold days and cold nights
D. warm days and warm nights
E. none of the above
231. Although all 13 species of maple produce maple sap, which 2 are considered to produce the best sap?
A. sugar and red
B. sugar and black
C. sugar and silver
D. sugar and box elder
E. all of the above
232. The number of tap-holes (per tree) for collecting maple sap is determined by the _____ of the tree.
A. age
B. height
C. dbh
D. all of the above
E. none of the above
233. It takes _____ gallons of sap that is 1% sugar to make 1 gallon of maple syrup.
A. 21
B. 43
C. 64
D. 86
E. none of the above
234. The tool driven into the tap hole for collecting maple sap, which directs the sap into the bucket or bag and also holds the bucket or bag is called a _____.
A. dribble
B. spiel
C. E-Z flow
D. spigot
E. all of the above
235. A standard cord of unsplit fuelwood contains _____ cubic foot.
A. 132
B. 128
C. 124
D. 100
E. none of the above
236. A fireplace cord - rick - or face cord are all terms used to describe a stack of wood with what measurements?
A. 4' X 4' X 8'
B. stove length X 4' X 4'
C. stove length X 4' X 8'
D. stove length X 4' X 4' X 8'
E. none of the above
237. The plant hardiness zone map is a map developed by the USDA, dividing the country into 10 zones based on _____.
A. geographic region
B. species location
C. average summer temperatures
D. average winter temperatures
E. all of the above
238. Which species will give the most heat per cord?
A. hickory
B. red oak
C. white ash
D. American elm
E. all of the above will give an equal amount of heat
239. Which wood gives off a pleasant aroma while being burned?
A. apple
B. ash
C. birch
D. hickory
E. all of the above
240. A problem with burning wood is _____.

- A. logs may spread insect and disease problems
 B. creosote build-up in the chimney may cause a fire
 C. injuries may occur while gathering wood
D. all of the above E. none of the above
241. A normal spacing for Christmas trees is _____. A. 2' X 2' **B. 6' X 6'**
 C. 10' X 10' D. 15' X 15' E. any of the above
242. Pine Christmas trees will most likely be ready to harvest ____ years after planting.
 A. 2 to 3 B. 3 to 5 **C. 6 to 10** D. 12 to 15
 E. none of the above
243. Christmas trees should be sheared in ____.
 A. late winter and early spring B. late spring and early summer
C. pines in June to July and spruces and firs in August
 D. any time of the year E. none of the above
244. Tools used to shape Christmas trees include which of the following?
 A. loping shears B. a machete type knife C. hedge shears
D. B & C E. none of the above
245. Which species would have the lowest value as a veneer log?
 A. black walnut **B. white pine** C. black cherry
 D. red oak E. all are equal
246. Goosenecks on pine trees are caused by which of the following?
 A. pine sawflies B. boll weevils C. gypsy moths
 D. all of the above **E. none of the above**
247. A cord of fuelwood will give off about the same amount of heat regardless of the species.
 A. true **B. false**
248. When shearing Christmas trees the leaders should never be sheared.
 A. true **B. false**
249. In forestry the letters tsi stand for the words ____.
 A. total saleable investment **B. timber stand improvement**
 C. total site income D. taxable site index E. all of the above
250. The closeness of the tree tops is called _____. A. closed canopy
 B. open canopy **C. crown density** D. carrying capacity
 E. all of the above
251. The scientific management of forests for the continued output of products is called _____.
 A. dendrology **B. forestry** C. ecology
 D. forest mensuration E. none of the above
252. The art of producing and caring for a forest is called _____.
 A. dendrology **B. silviculture** C. arboriculture D. ecology
 E. none of the above
253. A method of harvesting that removes all of the trees in the stand is called _____.
A. clearing B. clear cutting C. total cutting D. total removal
 E. none of the above
254. A cutting which removes trees of poor quality, undesirable species or those in poor condition is called _____.
A. improvement cutting B. upgrading
 C. thinning D. defect clearing E. none of the above

255. Cutting burnt or damaged trees before they become completely worthless is called _____.
 A. improvement cutting B. release cutting
C. salvage cutting D. scalping E. all of the above
256. Cutting large trees which are shading small trees is called _____.
 A. thinning B. selection cutting C. shade tree cutting
D. release cutting E. none of the above
257. Removing a part of the stand to promote faster growth of the remaining stand is called _____.
A. thinning B. release cutting
 C. improvement cutting D. under story cutting E. none of the above
258. Removal of mature trees which are the highest quality and most valuable is known as _____.
 A. clear cutting **B. selection cutting & economic high grading**
 C. type cutting D. mature cutting E. all of the above
259. Removing trees damaged by fire, insects or disease is called _____.
A. salvage cut B. clean cutting C. clear cut D. sanitation cut
 E. all of the above
260. Removal of mature timber in a series of cuttings so that the remaining trees might reseed the area is called _____.
 A. selection cutting
 B. natal cutting **C. shelterwood cutting** D. density cutting
 E. none of the above
261. Removal of the lower branches of a tree is called _____.
 A. thinning
 B. cutting back C. pinching **D. pruning** E. all of the above
262. A term often associated with sugar maple trees and maple syrup production is _____.
 A. sugar tree B. bee tree **C. sugar bush** D. sugar site
 E. none of the above
263. The first step in forest harvesting is _____.
B. felling and bucking C. loading D. hauling E. none of the above
264. Bucking is _____.
 A. cutting a tree down **B. cutting a down tree into log lengths**
 C. cutting the limbs off a standing tree D. cutting the limbs off a down tree
 E. none of the above
265. Which is not considered in stand density?
 A. basal area **B. tree height**
 C. crown density D. number of stems per acre E. none of the above
266. A mixed stand is one in which less than _____ % of the trees are of one species.
A. 75 to 80 B. 60 to 70 C. 50 D. 30 to 40 E. none of the above
267. Debris left after a logging operation is called _____.
 A. duff
 B. waste **C. slash** D. stubble E. all of the above
268. Selling standing timber is called a _____ sale.
 A. live B. green
C. stumpage D. standing E. all of the above
269. Litter from leaves, especially from needles, at various stages of decomposition is called _____.
 A. slash B. litter C. trash
D. duff E. all of the above
270. A log of marketable size which is made unmarketable because of rot, defect or poor form is called a _____.
 A. slash **B. cull** C. scratch
 D. zero E. none of the above

271. A tree stand regeneration almost totally from sprouts is called a ____.
- A. sprout forest B. seedless forest C. residual forest
D. stump forest **E. coppice forest**
272. A bolt is a log which is shorter than a standard log.
- A. true** B. false
273. Girdling is a method used to:
- B. harvest mature trees **A. kill unwanted trees**
C. properly space veneer quality trees
D. produce knot free lumber E. none of the above
274. Most public forest land in the United States is managed for :
- A. veneer log production B. Christmas tree production
C. coppice reproduction D. watershed protection **E. multiple use**
275. Pruning is done to produce logs with ____.
- B. a minimum of 24 inches in diameter **A. knot free lumber**
C. no insects or diseases
D. all of the above E. none of the above
276. The periodic removal of trees in order to produce better yields is:
- A. clear cutting B. seed-tree cutting **C. selective cutting**
D. shelterwood cutting E. none of the above
277. A log rule is a table or formula used to determine tree:
- A. age
B. diameter C. height D. value **E. volume**
278. Attack by scales and aphids would result in:
- A. death by girdling
B. defoliation C. forked and crooked trees **D. stunted growth**
E. all of the above
279. Basal area of a woodlot represents:
- A. area occupied by the tree in square feet
B. crown density **C. stand density** D. taper of trunk
E. all of the above
280. For best results, a Biltmore stick should be held:
- A. 15 inches from the eye
B. 20 inches from the eye **C. 25 inches from the eye**
D. 30 inches from the eye E. all of the above
281. A non-grass-like herbaceous plant is called a:
- A. forb** B. forage
C. forest D. tree E. none of the above
282. A fire which runs through the tops of living trees, brush, or chaparral is called
- A. back fire **B. crown fire** C. ground fire D. fire line
E. none of the above
283. The study of diseases of forest trees is called:
- A. forest dendrology
B. forest entomology **C. forest pathology** D. forest technology
E. all of the above
284. A butt log is:
- A. a log with excessive swelling at one end
B. a log with many defects **C. the first log cut above the stump**
D. the smallest log (in diameter) cut from the tree E. none of the above
285. A definite, individual, woody spore-bearing structure of a wood-destroying fungus, which projects beyond the bark is a (an):
- A. blaze B. cafface
C. check D. scar **E. conk**
286. When measuring with a compass, the line of sight that runs halfway between north and west has a bearing of:
- A. N 60 degrees **B. N 45 degrees W**
C. S 60 degrees W D. S 45 degrees E E. none of the above

287. Which of the following is the correct way to write a legal description of a land Parcel: A. S 16, T4N, R2E, NE 1/4 of SE 1/4
 B. R2E, S16, T4N, NW 1/4 of SW ¼ **C. NW 1/4 of SW 1/4, S16, T4N, R2E**
 D. NE 1/4 of Se 1/4, R2E, T4N, S16 E. none of the above
288. One square mile is equal to: A. 5280 feet B. 10 square chains
 C. 9 square feet **D. 1 section** E. none of the above
289. Defining a cord as 128 cubic feet of piled pulpwood including the bark and airspace, calculate the gross scale in terms of cords for the following situation: A truck has twelve 6-foot wide pallets, loaded 8 feet high with pulpwood 5 feet 3 inches in length. A. 1.96 cords B. 17.88 cords **C. 23.62 cords**
 D. 250.88 cords E. none of the above
290. When a topographic map undergoes office revision with aerial photographs, the changes are marked in: A. black B. blue **C. purple**
 D. red E. none of the above
291. A method of natural control of forest insect pests include(s):
A. allowing predators of the insect to control them
 B. logging the infested tree
 C. spraying with insecticide after the trees are felled
 D. either B or C E. none of the above
292. The Forest Service is federally administered by the:
 A. ASCS
 B. SAF
 C. SCS
 D. NRCS
E. USDA
293. Which of the following species has the greatest heating value per standard cord?
 A. Ash
 B. Beech
C. Hickory
 D. Yellow Poplar
 E. none of the above
294. Trees which are characterized by having unisexual flowers of both sexes produced on the same tree are:
 A. coniferous
 B. deciduous
C. dioecious
 D. monoecious
 E. all of the above
295. The national sponsor of the Tree Farm Program is:
 A. American Forest Institute
B. American Forestry Association
 C. Society of American Foresters
 D. United States Forest Service
 E. none of the above
296. Leaves, twigs, or buds that are pubescent would be characterized as:
 A. being dormant
B. having fine, wooly hairs
 C. occurring only on conifers
 D. all of the above
 E. none of the above

297. Logging costs typically represent what percent of the total cost of saw timber delivered to a mill?
A. 33%
B. 50%
C. 75%
D. 80%
E. none
298. The light-colored part of a cross section of a tree that is responsible for conducting water and minerals to the crown of the tree is the:
A. cambium
B. heartwood
C. pith
D. sapwood
E. all of the above
299. When timber buyers openly bid against one another at a timber sale it is called a (an):
A. auction sale
B. mill scale sale
C. sealed bid sale
D. stumpage sale
E. all of the above
300. Defective trees are of least concern when they are marketed as:
A. chip and saw
B. poles
C. pulpwood
D. sawlogs
E. none of the above
301. Diameter measurements for sawlogs are taken at:
A. The large end of the log
B. the log center
C. the small end of the log
D. the stump height mark
E. none of the above
302. The length of time needed to air dry or season wood depends on:
A. climate
B. method of stacking
C. wood size
D. all of the above
E. none of the above
303. The study of the relationship between organisms and their environment is called:
A. dendrology
B. ecology
C. physiology
D. silviculture
E. all of the above
304. Which of the following factors would affect the success or failure of direct seeding?
A. climatic conditions
B. consumption by animals
C. previous harvest method
D. both A and B
E. none of the above

305. The debris left after logging, such as limbs, tops, culls and knockdown trees is called:
- A. conk
 - B. kerf
 - C. stumpage
 - D. scrap
 - E. slash**
306. You plan to reforest a four acre area and plan to use a 6' X 8' spacing. How many trees should you order?
- A. 404
 - B. 908
 - C. 3630**
 - D. 36300
 - E. none of the above
307. When using the prism, a tree to be counted should be:
- A. all trees in the plot regardless of offset
 - B. offset completely
 - C. partially offset**
 - D. all of the above
 - E. none of the above
308. When using the topographic scale on the abney level, how far must one be from the tree?
- A. 66 feet
 - B. 100 feet
 - C. 1 chain
 - D. both a and c**
 - E. none of the above
309. A township is a square 6 miles on a side. Therefore a township contains :
- A. 9640 acres
 - B. 10,000 hectares
 - C. 23,040 acres**
 - D. 46,080 square chains
 - E. none of the above
310. Tree seedlings that are marked 3-0:
- A. are too young to plant
 - B. has a 3 inch tap root
 - C. have grown 3 years in the seedbed**
 - D. have grown 3 years in the transplant bed
 - E. none of the above
311. Cuttings made past the sapling stage for the purpose of improving the composition or the quality of the growing timber stand is called:
- A. cleaning cuttings
 - B. improvement cuttings**
 - C. liberation cuttings
 - D. weeding cuttings
 - E. none of the above
312. The primary purpose of the flower is _____.
- A. reproduction**
 - B. respiration
 - C. to attract beneficial insects
 - D. transpiration
 - E. all of the above

313. The leading region of the country for harvesting softwood sawlogs is the:
- A. North
 - B. Pacific Coast
 - C. Rocky Mountains
 - D. South**
 - E. none of the above
314. This wood is # 1 when it comes to making bowling pins and floors for bowling alleys. It is:
- A. hard maple**
 - B. ponderosa pine
 - C. sweet gum
 - D. white pine
 - E. none of the above
315. Caterpillars are an example of ___ who may destroy all or part of the leaf.
- A. bark borers
 - B. defoliators**
 - C. sap suckers
 - D. tip feeders
 - E. all of the above
316. Which of the following tree species is not found in the western part of the U.S.:
- A. Ash
 - B. Maple
 - C. Oak
 - D. All are found in the west**
 - E. none of the above
317. A tree that has leaves in clusters, 6 to 9 inches long, cones 2 to 3 inches long, with stiff sharp prickles is the:
- A. Douglas fir
 - B. Loblolly Pine
 - C. Longleaf Pine
 - D. Slash Pine**
 - E. none of the above
318. A tree that is second to oak in hardwood production in the U. S. is the most important southern hardwood and is highly prized for furniture and cabinet makers is:
- A. cottonwood
 - B. sweet gum
 - C. longleaf pine
 - D. yellow poplar**
 - E. none of the above
319. The general term used to describe instruments used to measure the diameter of a tree is:
- A. altimeter
 - B. clinometer
 - C. dendrometer
 - D. hypsometer**
 - E. none of the above
320. A forester performing a 20% cruise on 160 acres will need to take ___ 1/4 acre plots.
- A. 160
 - B. 128**
 - C. 80

- D. 40
- E. none of the above

321. When using a chainsaw, which of the following represents a dangerous situation?

- A. body entirely to one side of the chain line
- B. doing all of the cutting at full throttle
- C. having the left elbow extremely bent
- D. placing the thumb on the underside of the handlebar**
- E. none of the above

323. Kerf refers to:

- A. a type of log scale
- B. Cutting width of a saw blade**
- C. Log Volume
- D. The distance between the chain and the bar
- E. none of the above

324. Which of the following items IS NOT a cost to the landowner selling timber?

- A. establishing a road system for access to the tract being sold
- B. hiring a consultant to mark the trees to be sold
- C. preparing a timber sale prospectus and sending out sales notices
- D. prescribed burning of forest land to remove debris and open up the stand**
- E. none of the above

325. The distinctive feature of topographic maps is the _____.

- A. location of forest land
- B. location of landmarks
- C. location of roads and waterways
- D. shape or contour of the land**
- E. none of the above

326. The color used to depict fence lines and important roads on a topographic map is

- A. blue
- B. purple
- C. red and black**
- D. yellow
- E. none of the above

327. A drip torch is used in _____.

- A. felling trees
- B. insect and disease control
- C. planting seedlings
- D. prescribed burns**
- E. none of the above

328. A sanitation cut may be used to prevent an outbreak of forest pests. The trees removed _____.

- A. are injured and not merchantable
- B. are injured and may be merchantable**
- C. are only cut if dying
- D. include all trees within 500 yards of the damaged trees
- E. none of the above

329. Treating wood posts and lumber with penta, creosote or CCA improves its ____

- A. attractiveness
- B. resistance to decay and insects**
- C. strength
- D. susceptibility to decay and insects
- E. none of the above

330. The most important characteristics to use in tree identification are ____.
- A. bark, fruit, twigs and leaves**
 - B. bark, growth habit, leaves
 - C. fruit, twigs, leaves, color and taste
 - D. Twigs, bark, fruit, site
 - E. none of the above
331. The function of the xylem in the tree is to ____.
- A. develop leaves from nutrients
 - B. conduct water and minerals to the crown**
 - C. grow wood and bark cells
 - D. produce carbohydrates through photosynthesis
 - E. all of the above
332. A totally occupied forest stand that allows plenty of room for development of crop trees is called a (an) ____.
- A. fully stocked stand**
 - B. mixed stand
 - C. overstocked stand
 - D. pure stand
 - E. none of the above
333. A table showing the estimated or calculated amount of lumber which may be sawed from logs of given length and diameter is called ____.
- A. Biltmore stick
 - B. log rule**
 - C. Merritt Hypsometer
 - D. scale stick
 - E. all of the above
334. A hand-held instrument used for measuring tree heights, slopes and vertical angles is a/an ____.
- A. Abney level
 - B. clinometer**
 - C. stereoscope
 - D. Merritt Hypsometer
 - E. all of the above
335. A fire that has been started intentionally by a forester to be used as a management tool is a ____.
- A. crown fire
 - B. prescribed burn**
 - C. surface fire
 - D. wildlife
 - E. none of the above
336. The ____ CAN NOT be used to measure acreage in the woods.
- A. hand compass
 - B. planimeter**
 - C. staff compass
 - D. steel tape
 - E. all of the above
337. The national organization for professional foresters is the ____.
- A. American Forest Council
 - B. International Society of Tropical Foresters
 - C. Society of American Foresters**
 - D. United States Forest Service
 - E. none of the above

338. The American Tree Farm program is designed to _____.
A. encourage landowners to plant trees and preserve them in wildness areas
B. encourage private landowners to plant and grow trees as crops for harvest
C. encourage the government to buy more timberland and convert it to national forests
D. prevent the forest industry from buying timber land
E. none of the above
339. The _____ region of the United States contains the most acreage of forest land in government ownership.
A. Midwest
B. northeast
C. northwest
D. southern
E. none of the above
340. When a landowner sells timber, the timber sales contract should include _____.
A. a time limit for completion of the timber harvest
B. provisions for damage to residual trees in the stand
C. provisions for height of stumps on trees harvested
D. all of the above
E. only A and C
341. A surveyor's chain is divided into links. Each link is _____ long.
A. 0.66 feet
B. 1 inch
C. 1 foot
D. 66 feet
E. none of the above
342. The _____, a federal agency, provides money to private landowners to plant trees.
A. Natural Resources and Conservation Service
B. Cooperative extension service
C. Department of natural resources
D. State forestry department
E. none of the above
343. A wedge prism is used to measure the _____ of trees in a stand.
A. basal area
B. board foot volume
C. diameter
D. cubic foot volume
E. all of the above
344. The burning of peat and humus which produces intense heat below the surface and downward is a _____.
A. crown fire
B. ground fire
C. surface fire
D. wildlife
E. all of the above
345. For which of the following pests would a fungicide be used?
A. aphids
B. damping-off
C. scale
D. sunscald
E. gypsy moth

346. The removal of live or dead branches from standing trees is called ____.
- A. delimiting
 - B. pruning**
 - C. thinning
 - D. timber stand improvement
 - E. none of the above
347. The tax an owner pays after the timberland is sold is called ____.
- A. ad valorem tax
 - B. business tax
 - C. capitol gains tax**
 - D. severance tax
 - E. all of the above
348. A worker handling pulpwood sticks is most likely to use a ____.
- A. hookeroon**
 - B. spot gun applicator
 - C. tree marking gun
 - D. tree injector
 - E. all of the above
349. In 1964 Congress passed the Federal Wilderness Act. Today more than 21 million acres are set aside for future generations to enjoy as wilderness. By law, travel in wilderness areas can only be ____.
- A. by boat without a motor
 - B. on foot
 - C. on horseback
 - D. all of the above**
 - E. none of the above
350. A log that measures 6 inches by 12 inches by 18 feet contains ____ board feet of lumber.
- A. 4 board feet
 - B. 48 board feet
 - C. 108 board feet**
 - D. 1296 board feet
 - E. none of the above
351. The term MULTIPLE USE forest management is practiced by many private land owners across the country. Which statement is NOT an example of multiple forest management?
- A. building a duck blind in a beaver pond and prescribe burning a pine plantation
 - B. leasing hunting rights and clear cutting a mature hardwood stand
 - C. planting Douglas fir trees and planting game bird food plots
 - D. thinning a natural stand of trees and growing hay for cattle**
 - E. none of the above
352. The two most important uses for the nation's timber are ____.
- A. fuelwood and biomass
 - B. poles and posts
 - C. sawlogs and pulpwood**
 - D. veneer logs and plywood
 - E. none of the above
353. In measuring the site index of a tree, which criteria must be measured?
- A. age of tree and merchantable height
 - B. age of a tree and total tree height**
 - C. DBH and total tree height
 - D. merchantable height and DBH

- E. all of the above
354. A 10 percent cruise on 100 acres would require a forester to measure ____ 1/4 acre plots.
A. 4
B. 10
C. 40
D. 50
E. none of the above
355. The American Tree Farm System is the nation's largest and oldest forest management program. Its green and white sign is _____.
A. diamond shaped
B. oval shaped
C. rectangular
D. square
E. none of the above
356. _____ is the weight of complete trees including roots, stump, stem, limbs, branches and leaves.
A. basal area
B. biomass
C. cubic volume
D. stumpage
E. all of the above
357. If a forester plants seedlings on a 6 foot by 8 foot spacing, then the person will plant ____ seedlings per acre.
A. 436
B. 520
C. 680
D. 908
E. none of the above
358. The _____ is the predominant species of tree used in making poles and pilings in the United States because of its strength and straightness.
A. cedar
B. longleaf pine
C. ponderosa pine
D. yellow popular
E. none of the above
359. Shingles for roof tops made of wood are usually made from _____.
A. beech
B. cedar
C. maple
D. lodgepole pine
E. all of the above
360. The science that pertains to diseases of forest trees or stands and to the deterioration of forest products by organisms is _____.
A. dendrology
B. ecology
C. forest pathology
D. silviculture
E. none of the above
361. Which of the following career(s) is not involved in forestry?
A. geneticists
B. loggers

- C. hydrologists
- D. all are part of forestry**
- E. none are part of forestry

362. Which of the following eastern tree species has squared leaves with lobes on the sides as well as cone shaped fruit with winged seeds?
- A. beech
 - B. cottonwood
 - C. sycamore
 - D. yellow poplar**
 - E. none of the above
363. Which of the following western tree species has leaves in clusters of 3, tufted, 5 to 10 inch long and cones if present are 3 to 6 inches long with prickles?
- A. Douglas fir
 - B. hemlock
 - C. lodgepole pine
 - D. ponderosa pine**
 - E. none of the above
364. Which of the following southern pine species has a shiny cone 3 to 5 inches long and leaves 8 to 14 inches long in clusters of 2 or 3?
- A. cottonwood
 - B. loblolly pine**
 - C. shortleaf pine
 - D. slash pine
 - E. none of the above
365. Which central hardwood species of tree is used for high-grade cabinet wood and has leaves 12 to 24 inches long with 15 to 23 leaflets?
- A. black walnut**
 - B. elm
 - C. hickory
 - D. sweet gum
 - E. none of the above
366. A clinometer can be used to find:
- A. height of a tree
 - B. slope
 - C. distance
 - D. both a & b**
 - E. none of the above
367. The best starter fertilizer for trees has a high concentration of:
- A. nitrogen**
 - B. phosphorous
 - C. potassium
 - D. all of the above
 - E. none of the above
368. Kevlar is a material used in:
- A. herbicides
 - B. safety clothing**
 - C. fertilizers
 - D. surfactants
 - E. none of the above
369. The identification and classification of trees refers to:
- A. silviculture
 - B. endocrinology

C. dendrology

- D. hydrology
- E. none of the above

370. The best control of forest insects and disease problems is through ____.

A. prevention through proper forest practices

- B. the application of appropriate chemicals
- C. the introduction of exotic insect predators
- D. the removal of all trees showing insect or disease damage
- E. none of the above

371. The part of a tree that grows into a seed is called a(n):

A. ovule

- B. stamen
- C. ovary
- D. polyp
- E. all of the above

372. The separation between lobes on a leaf is a(n):

A. sinus

- B. serration
- C. outline
- D. perimeter
- E. none of the above

373. The science of classification of trees or any other living matter is:

- A. identification
- B. surveying
- C. agronomy
- D. horticulture
- E. taxonomy**

374. Pathogens are:

A. disease causing organisms

- B. wood boring insects
- C. used in biological control
- D. both a & c
- E. none of the above

375. The tree planted most often in the southeast is:

- A. shortleaf pine
- B. loblolly pine
- C. white pine
- D. Austrian pine
- E. longleaf pine**

376. How many seedlings would be required to plant one acre using a spacing of 8 feet by 8 feet?

- A. 640 seedlings
- B. 680 seedlings**
- C. 908 seedlings
- D. 544 seedlings
- E. none of the above

377. A conifer with scales rather than needles is _____.

A. cedar

- B. fir
- C. spruce
- D. yew
- E. hemlock

378. The final stages of fire suppression is called:
A. initial attack
B. backfire
C. mop-up
D. direct attack
E. all of the above
379. The most accurate method of selling pulpwood is:
A. by weight
B. Doyle Scale
C. International Scale
D. Scribner Scale
E. none of the above
380. Tree injectors are used to:
A. stimulate growth
B. mark trees
C. kill trees
D. inoculate trees
E. all of the above
391. Which pine may safely be control burned up to three years of Age:
A. Loblolly
B. White
C. Shortleaf
D. Longleaf
E. Scot's pine
392. Which of the following methods of timber cruising uses a prism to determine which trees are to be measured?
A. fixed plot cruise
B. radius plot method
C. strip cruise
D. variable plot
E. all of the above
393. How many chains are in a mile?
A. 66
B. 660
C. 80
D. 40
E. none of the above
394. How many square chains are there in an acre?
A. 4356
B. 43560
C. 10
D. 1
E. none of the above
395. A board foot is how many cubic inches?
A. 144
B. 128
C. 12
D. 100
E. none of the above
396. How many cords of wood is there in a pile 4' X 4' X 12'?
A. 1.4

- B. 1.5
- C. 1
- D. 2
- E. none of the above

397. The use of a counter (back) fire is what type of forest fire control?

- A. direct
- B. indirect**
- C. prescribed
- D. triangulation
- E. all of the above

398. The instrument used in triangulation is a (n):

- A. azimuth
- B. pantograph
- C. topograph
- D. alidade
- E. all of the above

399. If you are traveling at an azimuth reading of 325, you are heading:

- A. northeast
- B. southeast
- C. southwest
- D. northeast
- E. none of the above**

400. A species of tree exhibiting opposite branching arrangement is the:

- A. cottonwood
- B. maple**
- C. white oak
- D. white pine
- E. all of the above

401. A body of water on a topographic map is represented by the color:

- A. blue**
- B. green
- C. purple
- D. white
- E. pink

402. On a topographic map a plowed field would be shown as the color:

- A. black
- B. brown
- C. green
- D. white**
- E. pink

403. The first plants to occupy a field after a fire or when it is no longer cultivated are called:

- A. pioneer species**
- B. climax species
- C. beginning species
- D. first growth species
- E. all of the above

404. What is the site index of a Virginia Pine that is 50 years old and 57 feet tall?

- A. 50
- B. 57**
- C. 47
- D. cannot determine without a site index curve

E. none of the above

405. Which of the following trees has alternate branching?

A. ash

B. hickory

C. maple

D. shortleaf pine

E. eastern hemlock

406. The development of the system of scientific names for living organisms, the system of binomial nomenclature, is credited to:

A. Carolus Linnaeus

B. Charles Darwin

C. Charles E. Bessey

D. George Bentham

E. none of the above

407. Forest biomass is the:

A. measure of species diversity

B. types of vegetative matter

C. volume of vegetative matter

D. weight of vegetative matter

E. all of the above

408. A sapling is defined as a woody plant:

A. less than 3 feet tall

B. greater than 3 feet tall that will not become dormant

C. with a DBH greater than or equal to 4 inches

D. with a DBH greater than 1 inch but less than 4 inches

E. none of the above

409. Which of the following factors may predispose a tree to insect or disease damage?

A. controlling wildlife damage

B. harvesting over mature trees

C. planting only those species adapted to the site

D. planting trees in low quality sites

E. none of the above

410. Dutch Elm disease is capable of damaging even healthy trees because:

A. it attacks the entire tree all at once

B. It is caused by air-borne organisms and is impossible to control

C. native species have little or no resistance to this disease

D. all of the above

E. none of the above

411. Which of the following is a biological means of controlling / managing forest pests?

A. prevent wood contact with damp soils

B. release a parasite to reduce pest population

C. thin overstocked stands

D. use conventional pesticides

E. all of the above

412. Which of the following is a silviculture practice that is used to control / manage forest pests?

A. destroy logging slash, cones, branches, etc. which may harbor insects

B. harvest mature / over mature trees

C. release parasites to control infestation

D. spray with a pesticide

E. none of the above

413. Herbicide damage to trees may be indicated by:
- A. elongated cankers
 - B. tumor-like enlargements on the trunk
 - C. twisting of needles & stunted growth**
 - D. yellow to orange lesions on the bark
 - E. all of the above
414. A canker would best be described as a:
- A. dead tree top
 - B. globule swelling**
 - C. sunken area
 - D. tumor
 - E. all of the above
415. Which of the following species is noted for its timber as well as its syrup?
- A. birch
 - B. black walnut
 - C. sugar maple**
 - D. sweet gum
 - E. red dogwood
416. The value placed on trees in urban areas is:
- A. lower in rural areas
 - B. higher than in rural areas**
 - C. equal to that in rural areas
 - D. of no consequence as they are not utilized by the forest industry
 - E. none of the above
417. An urban tree census may include:
- A. individual tree location
 - B. site description
 - C. tree species
 - D. all of the above**
 - E. none of the above
418. The decline in value of a fixed asset due to wear and tear from use is called:
- A. declination
 - B. depletion
 - C. depreciation**
 - D. diminishing returns
 - E. all of the above
419. All timber sales and cutting contracts should include:
- A. designation of acreage and boundaries
 - B. slash disposal and site clean-up requirements
 - C. statement of purchase price
 - D. all of the above**
 - E. none of the above
420. The color used to depict vegetation on a topographic map is ____.
- A. blue
 - B. green**
 - C. red
 - D. yellow
 - E. pink
421. Which of the following symbols is depicted by a solid square with a pennant on top of it?
- A. barn

- B. cemetery
- C. school**
- D. warehouse
- E. Wal-Mart

422. The function of the phloem in the tree is to ____.
- A. develop leaves from nutrients
 - B. conduct food manufactured in the leaves to the branches, trunk and roots**
 - C. grow wood and bark cells
 - D. produce carbohydrates through photosynthesis
 - E. all of the above
423. Professional foresters spend most of their time working with ____.
- A. a bulldozer
 - B. a chainsaw
 - C. mechanical tree planters
 - D. people**
 - E. none of the above
424. The first consideration of forest recreational planning is to ____.
- A. develop an extensive trail system
 - B. protect the forest
 - C. provide a wide variety of activities
 - D. survey land use owners
 - E. complete a property inventory**
425. A hand-held instrument used for measuring angles of elevation or depression, expressed in degrees or per cent is a(n) ____.
- A. abney level**
 - B. prism
 - C. stereoscope
 - D. Merritt Hypsometer
 - E. all of the above
426. Other than wildfires, which of the following forest enemies are the most damaging?
- A. diseases and insects**
 - B. domestic livestock
 - C. environment
 - D. wildlife
 - E. none of the above
427. A plot of land is 30 chains long and 16 chains wide. It contains ____.
- A. 48 acres**
 - B. 480 acres
 - C. 200 hectares
 - D. 48 hectares
 - E. none of the above
428. The number of trees in a fully stocked stand _____ as the trees increase in diameter.
- A. can not be determined
 - B. decreases**
 - C. increases
 - D. remains the same
 - E. none of the above
429. An example of a biotic factor in a forest is _____.
- A. climate
 - B. rainfall
 - C. soil depth

D. a tree

E. soil texture

430. A cottonwood tree has a ____ leaf shape.
A. cordate
B. deltoid
C. obovate
D. oval
E. all of the above
431. A cant that measures 6 inches X 12 inches X 20 feet contains ____ board feet:
A. 6 board feet
B. 48 board feet
C. 120 board feet
D. 1440 board feet
E. none of the above
432. ____ is very intolerant of shade.
A. ash
B. beech
C. hickory
D. black walnut
E. none of the above
433. The contour interval on a topographic map indicated the _____.
A. difference in elevation represented by adjoining contour lines
B. different types of contour lines
C. elevation at a specific point
D. elevation of a general area
E. none of the above
434. ____ is not a silvical characteristic.
A. growth habit
B. seeding habit
C. site and moisture requirements
D. all of the above are silvical characteristics
E. none of the above
435. Board feet is calculated by multiplying length in inches by width in inches by thickness in inches and dividing by _____.
A. 12
B. 128
C. 144
D. 1728
E. none of the above
436. Leaves with opposite arrangement have _____.
A. leaves in an unpaired arrangement with one leaf per node
B. leaves paired at the same height
C. more than two leaves at each node
D. three or more blades per leaf
E. none of the above
437. Silvics is the science of tree ____ and species distribution in the forest.
A. cutting
B. disease
C. growth
D. harvest
E. all of the above

438. ___ prefers wet bottomlands with heavy soils.
- A. red oak
 - B. shortleaf pine
 - C. sugar maple
 - D. white oak
 - E. none of the above**
439. Which of the pine species has needles 5 to 9 inches long, few branches and usually black bark?
- A. cottonwood
 - B. loblolly pine
 - C. longleaf pine**
 - D. shortleaf pine
 - E. none of the above
440. Which of the following is NOT a benefit of trees to the environment?
- A. increase pollutants to the environment**
 - B. influence the climate
 - C. provide habitat for wildlife
 - D. provide oxygen to the environment
 - E. all of the above
441. Of the 738 million acres of forestland in the United States, roughly ___ of the acreage is referred to as noncommercial forestland that includes swamps, parks, wildlife preserves and game refuges where timber harvesting is not permitted.
- A. 1/4
 - B. 1/3**
 - C. 1/2
 - D. 2/3
 - E. none of the above
442. The term commercial forest means that the _____.
- A. land is capable of producing economically useful trees**
 - B. land produces only commercial size harvestable trees
 - C. government owns a majority of the saleable timber
 - D. timber companies own a majority of the forestland
 - E. all of the above
443. Who owns the majority of commercial forestland?
- A. forest product industries
 - B. local, state and federal governments
 - C. private individuals**
 - D. timber harvesters
 - E. all of the above
444. To be certified as a tree farm, one must manage ___ or more acres of forestland to produce timber.
- A. 5
 - B. 10**
 - C. 50
 - D. 100
 - E. none of the above
445. The state of Washington is located primarily in the ___ forest region.
- A. Central hardwood
 - B. Northern
 - C. Pacific Coast**
 - D. Rocky Mountain (Western)
 - E. none of the above

446. The state of Michigan is located primarily in the ___ forest region.
A. Central Hardwood
B. Northern
C. Pacific Coast
D. Southern
E. none of the above
447. A tree with a small crown in the general canopy level with but with little direct light from the side is called a / an ___ tree.
A. Codominant
B. Dominant
C. Intermediate
D. Suppressed
E. none of the above
448. The class of trees angiosperms is made up of ___ trees.
A. Broadleaf
B. conifer
C. evergreen
D. hardwood
E. none of the above
449. Arrangement, color, texture, type, size and shape refer to ___ characteristics used in tree identification.
A. bark
B. fruit
C. leaf
D. twig
E. none of the above
450. Roots which grow vertically downward and anchor the tree are _____.
A. feeder roots and hair roots
B. lateral roots
C. surface roots
D. tap roots
E. all of the above
451. The trunk as well as the branches and roots grow in diameter by means of cell division in the _____.
A. cambium layer
B. heartwood
C. sapwood
D. outer bark
E. all of the above
452. The inner core of a woody stem, wholly composed of non-living cells, darker in color than the outer layer of the stem is the _____.
A. cambium layer
B. heartwood
C. sapwood
D. outer bark
E. none of the above
453. Alternate, opposite and whorled describe _____.
A. leaf types
B. needle types
C. twig branching
D. tree classifications
E. all of the above

454. Which of the following trees has a tall, straight gray trunk clear of limbs for 30 feet to 50 feet and distinctively shaped leaf and flower from which the tree receives its name?
- A. American Beech
 - B. American Sycamore
 - C. Yellow Poplar**
 - D. Sweet Gum
 - E. all of the above
455. Which of the following trees has opposite leaves, 5 to 9 sharp pointed leaflets and diamond bark?
- A. ash**
 - B. hickory
 - C. pecan
 - D. black walnut
 - E. all of the above
456. The following tree usually has thick bright, reddish brown bark with papery scales and long, lustrous, drooping, bright green needles that are 8 to 15 inches long in clusters of 3.
- A. loblolly pine
 - B. lodgepole pine
 - C. longleaf pine**
 - D. ponderosa pine
 - E. all of the above
457. Which of the following is NOT usually an economic factor associated with forest management?
- A. cost of forest land
 - B. logging costs
 - C. timber supply and demand
 - D. wildlife resources in residence**
 - E. none of the above
458. The most expensive timber management activity is ____.
- A. estimating or cruising
 - B. hand planting
 - C. marking
 - D. site preparation**
 - E. none of the above
459. Timber sold on the basis of so much per thousand board feet or cords is sold as ____.
- A. individual trees
 - B. lump sum
 - C. tree scale**
 - D. weight
 - E. none of the above
460. A timber harvesting method used to allow faster growth of remaining trees, to remove diseased trees or to remove undesirable trees before the final harvest is called ____.
- A. initial forestation
 - B. intermediate cuttings**
 - C. selective cuttings
 - D. shelterwood
 - E. all of the above
461. Thinning is designed to ____.
- A. concentrate growth on the best trees

- B. reduce crown density
- C. reduce the number of trees in an immature stand
- D. reduce the time period to the final harvest**
- E. all of the above

462. Frilling involves ____.
- A. cutting the tree down
 - B. encircling a tree stem with downward, overlapping axe cuts**
 - C. spraying herbicide on the tree leaves
 - D. using tubular injection
 - E. all of the above
463. A process which removes injured, disease or insect-infested trees is called ____..
- A. liberation cutting
 - B. salvage cutting
 - C. sanitation cuttings**
 - D. thinnings
 - E. all of the above
464. An economical way to remove excess logging debris and undesirable vegetation prior to planting is to use ____.
- A. bulldozer
 - B. herbicide
 - C. prescribed fire**
 - D. wildlife
 - E. none of the above
465. In the ____ harvest method, the entire stand of trees are cut except for a few which are selected for their quality and seed producing ability.
- A. coppice
 - B. clearcutting
 - C. selective cutting
 - D. seed tree cutting**
 - E. all of the above
466. The purpose of this harvest method is to: produce a large immediate income, provide for the natural reseeding of the area and provide partial shelter for the seedlings as they begin to germinate.
- A. coppice
 - B. selective cutting
 - C. seed tree cutting
 - D. shelterwood cutting**
 - E. all of the above
467. Merchantable height can be estimated in the field with a ____.
- A. Hypsometer**
 - B. Planimeter
 - C. Stereoscope
 - D. Transit
 - E. all of the above
468. How tall is a sweet gum tree that is 50 years old and has a site index of 90?
- A. 50
 - B. 90**
 - C. 100
 - D. 140
 - E. none of the above
469. During a year of good growth, a tree will have ____ annual rings.
- A. colorful

- B. missing
- C. narrow
- D. wide**
- E. none of the above

470. The basal area per acre is ___ if a person has counted 24 trees with a 10-factor prism.
A. 60
B. 120
C. 180
D. 240
E. none of the above

471. The most common method of measuring pulpwood today at the wood buying centers is in terms of _____.
A. bolts
B. cubic feet
C. gross weight or tons
D. sticks
E. none of the above

472. Board feet is calculated by multiplying length in feet by width in inches by thickness in inches and dividing by _____.
A. 12
B. 128
C. 144
D. 1728
E. none of the above

473. A tree which is under the level of the forest crown and receives no direct sunlight is considered a _____ tree.
A. dominant
B. co-dominate
C. intermediate
d. suppressed
e. none of the above

474. Pennsylvania contains about _____ million acres of hardwood forests.
A. 1
B. 8
C. 17
D. 150
E. none of the above

475. _____ % of Pennsylvania is covered with forests.
A. 10
B. 25
C. 90
D. 60
E. none of the above

476. Pennsylvania's timber and forest products industry is the ____ largest manufacturing industry in the state.
A. 1st
B. 2nd
C. 3rd
D. 4th
E. None of the above

477. Pennsylvania's timber and forestry products industry is the ___ largest employer.

- A. 2nd
- B. 5th
- C. 7th**
- D. 10th
- E. None of the above

478. The removal of trees from the forest, including urban forests, _____ global warming and the amount of carbon dioxide in the atmosphere.

- A. Has no effect on
- B. Decreases
- C. Increases**

479. Which of the following natural events affects Pennsylvania forests?

- A. biological infestations of insects and diseases
- B. global warming
- C. severe weather including hurricanes and tornados
- D. all of the above**
- E. none of the above

480. The following are present or potential effects of global warming on Pennsylvania forests:

- A. warblers, which are responsible for eating many forest insect pest, are moving their nest sites further north
- B. blue jay populations could decrease, resulting in fewer oak seedlings, as blue jays are prime distributors of oak acorns
- C. both of the above**
- D. neither of the above

481. Which of the following species are considered invasive, exotics in PA?

- A. Norway maple
- B. Ailanthus
- C. Mimosa
- D. All of the above**
- E. None of the above

482. Ailanthus is often mistaken for staghorn sumac along PA roadways. Ailanthus can be identified by which of the following characteristics?

- A. compound leaves, which are often 14" or more long
- B. a winged seed, resembling ash, which is distributed by the wind
- C. a "stale peanut butter" odor when the leaf is broken from the twig
- D. a very large leaf scar
- E. all of the above**

483. Trees and forests are considered to be _____.

- A. producers**
- B. first level consumers
- C. second level consumers
- D. decomposers
- E. all of the above

484. Which of the following is one of the effects of acid rain on Pennsylvania forests?

- A. causes an increase in photosynthesis and faster tree growth
- B. releases aluminum ions from the soil which can damage tree roots**
- C. turns tree leaves brown, decreasing photosynthesis
- D. all of the above
- E. none of the above

485. Forest conservation not only preserves trees as resources but also allows them to:

- A. protect watersheds
- B. prevent soil erosion

C. provide wildlife habitat

D. all of the above

E. none of the above

486. The national forest found in Pennsylvania is the _____.

A. Valley Forge National Forest near Philadelphia

B. Gifford Pinchot National Forest in the Poconos

C. Joe Paterno National Forest near State College

D. Allegheny National Forest in northwest Pennsylvania

E. None of the above

487. The forests growing in Pennsylvania today are considered _____.

A. virgin forests (they have never been harvested)

B. second - growth forests (they have been harvested once)

C. third growth forests (they have been harvested twice)

D. none of the above

488. The virgin forest of the Allegheny national forest was predominately _____.

A. American Beech, hemlock, sugar and red maple, white pine and cherry

B. Red, white, black and chestnut oak

C. White pine, black spruce, tamarack and eastern hemlock

D. Dogwood, serviceberry, arrowwood, redbud and cucumbertree

E. None of the above

489. The reason the current forest of the Allegheny national forest is different from the original forest is:

A. The species that regrew were those adapted to bright sunlight

B. Deer browsing on the forest floor have eaten seedlings of some tree species

C. Grasses and brush grew and prevented the growth of some species of tree seedlings

D. All of the above

E. None of the above

490. The most important forest type (based on monetary value) in Pennsylvania today is _____.

A. Birch, sugar maple, beech, and black cherry

B. Dogwood, arrowwood, maple-leaved viburnum, grape vine

C. Yellow poplar, eastern hemlock, cucumbertree

D. Staghorn sumac, ailanthus, paulownia, mimosa

E. None of the above

491. The most important forest type in Pa today is oak-hickory, which found in _____ PA.

A. northwestern and southeastern

B. Northeastern and southwestern

C. central and southern

D. Northern and western

E. none of the above

492. The second most common forest type in PA is the northern hardwood forest found in _____ PA.

A. Central and southern

B. eastern and western

C. northeastern and southwestern

D. northern and northwestern

E. none of the above

493. All of Pennsylvania is found within the _____ forest biome.

A. Boreal

B. temperate coniferous

C. temperate deciduous

D. tropical deciduous

- E. temperate rainforest
494. Characteristics of the temperate deciduous forest biome include which of the following?
 A. long, warm summers with precipitation
 B. cold winters with precipitation
 C. trees which are mostly deciduous and lose their colored leaves in fall
 D. dominant trees - oaks, hickory, maple, beech, and sycamore
 E. **all of the above**
495. The United States Department of Agriculture's _____ is responsible for keeping exotic pests out of the U.S.
 A. **APHIS - Animal and Plant Health Service**
 B. EXOTIC - Exterminate Overseas Toxic and Invasive Crops
 C. KOP - Keep Out Pests
 D. All of the above
 E. None of the above
496. Which of the following are introduced tree diseases which have had grave effects on United States forests?
 A. white pine blister rust
 B. Chestnut blight
 C. Dutch elm disease
 D. **all of the above**
 E. none of the above
497. Introduced forest insect pests found in Pennsylvania and the northeastern United States include which of the following?
 A. Asian long-horned beetle
 B. pine shoot moth
 C. balsam wooly adelgid
 D. **all of the above**
 E. none of the above
498. A deciduous tree _____.
 A. **survives winter by dropping its leaves**
 B. contains trees whose leaves are needles or scales
 C. has tree leaves which remain green in winter
 D. all of the above
 E. none of the above
499. The best way to control forest insects or diseases is to _____.
 A. spray as soon as a disease or insect is noticed
 B. **use integrated pest management**
 C. harvest all trees near the infestation immediately
 D. all of the above
 E. none of the above
500. A very complex community of associated trees, shrubs, other plants and animals is a/an _____.
 A. Arboretum
 B. **Forest**
 C. Greenhouse
 D. Park
 E. None of the above
501. A tree that bears seeds in cones and that have long, narrow (needlelike) leaves is a _____.
 A. Broadleaf
 B. **Conifer**
 C. Deciduous tree

- D. Foliage plant
 - E. none of the above
502. The class of trees, Gymnosperm, is made up of _____ trees.
- A. Broadleaf
 - B. Coniferous**
 - C. Deciduous
 - D. Hardwood
 - E. none of the above
503. Roots which grow horizontally and help keep the tree upright are _____.
- A. Feeder roots and root hairs
 - B. Lateral roots**
 - C. Surface roots
 - D. Tap roots
 - E. None of the above
504. The process by which excess water from the tree is allowed to evaporate through openings in the leaves is _____.
- A. Hydrolysis
 - B. Osmosis
 - C. Photosynthesis
 - D. Transpiration**
 - E. none of the above
505. Which of the following terms is used to describe leaf margins?
- A. Acute
 - B. Deltoid
 - C. Lobed**
 - D. Wedge shaped
 - E. None of the above
506. Awl-shaped and scale-like describe _____.
- A. Fruit types
 - B. Flower types
 - C. Leaf types**
 - D. Twig branching
 - E. None of the above
507. Which of the following trees has a simple large leaf, scale like bark, and spineless fruit 1" in diameter?
- A. American beech
 - B. American sycamore**
 - C. Yellow poplar
 - D. Sweetgum
 - E. None of the above
508. Which of the following trees has smooth bark and coarsely toothed leaves, 3/4" long?
- A. American beech**
 - B. American sycamore
 - C. Yellow poplar
 - D. Sweetgum
 - E. None of the above
509. The following tree usually has thick, bright reddish-brown bark, a compact crown, and needles that are 6 to 9 inches long in clusters of 3.
- A. Loblolly pine**
 - B. Longleaf pine
 - C. Lodgepole pine
 - D. Ponderosa pine

E. all of the above

510. The leading country in growing softwood lumber in the world is _____.

- A. Europe
- B. Brazil
- C. Canada
- D. Russia**
- E. China

511. An example of a converted wood product is _____.

- A. Kitchen cabinets
- B. Charcoal**
- C. Firewood
- D. Posts
- E. All of the above

512. Radial sawed lumber is also called _____.

- A. Edge grained
- B. Flat sawn
- C. Plain sawn
- D. Quarter sawn**
- E. None of the above

513. Applying tree seeds to the harvested area or prepared beds is called _____.

- A. seed tree method
- B. direct seeding**
- C. natural seeding
- D. all of the above
- E. none of the above

514. Neither natural seeding or _____ will result in trees being planted in rows unless a grain drill is used.

- A. seed tree method
- B. Direct seedings**
- C. Natural seeding
- D. Shelterwood seeding
- E. None of the above

515. The forest pest attacking the eastern hemlock in PA is the _____.

- A. balsam wooly adelgid
- B. hemlock wooly adelgid**
- C. gypsy moth
- D. pine shoot sawfly
- E. none of the above

516. Which of the following species is most shade tolerant?

- A. Douglas Fir
- B. Hemlock**
- C. Loblolly Pine
- D. Ponderosa Pine
- E. None of the above

517. Which of the following species is intolerant of shade?

- A. Aspen
- B. Black Walnut
- C. Cottonwood
- D. Sugar Maple
- E. A & C**

518. Which of the following species is most intolerant of drought?

- A. Cedar
- B. Douglas Fir
- C. Hickory
- D. Sugar Maple**
- E. All of the above are intolerant of drought

519. Which of the following species is flood tolerant?

- A. Douglas Fir
- B. Ponderosa Pine
- C. Tupelo**
- D. White Oak
- E. None of the following is flood tolerant

520. Which of the log classifications listed below includes the highest value logs?

- A. construction class
- B. factory class
- C. local use class
- D. veneer class**
- E. none of the above

521. A watershed is a/an:

- A. aquifer
- B. drainage basin covered with vegetation**
- C. reservoir of drinking water
- D. subsurface storage system for water
- E. all of the above

522. Dendrology is commonly defined as the _____.

- A. study of forest measurement
- B. study of tree growth and management
- C. taxonomy of all woody plants**
- D. taxonomy of trees
- E. none of the above

523. 2,4-D is a(n):

- A. fungicide
- B. Herbicide**
- C. Insecticide
- D. Pesticide
- E. All of the above

524. A dibble is generally used to:

- A. collect soil samples
- B. fight brush fires
- C. plant containerized plugs (seedlings)**
- D. record tree tally information
- E. none of the above

525. A species of tree most tolerant of flood conditions is:

- A. Bald Cypress**
- B. Douglas Fir
- C. Flowering Dogwood
- D. Western Hemlock
- E. All of the above will tolerate floods

526. As a general rule:

- A. conifers are usually less tolerant of flooding than hardwoods**
- B. hardwood are usually less tolerant of flooding than conifers
- C. most important forest species are flood tolerant
- D. no important forest species are flood tolerant

527. A silviculture prescription:
- A. Changes in forest density
 - B. Is a type of forest inventory?
 - C. Plans for pesticide application to control insects
 - D. Usually contains cultural operations relating to objectives**
 - E. none of the above
528. Windrowing, herbicide application and prescribed burning are methods of:
- A. Artificial regeneration
 - B. Natural regeneration
 - C. Site preparation**
 - D. Uneven-aged management
 - E. none of the above
529. Limbing a tree is generally performed:
- A. After bucking and skidding
 - B. After the tree has been hauled to the mill
 - C. prior to bucking and skidding**
 - D. Prior to skidding but after bucking
 - E. None of the above
530. The part of the cut that controls the tree's direction of fall is the:
- A. Backcut
 - B. Bucking
 - C. Limbing
 - D. Undercut or hinge cut**
 - E. None of the above
531. If lumbe^r is referred to as "soft maple" it is most likely:
- A. Black Maple
 - B. Box Elder
 - C. Red Maple**
 - D. Sugar Maple
 - E. None of the above
532. Which of the following is considered a southern pine?
- A. Jack Pine
 - B. Loblolly Pine**
 - C. Pitch Pine
 - D. Red Pine
 - E. All of the above are called southern pines
533. A tree species with a high tolerance for urban pollutants is:
- A. Colorado (Blue) Spruce**
 - B. Gray Birch
 - C. Paper Birch
 - D. Ponderosa Pine
 - E. None of the above
534. Trees planted in urban areas:
- A. are useful in reducing heat values in the summer
 - B. may be valuable in home energy conservation
 - C. may reduce wind speeds
 - D. all of the above**
 - E. none of the above
535. An area 10 square chains in size is:
- A. 1 acre**
 - B. 1 hectare

- C. 1 mile
- D. 660 feet
- E. none of the above

536. Magnetic declination is:

- A. 0 degrees north of the equator
- B. is easterly if you are in a position west of the agonic line
- C. the angle of difference between true north and magnetic north**
- D. the point at which a compass points to the magnetic north pole
- E. none of the above

537. Aggregate fruits are:

- A. acorns
- B. borne in clusters**
- C. cones
- D. winged seeds
- E. none of the above

538. Gymnosperms bear naked seeds. They are the:

- A. broad-leafed trees
- B. cone bearing trees**
- C. fruit trees
- D. oaks
- E. none of the above

539. The tree most likely to be used for pulp and paper is:

- A. cedar
- B. elm
- C. oak
- D. spruce**
- E. none of the above

540. The species that attains the greatest height of any eastern tree is:

- A. Bald Cypress
- B. Paper Birch
- C. Red Oak
- D. Yellow Poplar**
- E. none of the above

541. Which of the following species produces the greatest amount of timber in the U.S.

- A. Douglas Fir**
- B. Northern Red Oak
- C. Shortleaf Pine
- D. Western Hemlock
- E. none of the above

542. The contour interval on a topographic map indicates the _____.

- A. difference in elevation represented by adjoining contour lines**
- B. different types of contour lines
- C. elevation at a specific point
- D. elevation of a general area
- E. none of the above

543. A bark gauge measures _____

- A. diameter of the tree trunk
- B. ratio of bark to wood
- C. the decibels generated when a felled hits the ground
- D. tree bark thickness**
- E. none of the above

544. An example of a sucking insect is:
- A. Gypsy Moth
 - B. Pales Weevil
 - C. Scale**
 - D. White Pine Weevil
 - E. None of the above are sucking insects
545. A conifer with scales rather than needles is _____.
- A. cedar**
 - B. fir
 - C. spruce
 - D. yew
 - E. none of the above have scale leaves
546. How many sections are in a township?
- A. 32
 - B. 36**
 - C. 64
 - D. 640
 - E. None of the above are correct
547. A fire weather kit contains tools needed to measure and record:
- A. fire fighting efficiency
 - B. site specific weather conditions**
 - C. the size and type of fire
 - D. the weather on the day of a fire
 - E. none of the above
548. The tool that will be most useful in locating your position in the woods would be a(n):
- A. altimeter
 - B. GPS receiver**
 - C. Hand compass
 - D. Staff compass
 - E. All of the above
549. To estimate the age of a tree use a(n):
- A. bark gauge
 - B. diameter tape
 - C. increment borer**
 - D. loggers tape
 - E. any of the above
550. The purpose of a dot grid is to:
- A. estimate acreage of an area on a map**
 - B. lay out property boundaries
 - C. locate a specific point on a map
 - D. transfer information from one map to another in a different scale
 - E. all of the above
551. Which of the following would not be considered a field surveying tool?
- A. fiberglass measuring tape
 - B. hand compass
 - C. planimeter**
 - D. transit
 - E. all of the above
552. Which of the following tools is not used to measure trees?
- A. diameter calipers
 - B. hypsometer
 - C. relkascop

D. wedge prism

E. all of the above

553. A theodolite is a(n)

A. electronic transit

B. forest inventory recording devise

C. tool for converting English measurements to the metric system

D. type of GPS receiver

E. none of the above

554. When purchasing a wedge prism you find each has a number, such as 5, 10, 15, etc. these numbers refer to:

A. acreage

B. basal area factors

C. classification of trees by size

D. distances from plot center

E. none of the above are correct

555. When performing a forest inventory with a wedge prism you are selecting trees by:

A. species

B. their dbh

C. their distance from you

D. using a table of random numbers to identify the trees

E. none of the above

556. A wedge prism is used in a type of inventory called:

A. cluster sampling

B. double sampling

C. plot sampling

D. point sampling

E. none of the above

557. On a topographic map which of the following is a dark, heavy line with an elevation figure?

A. contour index

B. contour interval

C. contour line

D. horizontal control station

E. none of the above

558. A disadvantage to clearcutting is _____

A. nothing can grow in clear-cut area for 3 years

B. soil erosion can be a problem if there is no advance tree regeneration

C. it is the most costly harvest method

D. there are no disadvantages to clearcutting

E. none of the above

559. The term "alkaline" refers to a substance with a pH of _____

A. 7.0

B. 7.1 or above

C. 4.9 or below

D. 3.0

E. none of the above

560. A soil with a pH of 3.2 is _____

A. neutral

B. acidic

C. alkaline

D. all of the above

E. none of the above

561. An herbicide that will not move or translocate within a plant is called a/an ____
herbicide
A. surfactant
B. contact
C. systemic
D. cuticle
E. all of the above
562. Aggressive reproduction, rapid growth and high quality wood have made ____ the most managed pine of the northern forest
A. Loblolly Pine
B. Longleaf Pine
C. Red Pine
D. White Pine
E. all of the above
563. The range of this pine stretches from North Dakota to Western Oregon and California and south well into Mexico.
A. Longleaf Pine
B. Ponderosa Pine
C. Red Pine
D. White Pine
E. Austrian Pine
564. Which of the following trees has compound leaves?
A. Black Walnut
B. Red Maple
C. Sycamore
D. Sweet Gum
E. red oak
565. The most basic parts of an azimuth compass include a magnet, usually a needle, and a circle divided into:
A. 90 degrees
B. 180 degrees
C. 360 degrees
D. 400 degrees
E. none of the above
566. A cant hook is used to _____.
A. roll logs
B. load logs
C. fell logs
D. skid logs
E. all of the above
567. An increment borer is NOT used to do which of the following?
A. estimate the age of a tree
B. determine the growth rate of a tree
C. eliminate knots in lumber
D. an increment borer does all of the above
E. an increment borer does none of the above
568. A tool used to help read aerial photographs is the _____.
A. Haga altimeter
B. clinometer
C. stereoscope
D. Abney level
E. all of the above are used to read aerial photographs

569. A hand held compass with numbers graduated up to 360 clockwise is called a ____
A. quadrant
B. azimuth
C. declination
D. any of the above would be correct
E. none of the above
570. The abney level is used to measure _____.
A. tree height
B. DBH
C. board feet
D. all of the above
E. none of the above
571. Calipers are used to measure _____.
A. tree height
B. DBH
C. board feet
D. land area
E. none of the above
572. A log scale stick is used to measure _____.
A. tree height
B. DBH
C. board feet in a log
D. land area
E. none of the above
573. The Biltmore stick is used to measure _____.
A. tree height
B. DBH
C. board feet
D. land area
E. both A & B
574. The merit hypsometer measures the number of ____ foot logs in a standing tree.
A. 8
B. 10
C. 12
D. 16
E. none of the above
575. When using a chain saw to remove a large limb on a standing tree the first cut should be made on the _____ of the limb.
A. top
B. side
C. bottom
D. it does not matter where the first cut is made
E. none of the above
576. More chain saw accidents occur when using dull chains, than when using sharp chains.
A. true
B. false
C. the sharpness of the chain has no affect on accidents
577. The hollow spouts driven into the holes of a maple tree and used to collect sap are called _____.
A. spiles

- B. hypsometers
- C. Kevlar
- D. any of the above may be used
- E. none of the above are correct

578. When using a chain saw, a "kick back" is caused by _____.

- A. standing on the wrong side of the log
- B. the wood 'binding'**
- C. elm wood
- D. not wearing chaps
- E. none of the above

579. Which of the following are safety devices which should be worn when ever you use a chain saw?

- A. hard hats
- B. eye and ear protection
- C. leg chaps
- D. all of the above**
- E. none of the above

580. Which of the following is a safety device on a chain saw

- A. Kevlar
- B. cant hook
- C. pickaroon
- D. leg chaps
- E. none of the above**

581. When numbering the sections in a township, always start numbering in the _____ corner.

- A. northwest
- B. northeast**
- C. southeast
- D. southwest
- E. none of the above

582. How many acres are there in a field which is $\frac{1}{4}$ mile long by $\frac{1}{4}$ mile wide?

- A. 160
- B. 80
- C. 40**
- D. 20
- E. none of the above

583. How many acres are in a field which is 220 feet long by 400 feet wide?

- A. 1
- B. 2**
- C. 3
- D. 4
- E. none of the above

584. A board foot is equal to a board with the measurements _____.

- A. 12" X 12" X 12"
- B. 12" X 12" X 1"**
- C. 12" X 1' X 1"
- D. 1" X 1" X 1"
- E. none of the above

585. How many board feet are in an order of lumber of 5 pieces of 2" X 4" X 12'?

- A. 480
- B. 16
- C. 40**

- D. 120
- E. none of the above

586. If lumber costs \$ 450.00/M, how much does 1 board foot cost?

- A. \$ 45.00
- B. \$ 00.45**
- C. \$ 04.50
- D. \$ 450.00
- E. none of the above

587. How much will 10 pieces of lumber cost 2" X 6" X 10' cost if the cost of lumber is \$ 650/M?

- A. \$ 650.00
- B. \$ 65.00**
- C. \$ 6.50
- D. \$ 0.65
- E. none of the above

588. How many chains are in a mile?

- A. 40
- B. 50
- C. 80**
- D. 120
- E. none of the above

589. How much will a pile of wood cost that is 6' X 12' X 20', if a cord is valued at \$ 60.00?

- A. 125
- B. 500
- C. 650
- D. 900
- E. none of the above**

590. How long is a pulpwood stick?

- A. 8 feet
- B. 80 inches
- C. 10 feet
- D. 100 inches**
- E. none of the above

591. How many pulpwood sticks are there in a log that is 43 feet long?

- A. 4
- B. 5**
- C. 6
- D. 7
- E. 4.3

592. Since round wood cannot be stacked to make a solid volume, a cord of wood is actually reduced from 128 cubic feet to _____ cubic feet of actual wood.

- A. 110 - 120
- B. 100 - 110
- C. 80 - 90
- D. 70 - 90**
- E. 50 - 60

593. The area of the end of a log is called the _____ area.

- A. basal**
- B. end
- C. stump
- D. butt

E. none of the above

594. If a 20 acre stand of trees is to receive a 10% cruise - how many 1/5 acre plots will be required?

A. 10

B. 20

C. 25

D. 5

E. none of the above

595. A pace in land measurement is equal to ___ steps.

A. 1

B. 2

C. 4

D. however many steps you want it to be

E. there is no such thing as a pace in forestry

596. When using a Meritt Hypsometer you should stand _____ feet from the tree to estimate tree height.

A. 6

B. 66

C. 10

D. 100

E. none of the above

597. Which has a larger volume, a cord of oak or a cord of hickory?

A. oak

B. pine

C. they have equal volume

598. Which normally has a greater value, black walnut wood or white pine?

A. black walnut

B. white pine

C. the value is usually equal - not based on the species

599. Which will weigh more, a cord of hickory or a cord of aspen?

A. hickory

B. aspen

C. a cord of any species will weight the same as a cord of any other species

600. Stumpage refers to the _____.

A. number of stumps left after a timber harvest

B. the value of the stumps of black walnut for gun stocks

C. not knowing what to do next

D. the value of trees as they stand uncut in the woods

E. none of the above

601. A forest fire which is out of control is called a _____.

A. ground fire

B. spot fire

C. suppression fire

D. wild fire

E. none of the above

602. The most common cause of forest fire in the United States is _____.

A. careless smokers

B. campers

C. incendiary

D. railroads

E. none of the above

603. Incendiary burning is _____.
- A. burning near woods to get rid of weeds, underbrush, insects, ect.
 - B. caused by lightening
 - C. responsible for less than 5 % of the forest fires in the United States
 - D. intentionally setting a fire**
 - E. none of the above
604. The only important and unpreventable cause of forest fires is _____.
- A. careless smokers
 - B. logging machinery
 - C. incendiary fires
 - D. lightning**
 - E. none of the above
605. Incendiary fires account for _____ per cent of the forest fires in the U.S.
- A. 13%
 - B. 26%**
 - C. 39%
 - D. 52%
 - E. none of the above
606. Burning debris in farmland and urban areas which gets out of control and spreads to nearby forests accounts for _____ of the forest fires in the U.S.
- A. 11 %
 - B. 17%
 - C. 23 %**
 - D. 8 %
 - E. none of the above
607. Which, if any, of the following does not affect the behavior of a forest fire ?
- A. relative humidity
 - B. wind
 - C. topography
 - D. all of the above affect a forest fire**
 - E. none of the above affect a forest fire
608. The most extreme fire danger rating is _____.
- A. low
 - B. medium
 - C. high - I believe it is none, low, medium, and high
 - D. explosive**
 - E. none of the above
609. A fire set along the inner edge of a fire control line to stop a spreading fire is called a _____.
- A. backfire**
 - B. prescription fire
 - C. choker
 - D. spot fire
 - E. none of the above
610. A fire which is away from the main fire which was started by flying sparks is called a _____.
- A. backfire
 - B. widow maker
 - C. branch fire
 - D. spot fire**
 - E. none of the above

611. The discovery, confinement and extinguishing of a forest fire is called _____.
A. fire fighting
B. fire suppression
C. firebreak
D. burning
E. none of the above
612. In most parts of the United States the major forest fire seasons are _____.
A. winter and spring
B. spring and summer
C. spring and fall
D. summer and fall
E. there is no forest fire season
613. The application of fire to gain beneficial results is called _____.
A. sanitation burn
B. prescription burn
C. management burn
D. selective burn
E. none of the above
614. A buffer zone in and around forest stands which is used to potentially stop the spread of fire is called a _____.
A. shelterbelt
B. suppression barrier
C. fire line
D. fire break
E. none of the above
615. Which are hand tools commonly used in fighting forest fires?
A. mattock and Pulaski
B. back pack pump and shovel
C. rakes and brooms
D. all of the above
E. none of the above
616. Which is not a necessity for a forest fire?
A. oxygen
B. heat
C. fuel
D. humidity
E. all of the above are requirements for a fire
617. The study of forest insects is called _____.
A. forest insectology
B. forest entomology
C. forest pestology
D. forest ornithology
E. none of the above
618. Insects cause _____ damage to forests than does forest fires.
A. more
B. less
C. about the same amount of
619. Chemicals used to control only forest insects are called _____.
A. forest pesticides
B. forest herbicides
C. forest insecticides
D. forest fungicides

- E. none of the above
620. Chemicals used to control unwanted forest plants are classified as _____.
A. forest pesticides
B. forest herbicides
C. forest insecticides
D. forest fungicides
E. none of the above
621. Aphids damage forest trees by _____.
A. chewing
B. sucking
C. defoliating
D. all of the above
E. none of the above
622. Fungicides are chemicals used to control _____.
A. rust diseases
B. fungus diseases
C. powdery mildew
D. all of the above
E. none of the above
623. The disease fire blight is caused by _____.
A. fungus
B. virus
C. bacteria
D. any of the above
E. none of the above
624. Dutch elm disease is spread by _____.
A. wind
B. insects
C. water (through the ground)
D. fire
E. none of the above
625. Animals (either wild or domestic) eating twigs & leaves & needles is called _____.
A. grazing
B. cropping
C. lopping
D. browsing
E. none of the above
626. The most destructive practice many farm woodlot owners do is _____.
A. burning
B. grazing
C. fencing
D. all of the above
E. none of the above
627. Allowing domestic animals to graze woodlots reduces both the quality of the pasture and the woodlot. Woodlot values are reduced because of _____.
A. livestock trample seedlings
B. livestock compact the soil causing root damage
C. livestock peel off the bark of the most valuable part of the log
D. all of the above
E. none of the above
628. Which group does the least amount of damage to forest tree stands?

- A. rabbits and mice
- B. deer and dogs
- C. squirrels and porcupines
- D. mink and weasels**
- E. none of the above do damage

629. Sunscald occurs most often in _____.

- A. late winter**
- B. late spring
- C. Late summer
- D. late fall
- E. there is no sunscald problem in the U.S.

630. Which tree would most likely suffer sunscald?

- A. ashes
- B. oaks
- C. maples**
- D. elms
- E. all of the above suffer about the same

631. Which oak group is most likely to suffer from oak wilt?

- A. white oak group - white oak - swamp oak - bur oak
- B. red oak group - red oak - pin oak - black oak**
- C. both groups are equally affected
- D. neither group is affected

632. Most insect damage is done while the insects are in the _____ stage.

- A. egg
- B. larva**
- C. pupa
- D. adult
- E. stage of life cycle has no effect on amount of damage

633. Grazing by cattle does little damage to woodlot once the trees are past the sapling stage.

- A. true
- B. false**
- C. stage of growth has no affect on woodlot damage by grazing

634. A cant that measures 12" X 12" X 40' contains _____ board feet of timber.

- A. 40 board feet
- B. 144 board feet
- C. 480 board feet**
- D. 5760 board feet
- E. none of the above

635. When a logger bids one total price for all the wood to be cut, this is called a _____ sale.

- A. lump sum**
- B. no scale
- C. cruise and sale
- D. total
- E. none of the above

636. "Tree farms" are limited to _____.

- A. private land**
- B. public lands
- C. commercial forest lands
- D. there is no limit on the type of land used

637. Which of the following products would a landowner normally be able to see one tree at a time?
A. pulpwood
B. lumber
C. veneer
D. all of the above
E. none of the above
638. Black spruce is used extensively for _____.
A. lumber
B. veneer
C. pulpwood
D. fine furniture
E. none of the above
639. _____ wood is used to make acetic acid and wood alcohol.
A. white oak
B. white pine
C. sugar maple
D. honey locust
E. none of the above
640. The wood of _____ is used to make pulp for high grade magazines and books.
A. red oak
B. white oak
C. box elder
D. cottonwood
E. none of the above
641. Honey locust is not commonly used for which of the following?
A. fuelwood
B. veneer
C. pulpwood
D. all of the above are common uses for honey locust
E. none of the above
642. The wood of blue spruce is considered to be of little commercial value.
A. true
B. false
643. The wood of the butternut (white walnut) is much lighter and softer than its close relative the black walnut.
A. true
B. false
644. The wood of the ironwood tree (eastern hop hornbeam) is quite similar to white pine.
A. true
B. false
645. Red oak wood is stronger and more durable than white oak wood.
A. true
B. false
646. Elm wood is very tough to split when used for fuelwood.
A. true
B. false
647. Eastern redbud is considered to be of little importance as a commercial wood.
A. true
B. false

648. The wood of green ash is very similar to that of white ash.
A. true
B. false
649. A _____ has an achene type fruit.
A. elm
B. maple
C. pecan
D. sycamore
E. none of the above
650. Salt damage to a tree is identified by_____.
A. bent or broken stems
B. foliage necrosis
C. tip curl
D. twisting of needles or leaves
E. none of the above
651. A strip of bark removed from a tree in a spiral pattern would indicate damage from _____.
A. drought
B. frost
C. lightning
D. tornado
E. black bear
652. Which tree is well adapted to direct seeding?
A. American beech
B. oak
C. shortleaf pine
D. white walnut
E. none of the above
653. Cleanings are done during _____.
A. a harvest cutting
B. disease outbreaks
C. the sapling stage
D. the sawlog stage
E. none of the above
654. A process which removes damaging, dominant trees in an all-aged forest stand is called a _____.
A. liberation cut
B. salvage cut
C. sanitation cut
D. thinning
E. none of the above
655. A backfire extinguishes a fire by _____.
A. creating a strong updraft
B. drying out the soil
C. robbing the fire of fuel
D. using oxygen in the vicinity of the main fire
E. none of the above
656. Soft cambium and newly formed wood is damaged by these enemies which leave tunnels as a sign of damage.
A. bark borers
B. defoliators

- C. sap suckers
- D. tip feeders
- E. none of the above

657. Aphids and scales are examples of _____ with penetrating mouth parts.

- A. bark borers
- B. defoliators
- C. sap suckers**
- D. tip feeders
- E. all of the above

658. Insects that produce abnormal growth on twigs, limbs, trunks or leaves are ____.

- A. gall forming insects**
- B. root feeders
- C. seed eaters
- D. wood borers
- E. all of the above

659. A symptom of winter injury in conifers may be _____.

- A. blackened and dead roots
- B. foliage turns red and dies**
- C. small spots on the needles
- D. stem cankers
- E. all of the above

660. Which of the following is symptomatic of needle cast diseases?

- A. brown needles, die back and top kill
- B. needles bent at the end of the fascicle
- C. orange discoloration at the base of the needles
- D. spots on the needles, death of the affected needles**
- E. all of the above

661. Which of the following conifers has the largest cone?

- A. bald cypress
- B. Douglas fir
- C. eastern hemlock
- D. longleaf pine**
- E. all of the above have ½ inch cones

662. A capsule is the fruit found on a (n) _____.

- A. aspen**
- B. birch
- C. cherry
- D. hickory
- E. none of the above

663. The internal revenue service allows timber income to be treated preferentially as _____

- A. long-term capital gains income**
- B. ordinary income
- C. ad valorem income
- D. business income
- E. any of the above - it is the forest owners choice

664. What is the site index of a sweet gum tree that is 50 years old, 12 inches in diameter and 75 feet tall?

- A. 75**
- B. 80
- C. 50
- D. cannot be determined

665. The greatest amount of distortion on an aerial photograph is at the _____.
A. bottom half of the photo
B. the center of the photo
C. the edges of the photo
D. the top half of the photo
E. none of the above
666. To avoid pinching when removing a tree branch with a chain saw, the operator should _____.
A. cut the branch as close to the tree as possible, starting on the top
B. make a limbing undercut
C. make a stub undercut in front of the top down cut
D. make a limbing cut, top down, beyond the undercut
E. none of the above
667. Which one of the following insect pests lays down a silky trail on foliage or bark?
A. aphid
B. gypsy moth
C. spider mite
D. tent caterpillar
E. none of the above
668. Which of the following species is rated highest in decay resistance of heartwood?
A. aspen
B. black walnut
C. cottonwood
D. sugar maple
E. all of the above
669. Which of the following has what is commonly called a grass stage?
A. loblolly pine
B. longleaf pine
C. Pacific yew
D. white pine
E. none of the above
670. Coppice shoots and root suckers are examples of _____.
A. sexual reproduction
B. vegetative reproduction
C. wood production
D. all of the above
E. none of the above
671. A line which is 60 degrees toward the west from south has a bearing of _____.
A. N 240 degrees W
B. S 60 degrees W
C. S 240 degrees W
D. S 130 degrees W
E. none of the above
672. The greatest amount of forest plantation type regeneration occurs in the ____ region of the United States.
A. northern forest
B. Pacific coast forest
C. Rocky Mountain forest
D. tropical forest
E. none of the above
673. About 2/3 of the U. S. forest is considered _____.

- A. commercial**
- B. non-commercial
- C. park land
- D. wilderness
- E. all of the above

674. If a topographic map has a scale of 1:24000 it means the scale is _____.

- A. 1 inch = 2000 inches
- B. 1 inch = 2000 feet
- C. 1 inch = 24000 feet
- D. 1 inch = 24000 inches or 1" equals 2000'**
- E. none of the above

675. On a colored topographic map, water is indicated by the color _____.

- A. black
- B. blue**
- C. green
- D. purple
- E. none of the above

676. Grubs and wire worms are examples of _____.

- A. defoliators
- B. gall makers
- C. root feeders**
- D. wood borers
- E. all of the above

677. For which of the following would a fungicide be used?

- A. aphids
- B. damping-off**
- C. scale
- D. sunscald

678. Which of the following would you not find in your chain saw owners manual?

- A. recommended spark plug gap
- B. recommended ratio for gas and oil
- C. recommended protective clothing
- D. recommended adjustments for cutting with a dull chain**

679. If your owners manual for your chain saw tells you to mix the gas and oil at a 16:1 ratio, you would mix _____ . (there are 128 ounces in 1 gallon)

- A. 1 gallon of gas with 13 ounces of oil
- B. 1 gallon of gas with 6.5 ounces of oil
- C. 1 gallon of gas with 2 ounces of oil
- D. 1 gallon of gas with 8 ounces of oil**
- E. none of the above

680. Which of the following chain saw tasks does not involve removing and re-installing the chain saw guide bar and chain?

- A. replacing the chain
- B. turning the rotors**
- C. replacing the sprocket
- D. turning the guide bar

681. The term biological control refers to _____.

- A. pest control chemicals containing mostly carbon
- B. pest control using natural agents**
- C. pest control chemicals that are created in a lab by biologists
- D. synthetic pest chemicals
- E. all of the above

682. Fungi are microorganisms which lack _____.
- A. cells
 - B. reproductive parts
 - C. chlorophyll**
 - D. color
 - E. all of the above
683. Which tree species has the greatest resistance to drought?
- A. white ash
 - B. green ash**
 - C. basswood / linden
 - D. sugar maple
 - E. none of the above are resistant to drought
684. A forester would use a soil test kit to measure _____.
- A. depth of the top soil
 - B. moisture level
 - C. percentage of organic matter
 - D. soil pH**
 - E. all of the above
685. All other things being equal a disadvantage of clearcutting is _____.
- A. it is the most costly harvest method
 - B. nothing can grow in the clear cut area for 3 years
 - C. soil erosion can be a serious problem**
 - D. there are no disadvantages to clearcutting
 - E. none of the above are disadvantages
686. The top of the tree is referred to as the _____.
- A. bole
 - B. capon
 - C. collar
 - D. crown**
 - E. none of the above
687. The terminal bud is found at the end of the _____.
- A. flower
 - B. individual leaf structure
 - C. stamen
 - D. twig or branch**
 - E. none of the above
688. _____ has the longest needles of any southern pine.
- A. Loblolly pine
 - B. Longleaf pine**
 - C. Ponderosa pine
 - D. White pine
 - E. none of the above
689. The darker colored interior wood near the tree's center, often no longer living, is called _____.
- A. core wood
 - B. heartwood**
 - C. sapwood
 - D. terminal wood
 - E. none of the above
690. Which of the following trees produces corky bark on the twig as a means of protection?

- A. cedar
- B. pecan
- C. sweet gum**
- D. yellow poplar
- E. none of the above produce corky bark

691. A stand that varies little in the age of its trees is called _____.

- A. even-aged**
- B. mixed
- C. odd-aged
- D. pure
- E. none of the above

692. The most serious hardwood defoliator in the United States is the _____.

- A. fall webworm
- B. gypsy moth**
- C. locust leaf miner
- D. sycamore lace bug
- E. none of the above are defoliators

693. Measuring tree diameter from the uphill side of the tree is preferred because it:

- A. is more easily and accurately determined
- B. provides more secure footing
- C. reduces problems with butt swelling
- D. all of the above**
- E. none of the above

694. Carya is the genus of the _____.

- A. hickory**
- B. maple
- C. oak
- D. spruce
- E. None of the above

695. The ash genus is the _____.

- A. Abies
- B. Acer
- C. Carya
- D. Fraxinus**
- E. none of the above

696. Doyle and Scribner are names of:

- A. Biltmore sticks
- B. diameter measuring devices
- C. tables used to determine form class
- D. U.S. senators who have sponsored forestry legislation
- E. log rules**

697. The white pine weevil:

- A. defoliates trees
- B. kills leaders**
- C. produces galls
- D. stunts twig growth
- E. none of the above

698. Which of the following trees has compound leaves:

- A. birch
- B. persimmon
- C. maple
- D. oak

E. none of the above have compound leaves

699. Pubescent and glaucous are terms used to describe leaf _____.
A. apices and bases
B. margins
C. shapes
D. surfaces
E. none of the above
700. Which of the following terms describes a type of fruit?
A. achene
B. inflorescence
C. panicle
D. pith
E. all of the above are types of fruit
701. Which tree part listed below is considered non-living?
A. cambium
B. heartwood
C. inner bark
D. sapwood
E. all of the above are living
702. Caterpillars are an example of _____ which may destroy all or part of the leaf.
B. defoliators
A. bark borers
C. sap suckers
D. tip feeders
E. none of the above
703. Fields are depicted as _____ on a topographic map.
D. white
A. black
B. brown
C. green
E. none of the above
704. Which of the following is not a factor in using controlled burns?
A. area to be burned
B. intensity of the fire
C. humidity
D. site index
E. none of the above are factors
705. Which of the following is not a harvesting system?
A. coppice cutting
B. clear cutting
C. selective cutting
D. thinning
e. all of the above
706. The harvest method that results in sustained production forestry by requiring foresters to choose trees for harvest based on maturity, size, species, growth rate or other factors is _____.
A. coppice cutting
B. clear cutting
C. selective cutting
D. thinning
e. none of the above

707. An azimuth reading of 196 degrees would convert to a bearing of _____.
- A. 96 degrees south
 - B. 196 degrees SW
 - C. S 16 degrees W**
 - D. 16 degrees SW
 - E. none of the above
708. A forester doing a 20% cruise on 300 acres would need to measure ___ $\frac{1}{4}$ acre plots.
- A. 15
 - B. 24
 - C. 60
 - D. 75
 - E. 240**
709. A backfire extinguishes a fire by _____.
- A. creating a strong updraft
 - B. drying out the soil
 - C. robbing the fire of fuel**
 - D. using oxygen in the vicinity of the main fire
 - E. all of the above
710. An azimuth reading of 255 degrees corresponds to _____.
- A. south
 - B. southwest**
 - C. northeast
 - D. northwest
 - E. none of the above
711. An important factor in the distribution and germination of white oak acorns is _____.
- A. rain
 - B. wild turkey
 - C. deer
 - D. wind
 - E. gray squirrel**
712. A tree that may be used to protect riverbank soils from erosion is the _____.
- A. black willow**
 - B. Douglas fir
 - C. red oak
 - D. sugar maple
 - E. chestnut oak
713. The genus of the tree noted for its great size and long life is _____.
- A. Alnus
 - B. Betula
 - C. Salix
 - D. Sequoia**
 - E. Abies
714. Which of the following trees is valued for its fruit?
- A. birch
 - B. fir
 - C. sycamore
 - D. cottonwood
 - E. pecan**
715. A species of tree with wood noted for its insect repelling properties is the _____.
- A. pecan
 - B. red cedar**

- C. sugar maple
- D. white pine
- E. aspen

716. Contour lines on a topographic map provide information concerning _____.

- A. elevation**
- B. forest boundaries
- C. land use potential
- D. water levels
- E. all of the above

717. The USDA Forest Service manages all of the following except _____.

- A. hunting**
- B. grazing
- C. timber
- D. water
- E. saw log production

718. Which of the following may administer outdoor recreation areas?

- A. Army Corps of Engineers**
- B. Farmers Home Administration
- C. Internal Revenue Service
- D. U,S. Geological Service
- E. all of the above

719. Tree diameter growth is related to _____.

- A. age of the tree
- B. availability of moisture and nutrients
- C. stand density
- D. all of the above**
- E. none of the above

720. Stumps should be cut _____.

- A. 1 foot above the ground
- B. at dbh
- C. at waist height
- D. close to the ground to avoid waste**
- E. none of the above

721. When felling a tree with a chainsaw the backcut _____.

- A. is placed below the undercut
- B. should be placed on the same level as the undercut
- C. should be level with the bottom of the open face notch**
- D. should cut straight through the notch
- E. none of the above

722. When frass is found at the base of a tree the probable cause is _____.

- A. aphids
- B. boring insects**
- C. caterpillars
- D. scale
- E. none of the above

723. Which of the following may girdle a tree?

- A. aphids
- B. bark beetles**
- C. sawflies
- D. scales
- E. none of the above

724. An example of a stem canker disease is _____.
- A. chestnut blight**
 - B. Dutch elm disease
 - C. Fomes
 - D. white pine blister rust
 - E. all of the above
725. Which of the following is considered a parasitic cause of disease?
- A. drought
 - B. fungi**
 - C. ice storms
 - D. salt
 - E. none of the above
726. Backfires are _____.
- A. caused by a change in wind direction during a fire
 - B. necessary in regenerating coniferous forests
 - C. only used in mid-summer
 - D. used to remove fuel ahead of a fire**
 - E. all of the above
727. Thinning overstocked stands in order to manage or control pests is a _____ pest management strategy.
- A. biological
 - B. chemical
 - C. regulatory
 - D. silvicultural**
 - E. none of the above
728. Which of the following is a biological pest management strategy?
- A. coat uninfest wood with paint
 - B. harvest mature trees or stands
 - C. release parasites or predators**
 - D. use pesticides
 - E. all of the above
729. The letters GPS stand for _____.
- A. Geographical Position Site
 - B. Geosynchronous Polar Station
 - C. Geosynchronous Positioning System
 - D. Global Positioning System**
 - E. none of the above
730. Periodic low-intensity fires _____.
- A. are valuable in reducing the amount of fuel available in the forest**
 - B. can be used in any type of forest
 - C. deplete the nutrients in forests soils
 - D. should not be used in coniferous forests
 - E. all of the above
731. Prescribed forest fires _____.
- A. are most useful in cleaning debris from stands of young trees
 - B. are valuable in regenerating certain types of coniferous forests
 - C. are very important in regenerating deciduous forests
 - D. all of the above**
 - E. none of the above
732. Which of the following is a conifer?
- A. alder
 - B. black gum

- C. pecan
- D. walnut
- E. yew**

733. To locate and map points the best tool to use would be the _____.

- A. aerial photograph
- B. GPS receiver**
- C. hand compass
- D. topographic map
- E. none of the above

734. Convulsions, secretions from nose and ears, loss of consciousness and inability to breathe are symptoms of _____.

- A. heat stroke
- B. hypothermia
- C. severe pesticide poisoning**
- D. smoke inhalation
- E. all of the above

735. A snag is a _____.

- A. blocked firebreak
- B. a branch from one tree caught up in branches from another tree
- C. a standing dead tree**
- D. a pinched chain saw bar
- E. none of the above

736. A Pulaski is used in forest firefighting for _____.

- A. felling and clearing
- B. grubbing and chopping**
- C. raking and sweeping
- D. scraping and raking
- E. none of the above

737. Trees in the 4 to 10" dbh range are called _____.

- A. firewood
- B. pole timber**
- C. saw timber
- D. seedlings
- E. none of the above

738. A hypo-hatchet is used for _____.

- A. applying a blaze to trees to mark a boundary
- B. cutting small trees quickly
- C. girdling a tree
- D. injecting a tree with herbicide**
- E. all of the above

739. To view an area in three dimensions you would use a _____.

- A. a pair of aerial photographs and a magnifying lens
- B. a pair of aerial photographs and a stereoscope**
- C. a pair of topographic maps and a magnifying glass
- D. a pair of topographic maps and a telescope
- E. none of the above

740. You are using a clinometer to determine tree height on level ground from a distance of 100 feet. Your reading to the top of the tree is +75%, the bottom reading is -5%. What is the height of the tree?

- A. 70 feet
- B. 75 feet
- C. 80 feet**

- D. 100 feet
- E. none of the above

741. Amber glass wedges are more useful than clear glass prism _____.
- A. at night
 - B. bright sunlight
 - C. in low light and hazy conditions**
 - D. both A & B
 - E. none of the above
742. Chain saw chaps protect the wearer by _____.
- A. bouncing the saw off the leg and away from the body
 - B. clogging the moving chain with cut-resistant fabric**
 - C. preventing the wearer from becoming tangled in briars
 - D. Using a thin layer of metal to prevent the chain from cutting through
 - E. none of the above
743. One way in which white oaks differ from red oaks is that acorns of white oaks ____
- A. mature in one season**
 - B. may take 5 or more years to reach maturity
 - C. remain on the tree for 3 years
 - D. take two seasons to mature
 - E. none of the above
744. Which of the following pest management strategies is categorized as a silvicultural method?
- A. coat uninfested wood with paint, wax, varnish or oil
 - B. harvest mature trees or stands**
 - C. use conventional insecticides
 - D. Utilize pheromones, attractants, repellants or inhibitors
 - E. none of the above
745. Which type of habitat most greatly benefits woodcock?
- A. Dense coniferous forests
 - B. Moist woodlands**
 - C. Open bushy areas
 - D. Open hardwood stands
 - E. all of the above
746. Forests and open meadows provide ideal habitats for _____.
- A. American bison
 - B. American elk**
 - C. Mountain goats
 - D. Pronghorn antelope
 - E. River otters
747. A _____ is the type of control burn best used for hazard reduction in young forest stands with a heavy layer of litter.
- A. back fire**
 - B. flank fire
 - C. ring fire
 - D. strip head fire
 - E. none of the above
748. Tsuga Canadensis is the scientific name for the _____.
- A. black walnut
 - B. longleaf pine
 - C. pecan
 - D. Canada goose
 - E. eastern hemlock**

749. Which of the following would be considered a method of direct visitor management in managing outdoor recreation areas?
A. eligibility requirements
B. enforcement of regulations
C. information distribution
D. physical alterations
E. none of the above
750. Rain, snow sleet and hail are forms of _____.
A. evaporation
B. infiltration
C. precipitation
D. transpiration
E. none of the above
751. The mid-summer water temperature of a stream flowing through a clear-cut with no stream buffer would be _____ the temperature of the water prior to the clearcut.
A. lower than
B. higher than
C. the same as
D. clearcutting would not affect the water temperature
752. Which of the following would be considered mechanical tree damage?
A. frost cracks
B. girdling roots
C. powdery mildew
D. sunscald
E. none of the above
753. Appropriate dress for applying toxic pesticides includes _____.
A. leather shoes, hat, raincoat, apron and gloves
B. leather work gloves, sneakers, goggles or face shield and hat
C. neoprene gloves, goggles, raincoat and respirator
D. raincoat, gloves, goggles, and leather boots
E. none of the above
754. Which of the following species has dark brown heartwood?
A. hickory
B. magnolia
C. redwood
D. white pine
E. elm
755. _____ are desirable pulp species because they can be bleached easily.
A. cedars and firs
B. oaks and hickories
C. pines and firs
D. spruces and hemlocks
E. all of the above
756. White pine, Ponderosa pine and red cedar sawdust and shavings are particularly useful for _____.
A. animal bedding
B. dyes
C. metal finishing
D. Sawdust- cement concrete
E. none of the above

757. A topographic divide is a mechanism for defining _____.
- A. forest management areas
 - B. housing development
 - C. rangelands
 - D. watersheds**
 - E. all of the above
758. Doyle, Scribner and International Rules are _____.
- A. Codes governing ethical behavior by foresters around the world.
 - B. Means by which log volumes are calculated**
 - C. regulations concerning how timber is marked for sale.
 - D. rules used to enforce safety in logging operations
 - E. all of the above
759. Merchantable height is that height from the stump to _____.
- A. a specified minimum top diameter**
 - B. half-way between the first branch and the top of the tree
 - C. that point which is 2/3 the total height of the tree
 - D. the very top of the tree
 - E. the first branch
760. Which of the following is not commonly used for planting tree seedlings?
- A. Auger
 - B. Dibble
 - C. Mattock
 - D. Shovel
 - E. Pulaski**
761. An advantage of natural forest regeneration is _____.
- A. better access for fire fighting equipment
 - B. better early root system development by seedlings**
 - C. good control over stocking and spacing
 - D. less need for precommercial thinning
 - E. all of the above
762. Which of the following is an advantage of mechanical felling of trees?
- A. it is most useful when logs are to be handled individually after felling
 - B. it is slower and more expensive than manual felling
 - C. it is difficult to use in areas with thick brush
 - D. it may improve efficiency by increasing the number of trees felled per hour**
 - E. all of the above
763. An articulated log skidder is _____.
- A. a modified farm tractor
 - B. less maneuverable than a non-articulated skidder
 - C. one with a hinge in the midsection**
 - D. suitable only for gentle terrain
 - E. all of the above
764. Which of the following is a fixed cost of a logging operation?
- A. electricity
 - B. fuel
 - C. rent for office space**
 - D. telephone
 - E. all of the above
765. A source of revenue for a logging operation is _____.
- A. depreciation
 - B. income tax
 - C. log sales**

- D. vehicle insurance
- E. fuel and lubricants

766. Any chemical purchased for commercial use will be accompanied by details relating to chemical make-up, first aid instructions, proper disposal and health concerns. This information is contained in the _____.

- A. Material Safety Data (MSD) Sheets**
- B. Safe Materials Use (SMU) Sheets
- C. Chemical Safety Data (CSD) Sheets
- D. Safe Pesticide Application (SPA) Sheets
- E. none of the above

767. A good way to improve urban and suburban wildlife habitats is to _____.

- A. plant flower gardens
- B. plant specimen trees
- C. reduce mowed areas**
- D. remove and decrease under story
- E. all of the above

768. Safety gear, such as hard hats and goggles must meet ANSI standards. ANSI stands for _____.

- A. American National Standards Institute**
- B. American Naval Safety Inspectors
- C. American National Safety Institute
- D. Association of North American Safety Inspectors
- E. none of the above

769. Workplace safety is overseen by OSHA. This acronym stands for _____.

- A. Occupational Safety and Health Administration**
- B. Occupational Safety and Health Association
- C. Office of Safety and Health Affairs
- D. Organization of Safety and Health Affairs
- E. none of the above

770. Square blocks measure six miles per side. The blocks are called _____.

- A. corners
- B. ranges
- C. sections
- D. townships**
- E. all of the above

771. What is the site index of a slash pine tree that is 25 years old and 60 feet tall?

- A. 25
- B. 60**
- C. 65
- D. 85
- E. none of the above

772. Homeowners can reduce cooling costs by _____.

- A. not planting any trees on their property
- B. planting trees on the east and west sides of the house
- C. planting trees on the south side of the house
- D. planting trees on the south and west side of the house**
- E. none of the above

773. Which of these tree species has compound leaves?

- A. American holly
- B. black cherry
- C. common sassafras
- D. white ash**

E. black birch

774. A soil profile is made up of different soil layers. The proper term for a soil layer is a _____.

A. horizon

B. strata

C. vertical

D. zone

E. layer

775. During forestry operations, buffer strips should be left along streams to reduce erosion and provide shade for fish. These buffer strips are called:

A. Broad-based dip zones (BDZ)

B. Forest Preservation zones (FPZ)

C. regeneration Shade Zones (RSZ)

D. Streamside Management Zones (SMZ)

E. none of the above

776. Which of the following trees has light grey bark that separates into thin plates?

A. Ash

B. Hickory

C. Red oak

D. White oak

E. Black birch

777. Which of the following processes uses shelterwood methods of harvesting to promote regeneration?

A. cuttings

B. direct seeding

C. natural seeding

D. seedlings

E. none of the above

778. A _____ is used to estimate basal area per acre.

A. clinometer

B. hypsometer

C. planimeter

D. wedge prism

E. Biltmore stick

779. The control of a damaging insect population by its natural enemies is an example of _____.

A. mechanical control

B. chemical control

C. management control

D. natural control

E. none of the above

780. The introduction of a pathogen that attacks certain insects is called a _____.

A. biological control

B. chemical control

C. management control

D. mechanical control

E. none of the above

781. The most devastating enemy of the forest is _____.

A. disease

B. insects

C. wildfire

D. wildlife

E. none of the above

782. The classification, nomenclature and identification of all living things is called _____.

- A. arboriculture
- B. biology
- C. botany
- D. taxonomy**
- E. none of the above

783. The system used to name all living organisms is properly called _____.

- A. binomial classification**
- B. Latin names
- C. scientific names
- D. all of the above
- E. none of the above

784. Achene, samara, drupe and pome are types of _____.

- A. bark
- B. flowers
- C. fruit**
- D. leaves
- E. buds

785. The genus Tsuga consists of the _____.

- A. cedars
- B. firs
- C. hemlocks**
- D. spruces
- E. oaks

786. The name of the genus for spruce is _____.

- A. Abies
- B. Larix
- C. Picea**
- D. Pinus
- E. Tsuga

787. Which of the following has the largest cone?

- A. bald cypress
- B. Douglas fir
- C. eastern hemlock
- D. longleaf pine**
- E. sequoia

788. A capsule is the fruit found on a(n) _____.

- A. aspen**
- B. birch
- C. cherry
- D. hickory
- E. maple

789. A samara would be found on a(n) _____.

- A. birch
- B. maple**
- C. oak
- D. yew
- E. aspen

790. What is the site index of a sweet gum tree that is 50 years old, 14 inches in diameter and 75 feet tall?
A. 50
B. 75
C. 100
D. 125
E. 139
791. What is the site index of a sweet gum tree that is 50 years old, 12 inches in diameter and 75 feet tall?
A. 50
B. 75
C. 100
D. 125
E. 137
792. If you are traveling at an azimuth reading of 325 degree, you are heading _____.
A. southwest
B. southeast
C. northwest
D. northeast
E. north
793. You plan to reforest a 4 acre area and plan to use an 8' X 10' spacing. How many trees should you order?
A. 320
B. 2178
C. 21,780
D. 545
E. none of the above
794. The practice most commonly used to produce high grade stands is _____.
A. cleaning
B. improvement
C. release
D. thinning
E. clear cutting
795. The process to remove damaging dominant trees in an all-aged stand is called _____.
A. liberations
B. salvage cuttings
C. sanitation cuttings
D. thinnings
E. none of the above
796. Tree cuttings made to allow faster growth of remaining trees, to remove diseased trees or to remove undesirable trees before the final harvest is called _____.
A. early forestation
B. intermediate cuttings
C. seed tree cuttings
D. shelterwood
E. clear cuttings
797. The most accurate method of cruising is the _____.
A. average cruise
B. ocular cruise
C. one hundred percent cruise
D. point sampling
E. one percent cruise

798. Which of the following currently evaluates and distributes forestry software and provides advice on forestry computing needs?
- A. ASCS
 - B. FORS**
 - C. NRCS
 - D. U.S. Fish & Wildlife Service
 - E. none of the above
799. Which of the following silvicultural practices is recommended for trees smaller than 4 inches dbh and most effective on stems 2 inches or less?
- A. basal spraying**
 - B. cutting
 - C. girdling
 - D. pruning
 - E. clearcutting
800. Which one of the following forest pests lays down a silky trail or mat on foliage or bark?
- A. aphid
 - B. bark beetle
 - C. Gypsy moth
 - D. spider mite
 - E. tent caterpillar**
801. A _____ is most likely used to handle pulpwood sticks.
- A. hooker**
 - B. peavey canthook
 - C. planimeter
 - D. Wheeler caliper
 - E. Biltmore stick
802. A Jacob staff is used with a _____ to increase accuracy of tree measurement readings.
- A. diameter tape
 - B. planimeter
 - C. relaskop**
 - D. stereoscope
 - E. hooker
803. A majority of the foresters in the United States work for _____.
- A. federal government agencies
 - B. private industry
 - C. state and local agencies**
 - D. themselves
 - E. none of the above
804. Which of the following forestry occupations usually requires at least a bachelor's degree?
- A. forestry technician
 - B. logger
 - C. professional forester**
 - D. tree scaler
 - E. all of the above
805. Which of the following species is rated highest in decay resistance of the heartwood?
- A. aspen
 - B. black walnut**
 - C. cottonwood
 - D. Douglas fir

E. elm

806. Which of the following species is the most cold hardy and displays the greatest bending strength?
- A. cedar
 - B. Douglas fir
 - C. sugar maple**
 - D. yellow poplar
 - E. all of the above
807. Which of the following products constitutes the greatest volume of the U.S. annual timber production?
- A. firewood
 - B. posts and poles
 - C. sawlogs**
 - D. veneer and plywood
 - E. none of the above
808. An achene _____.
- A. describes twig texture
 - B. is a description of bud shape
 - C. is an unwinged seed**
 - D. is a winged seed
 - E. is a nut or acorn
809. Which of the following species has fascicled needles?
- A. Douglas fir
 - B. Pacific yew
 - C. Sitka spruce
 - D. white pine**
 - E. white oak
810. Hybridization is _____.
- A. a cross between two different species**
 - B. an aspect of photosynthesis
 - C. cloning
 - D. vegetative reproduction
 - E. asexual reproduction
811. If a leaf is described as obtuse we would expect it to be _____.
- A. blunt**
 - B. circular
 - C. pointed
 - D. wedge shaped
 - E. compound
812. Which of the following has persistent foliage?
- A. aspen
 - B. elm
 - C. hemlock**
 - D. larch
 - E. maple
813. Palmate leaves can be found on _____.
- A. ash
 - B. buckeye**
 - C. cottonwood
 - D. dogwood
 - E. elm

814. An ovate leaf is _____.
A. egg shaped
B. heart shaped
C. kidney shaped
D. triangular in shape
E. square
815. A leaf margin described as entire is _____.
A. coarsely toothed
B. lobed
C. smooth
D. wavy
E. finely toothed
816. Which of the following species has what is called a "grass Stage"/
A. loblolly pine
B. longleaf pine
C. pacific yew
D. white pine
E. Sitka spruce
817. Which of the following produces reproduction from stump sprouts?
A. coppice cutting
B. seed tree cutting
C. selective cutting
D. shelterwood cutting
E. clear cutting
818. A shade intolerant, rapid growing tree species commonly planted as a windbreak is _____.
A. cottonwood
B. elm
C. pecan
D. red oak
E. dogwood
819. Coppice shoots and root suckers are examples of _____.
A. sexual reproduction
B. vegetative reproduction
C. cloning
D. wood production
E. none of the above
820. Fallen tree tops are generally referred to as _____.
A. biomass
B. brush piles
C. firewood
D. slash
E. humus
821. Incendiary fires are _____.
A. ignited accidentally through use of power logging equipment
B. set maliciously
C. started by burning debris after logging
D. the result of carelessly discarded cigarettes
E. none of the above
822. Crown fires _____.
A. are also known as surface fires
B. are the most common types of forest fires

C. burn primarily in the tree leaves and needles

- D. usually follow a logging operation
E. none of the above

823. You plan to reforest a 6 acre area and use a 10' X 12' spacing. How many trees should you order?

- A. 120
B. 363
C. 720
D. 2178

E. none of the above

824. A line which is 60 degrees toward the west from south has a bearing of _____.

- A. N 240 degrees W
B. S 60 degrees W
C. S 240 degrees W
D. S 130 degrees W
E. none of the above

825. Which of the following is a defoliating insect that prefers oaks?

- A. aphid
B. gypsy moth
C. spider mite
D. tent caterpillar
E. pine sawfly

826. This measurement instrument uses prisms.

- A. hookeroon
B. Peavy canthook
C. planimeter
D. Wheeler Caliper
E. Biltmore stick

827. The basal area per acre is _____ if you have counted 30 trees with a 10-factor prism.

- A. 3
B. 30
C. 150
D. 300
E. 40

828. _____ is the best measurement of site quality.

- A. tree height**
B. tree diameter
C. crown closure
D. stand density
E. none of the above

829. The continental United States has _____ forest regions.

- A. 1
B. 4
C. 6
D. 8
E. 12

830. Which of the following federal agencies does NOT administer outdoor recreation areas?

- A. Army Corps of Engineers
B. Bureau of Land Management
C. U.S. Forest Service Service

D. U.S. Geological Service

E. none of the above administers outdoor recreation areas

831. Forests in the United States consist of approximately ____ different species of trees.
A. 230
B. 700
C. 860
D. 940
E. 1 million
832. About 2/3 of the U.S. forest lands are considered _____.
A. wilderness
B. park land
C. commercial
D. non-commercial
E. tropical
833. If a topographic map has a scale of 1:24000 it means the scale is _____.
A. 1" = 2000"
B. 1" = 2000'
C. 1" = 24000'
D. 1" = 24000"
E. none of the above
834. Contour lines show _____.
A. elevation and shape of the land
B. land quality
C. land use potential
D. resource distribution
E. none of the above
835. On a topographic map which of the following is a dark, heavy line with an elevation figure?
A. contour index
B. contour interval
C. contour line
D. horizontal control station
E. none of the above
836. In the northeastern United States, the state with the most total timberland area (regardless of type of ownership) is _____.
A. Delaware
B. Maine
C. Pennsylvania
D. New York
E. West Virginia
837. The United States imports ____ % of the total industrial wood consumed in this country.
A. 5%
B. 12%
C. 20%
D. 33%
E. 50%
838. The southern United States has been blessed with _____ that contribute to rapid tree growth.
A. a warm climate
B. abundant rainfall

- C. a long growing season
- D. soils
- E. all of the above**

839. The southern United States is the world center for _____ production.
- A. furniture
 - B. pulpwood
 - C. naval stores**
 - D. plywood
 - E. none of the above
840. In localized areas forests have which of the following effects on climate?
- A. temperature
 - B. humidity
 - C. wind velocity
 - D. all of the above**
 - E. none of the above
841. In comparing the temperature in a forest to that in an adjacent open field, the air temperature within the forest is cooler. This is because _____.
- A. the forest canopy is a barrier to direct sunlight
 - B. the forest canopy shades the forest floor
 - C. both A and B**
 - D. none of the above
842. Snow will last longer in _____.
- A. an open field
 - B. a forest**
 - C. it will last the same amount of time in the field and the forest
843. Leaf litter and _____ on the forest floor act as moderators of soil temperature.
- A. mineral soil
 - B. humus**
 - C. sand
 - D. silt
 - E. none of the above
844. There is usually less runoff from a forested area than from an open field because ____.
- A. the leaves and branches break the impact of the rain, causing it to drip rather than reach the soil surface with force
 - B. when it reaches the forest floor, rain is absorbed by the litter and humus
 - C. litter and humus keep the forest soil mellow, porous and permeable
 - D. all of the above**
 - E. none of the above
845. Where snow occurs in the U.S., forests retard snow melt. Which of the following are advantage of the slower snow melt?
- A. more of the snow melt is absorbed into the forest soil
 - B. the intensity of runoff is reduced, reducing possible flooding
 - C. stream flow is equalized because of the slower snow melt
 - D. all of the above**
 - E. none of the above
846. The two advantages that forested stream buffers offer for fish habitat are _____.
- A. a forested stream buffer helps prevent excessive stream temperatures
 - B. trees, especially hickories provide a source of food for fish such as minnows
 - C. forests help to produce clear flowing streams that are more ideal for fish life
 - D. A & B
 - E. A & C**

847. Windbreaks are common in many parts of the U.S. Which of the following are advantages of windbreaks?
- A. windbreaks reduce wind erosion
 - B. windbreaks help prevent blowing and drifting snow
 - C. windbreaks protect crops, livestock, homes and barns from cold or hot winds
 - D. windbreaks help keep the soil from drying out
 - E. all of the above**
848. Urban forests have many values. Which of the following are advantages of urban forests?
- A. Increased runoff from urban forested areas
 - B. Increased soil and air temperatures as a result of urban trees
 - C. reduction in oxygen and increase in carbon dioxide as a result of trees
 - D. all of the above
 - E. none of the above**
849. Which of the following are advantages of urban forestry?
- A. trees reduce excessive glare from surfaces such as concrete and glass
 - B. urban trees function as windbreaks reducing the force of winter winds
 - C. lower air and surface temperatures as a result of shading
 - D. urban trees provide habitat for wildlife species
 - E. all of the above**
850. Using the natural shape and texture of a tree to complement the architecture of a building or to enhance the vertical elements of a structure is an example of a _____ benefit of urban trees.
- A. aesthetic**
 - B. environmental
 - C. economic
 - D. wildlife
 - E. none of the above
851. _____ are examples of trees used in urban forestry because of their showy spring flowers.
- A. oaks, maples, hickories
 - B. magnolias, buckeyes, dogwood**
 - C. cedar, pine, hemlock
 - D. all of the above
 - E. none of the above
852. Which of the following are negative aspects of urban trees and forests?
- A. lifting and breaking of sidewalks
 - B. clogging of drainage systems
 - C. trees grow into and interfere with electric and telephone service
 - D. all of the above are negative aspects**
 - E. none of the above
853. Of the following, which are functions of urban trees?
- A. shade tree
 - B. noise barrier
 - C. windbreak
 - D. definition of a space
 - E. all of the above**
854. When considering a tree for urban use, you should consider which of the following?
- A. mature height
 - B. mature width
 - C. rooting depth
 - D. all of the above**
 - E. none of the above

855. urban pollutants that can affect trees include which of the following?
A. road salt
B. carbon dioxide
C. dihydrogen oxide
D. chlorophyll
E. humus
856. The function of root hairs is to _____.
A. anchor the tree
B. absorb water and nutrients
C. produce chlorophyll
D. all of the above
E. none of the above
857. _____ lack root hairs.
A. aspen
B. birch
C. catalpa
D. dogwood
E. all of the above have root hairs.
858. Instead of root hairs, pines have _____ attached to the rootlets which absorb water and nutrients.
A. tap roots
B. branch roots
C. mycorrhizae (fungi)
D. all of the above
E. none of the above
859. Windfalls are most common on _____.
A. forest stands that have been heavily cut over
B. on shallow soils
C. on wet soils
D. all of the above
E. none of the above
860. The process whereby chloroplasts convert radiant energy into chemical energy is called _____.
A. transpiration
B. respiration
C. perspiration
D. chlorophyll
E. none of the above
861. In photosynthesis carbon dioxide from the air and water and minerals from the soil into _____ with oxygen as a by-product.
A. fats and proteins
B. amino acids
C. sugars and starches
D. vitamins and minerals
E. none of the above
862. The process of consuming carbohydrates and oxygen to obtain energy for the biological processes of life support, growth and reproduction is called _____.
A. transpiration
B. respiration
C. perspiration
D. chlorophyll
E. all of the above

863. The loss of water vapor from the leaf of a tree is called _____.
- A. transpiration**
 - B. respirations
 - C. perspiration
 - D. chlorophyll
 - E. all of the above
864. Most of the water vapor given off by a plant escapes through structures called _____.
- A. pores
 - B. stomata**
 - C. exit cells
 - D. cutin
 - E. none of the above
865. Excess carbohydrates not used in respiration are converted to _____ and _____ and is then stored in the tree.
- A. fats and protein
 - B. vitamins and minerals
 - C. cellulose and lignin**
 - D. chlorophyll and chloroplasts
 - E. none of the above
866. _____ and _____ are the main constituents of wood.
- A. fats and protein
 - B. vitamins and minerals
 - C. cellulose and lignin**
 - D. chlorophyll and chloroplasts
 - E. none of the above
867. A ring count is most accurate in aging a tree if you use the increment borer _____ on the trunk of the tree.
- A. low**
 - B. high
 - C. at dbh
 - D. at 7 feet
 - E. it really does not matter
868. A false ring is _____.
- A. an extremely narrow ring
 - B. an extremely wide ring
 - C. a second ring for a given year**
 - D. a black ring
 - E. none of the above
869. Sprouting, suckering and layering are examples of _____ reproduction in trees.
- A. sexual
 - B. asexual or vegetative**
 - C. slow
 - D. fast
 - E. none of the above
870. Pine seeds are produced on the scales of the carpellate or _____ cones.
- A. female**
 - B. male
 - C. all pine
 - D. pollen bearing
 - E. none of the above
871. How well any tree will reproduce itself is generally based on _____.

- A. the weight of the seed
- B. the number and viability of the seeds
- C. environmental factors at the time of germination
- D. all of the above**
- E. none of the above

872. The two divisions of the scientific classification system to which true trees belong are the _____ and _____.

- A. pines and oaks
- B. Pinophyta and Magnoliophyta**
- C. evergreens and deciduous
- D. hardwood and softwood
- E. Coniferous and deciduous

873. The plant kingdom division Magnoliophyta includes _____.

- A. angiosperms
- B. broadleaf trees
- C. oaks and hickories
- D. maples and aspen
- E. all of the above**

874. In the scientific name for black walnut, *Juglans nigra* L., the L. stands for ____.

- A. Latin, the language of scientific names
- B. Linnaeus, the person who classified and named this tree**
- C. Location, where the tree is found growing
- D. Lumber, indicating that this tree is cut for lumber
- E. Lanceolate, for the shape of the leaflet

875. During autumn and winter your best way to identify trees will be to compare _____ and _____ characteristics.

- A. leaf and flower
- B. fruit and stem
- C. twig and bark**
- D. all of the above
- E. none of the above

876. Major characteristics of _____ used in identification are buds, leaf scars, lenticels and bark.

- A. leaves
- B. bark
- C. fruit
- D. twigs**
- E. none of the above

877. On deciduous trees _____ is the most important identification feature in the dormant winter period.

- A. fruit
- B. leaves
- C. twigs
- D. flowers
- E. bark**

878. Which of the following is an example of a cone bearing deciduous tree?

- A. aspen
- B. birch**
- C. catalpa
- D. dogwood
- E. all of the above

879. Which of the following trees has broad evergreen leaves?

- A. live oak
- B. southern magnolia
- C. American holly
- D. all of the above**
- E. none of the above

880. Which of the following trees produces nut type seeds?

- A. horsechetrnut
- B. buckeyes
- C. beeches
- D. hickories
- E. all of the above**

881. Which of the following trees has a pod type seed?

- A. redbud
- B. Kentucky coffeetree
- C. locust
- D. all of the above**
- E. none of the above

882. Which of these trees has a bright red berry type fruit?

- A. red oak
- B. red bay
- C. redbud
- D. all of the above
- E. none of the above**

883. Which of these trees has a soft berry-like fruit?

- A. mulberry**
- B. birch
- C. tree of heaven
- D. catalpa
- E. none of the above

884. Which of the following trees has a soft berry like fruit?

- A. persimmon
- B. sassafras
- C. hawthorn
- D. American holly
- E. all of the above**

885. Which of the following trees has seeds with wings?

- A. hornbeam
- B. elms
- C. maples
- D. ashes
- E. all of the above**

886. Which of the following trees has seeds with a cotton-like attachment?

- A. cottonwood**
- B. oaks
- C. hickories
- D. maples
- E. locust

887. Which of these trees has flowers which appear before or with the leaves?

- A. redbud
- B. maples
- C. hickories
- D. black willow

E. all of the above

888. Which of these trees has flowers that appear after the leaves have opened?

- A. magnolia
- B. buckeye and horsechestnut
- C. flowering dogwood
- D. catalpa

E. all of the above

889. Sweetgum, hawthorns, sumacs, black gum and flowering dogwood leaves turn ____ in autumn.

- A. yellow
- B. brown

C. red

- D. orange
- E. they stay green all year

890. The leaves of hickories, redbud, red maple, ashes and catalpa turn ____ in autumn.

A. yellow

- B. brown
- C. red
- D. orange
- E. they stay green all year

891. Bald cypress, willow, hawthorn, black gum and alder prefer _____ sites.

B. moist

- C. sandy
- D. hill top
- E. none of the above

892. Magnolia, pawpaw, catalpa and paulownia are noted for their _____.

- A. bright red flowers
- B. spines or thorns
- C. large showy flowers**
- D. commercial nut production
- E. star shaped pith

893. Surveys of the boundary of a timber tract are done to _____.

- A. establish exact property locations
- B. make timber cutting lines
- C. determine the area of the tract

D. all of the above

- E. none of the above

894. Surveys would be useful for which of the following?

- A. mapping plant types and soil series
- B. locating water drainages, culverts, bridges and cattle guards
- C. locating roads, log-skid trails and log loading areas
- D. locating fences and firebreaks

E. all of the above

895. Knots, crooks, fire and lightning scars, stem and butt rot, beetle holes and blue stain are examples of _____.

- A. unusual occurrences that increase the value of a log for veneer
- B. desirable characteristics for pulpwood
- C. factors that increase the value of sawlogs

D. defects which reduce the value of a log

- E. none of the above

896. Following completion of a timber cruise, volumes are totaled by _____.
- A. species, tree sizes and products**
 - B. sawlogs, veneer and pulpwood
 - C. oaks, hickories, maples
 - D. all of the above
 - E. none of the above
897. Diameter of a log is measured at the _____ end (inside bark) to the nearest inch.
- A. large
 - B. small**
 - C. it really does not matter at which end the log is measured
898. Pulpwood may be measured by _____.
- A. cords
 - B. cubic feet
 - C. weight
 - D. any of the above**
 - E. none of the above
899. Poles and pilings are measured in _____.
- A. linear feet**
 - B. cords
 - C. cubic feet
 - D. weight
 - E. cunits
900. In addition to the size of the woodlot and the value of the timber involved, the amount or percent of cruise necessary to obtain acceptable accuracy is dependent on _____.
- A. the topography of the tract
 - B. the extent of openings in the tract
 - C. the number of species represented
 - D. uniformity of the tree stand
 - E. all of the above**
901. A report developed from a timber cruise can be used to _____.
- A. develop overall plans to manage the timber tract
 - B. make a timber sale
 - C. plan the logging of a stand of timber
 - D. establish timber values for tax purposes
 - E. all of the above**
902. If a map is part of a timber cruise report it should show _____.
- A. property boundaries
 - B. physiographic features such as drainages and ridges
 - C. improvements such as roads, bridges, fences, gates and buildings
 - D. the location of various species within the tract
 - E. all of the above**
903. The most common forest (that covering the largest area) type in the northeastern United States is the _____.
- A. oak - hickory
 - B. maple - beech - birch**
 - C. spruce - fir
 - D. white pine - red pine - jack pine
 - E. none of the above
904. The most common forest type (that covering the largest area) in the eastern United States is the _____.
- A. oak - hickory**

- B. maple - beech - birch
- C. spruce - fir
- D. white pine - red pine - jack pine
- E. none of the above

905. In the western United States (including Alaska) the most common forest type (that covering the greatest area) is the _____.
- A. larch
 - B. redwood
 - C. Douglas fir
 - D. western white pine
 - E. none of the above**
906. In a mature forest ecosystem, the large trees grow at a _____ rate.
- A. slow**
 - B. fast
907. Which of the following soil characteristics affect the growth of a forest?
- A. soil texture, structure and depth
 - B. soil moisture holding capacity and drainage
 - C. soil chemical composition and nutrient content
 - D. all of the above**
 - E. none of the above
908. Which of the following biological factors can have an influence on the growth of a forest?
- A. animals that use the forest for food and cover
 - B. small animal life such as insects
 - C. fungi, especially those hosted by trees
 - D. microorganisms in the soil
 - E. all of the above**
909. In a dormant condition trees can withstand _____ temperature extremes than during periods of active growth.
- A. smaller
 - B. greater**
 - C. the same
 - D. none of the above
910. In the temperate zone summer growth is often completed _____ high maximum summer temperatures are reached.
- A. before**
 - B. long after
 - C. at the same time as
 - D. at least 3 months before
 - E. none of the above
911. Sunlight is important in regulating which of the following processes?
- A. growth
 - B. leaf fall and dormancy
 - C. flowering and reproduction
 - D. all of the above**
 - E. none of the above
912. Day length or _____ influences diameter growth in trees.
- A. photoperiod**
 - B. perspiration
 - C. photosynthesis
 - D. photochemical
 - E. none of the above

913. Periods of long daylight in spring and early summer result in the production of _____ cells.
- A. large diameter, thick walled, spring wood
 - B. large diameter, thin walled, spring wood**
 - C. small diameter, thick walled, summer wood
 - D. small diameter, thin walled, summer wood
 - E. none of the above
914. Length of day light affects the time of flushing or _____ in the spring and the onset of dormancy in the autumn.
- A. phototropism
 - B. defoliation
 - C. new growth**
 - D. bud formation
 - E. none of the above
915. Light distribution can affect tree form, resulting _____.
- A. greater development of the tree on the side exposed to the most sunlight**
 - B. less growth on the side of the tree exposed to the most sunlight
 - C. a tall, spindly tree because of exposure to the sun
 - D. a short, overtopped tree because of exposure to the sun
 - E. none of the above
916. Of all the factors that influence the growth of trees, _____ is the most limiting element.
- A. soil fertility
 - B. sunlight
 - C. moisture**
 - D. carbon dioxide
 - E. none of the above
917. Seed formation depends on the amount of reserve _____ and nitrogenous materials in a tree.
- A. fatty acids
 - B. carbohydrates**
 - C. proteins and amino acids
 - D. oxygen
 - E. none of the above
918. Trees produce seed in _____ quantity from year to year.
- A. the same
 - B. varying**
919. Open grown softwood trees (pines, etc) take on a _____ form.
- A. triangular**
 - B. bulb like
 - C. columnar
 - D. square
 - E. rectangular
920. Open grown hardwood trees become _____ in form.
- A. triangular
 - B. bulb like**
 - C. columnar
 - D. square
 - E. rectangular

921. Southern pines are well adapted to the use of fire as a forest management tool because they have _____.
- A. foliage found high on the tree which is therefore not affected by flames
 - B. deep root systems allowing them to grow back after a fire
 - C. thick, fire resistant bark allowing them to survive flames**
 - D. all of the above
 - E. none of the above
922. The term _____ is used to describe the physical expression of an inherited tree trait that can be measured and observed.
- A. genotype
 - B. genetic map
 - C. physical map
 - D. phenotype**
 - E. none of the above
923. The term _____ is used to describe the genetic makeup of an individual tree.
- A. genotype**
 - B. genetic map
 - C. physical map
 - D. phenotype
 - E. none of the above
924. 924. Before using pesticides in a forest, we should consider which of the following?
- A. are the pesticides appropriate to use in this particular situation (for example in a wetland area)
 - B. are there alternate methods that would be equally as effective
 - C. can the use of pesticides be justified economically
 - D. all of the above**
 - E. none of the above
925. The United States has a growth-removal ratio of approximately 1.46. What does this mean?
- A. the U.S. is using 46% more timber than is grown each year in our forests
 - B. the U.S. is growing 46% more timber than is harvested each year**
 - C. the U.S. is growing 46 times more hardwoods than softwoods each year
 - D. all of the above
 - E. none of the above
926. The United States has a softwood growth-removal ratio of 1.33. What does this mean?
- A. the U.S. soft wood growth exceeds removals by 33%**
 - B. the U.S. soft wood removal exceeds growth by 33%
 - C. the U.S. currently imports 33% of its soft wood lumber / pulpwood needs.
 - D. the U.S. currently imports 1% of its soft wood lumber / pulpwood needs.
 - E. none of the above
927. The specific gravity of wood is influenced by _____.
- A. the amount of gums, resins and other extractives in the wood
 - B. the size of the wood's cell cavities
 - C. the thickness of the wood's cell walls
 - D. all of the above**
 - E. none of the above
928. When extreme bends are required in furniture, which of the following species would be best to use?
- A. birch, beech, sweet gum
 - B. elm, ash, pecan**
 - C. southern pine
 - D. all woods bend about the same
 - E. none of the above

929. The term southern pine can be applied to which of the following?
- A. shortleaf pine and loblolly pine
 - B. slash pine and longleaf pine
 - C. yellow pine, so named because of the yellowish color of the wood
 - D. all of the above**
 - E. none of the above
930. The effects of fires on a forest vary considerably depending on factors such as _____.
- A. the size, intensity and duration of the fire
 - B. the size and composition of the timber stand
 - C. the nature of the fuel burned and frequency of fire on the area
 - D. the character of the soil
 - E. all of the above**
931. Which of the following is a pest of hardwoods?
- A. white pine weevil
 - B. larch sawfly
 - C. spruce budworm
 - D. Southern pine beetle
 - E. none of the above**
932. Which of the following is a pest of hardwoods?
- A. ash borer
 - B. gypsy moth
 - C. hickory bark beetle
 - D. white oak borer
 - E. all of the above**
933. In the northeastern U.S. the most serious forest insects are the _____.
- A. spruce budworm, gypsy moth caterpillar, forest tent caterpillar**
 - B. southern pine beetle, southern pine sawyer, Virginia pine sawfly
 - C. Arkansas pine sawfly, Loblolly pine sawfly, Texas leaf cutting ant
 - D. mountain pine beetle, western conifer seedbug, sugar pine tortix
 - E. lodgepole pine needle miner, Jeffrey pine beetle, Douglas fir tussock moth
934. In order to control forest insect pests, you must know basic information about the insect. Which of the following information could be useful in controlling a forest insect pest?
- A. What parasites and predators attack the insect pest?
 - B. How does the insect damage the tree(s)?
 - C. When are young insects produced? How many generations are there per year?
 - D. Where and in what stage of life does the insect over winter?
 - E. all of the above**
935. _____ of insect species found in the forest are not harmful to trees.
- A. 75%
 - B. 100%
 - C. the vast majority**
 - D. 25%
 - E. 10%
936. Which of the following groups of insects may damage forest trees?
- A. borers
 - B. leaf feeders
 - C. plant sucking insects and mites
 - D. gall insects and mites
 - E. all of the above**

937. The most destructive group of forest insects are the _____.
- A. borers**
 - B. leaf feeders
 - C. plant sucking insects and mites
 - D. gall insects and mites
 - E. root feeding insects
938. The severity of damage to forest trees from leaf feeders depends on _____.
- A. the season when the foliage damage takes place
 - B. the extent of the damage
 - C. the frequency of the damage
 - D. all of the above**
 - E. none of the above
939. Severe defoliation that occurs _____ is most harmful to trees.
- A. late in the season
 - B. in September and October
 - C. in July and August
 - D. as the spring foliage is unfolding**
 - E. none of the above
940. The most damaging hardwood defoliator in the United States is the _____.
- A. southern pine bark beetle
 - B. gypsy moth**
 - C. pine bark aphid
 - D. fall web worm
 - E. tent caterpillar
941. The gypsy moth over winters in the _____ stage.
- A. adult
 - B. pupae
 - C. egg**
 - D. larva
 - E. none of the above
942. The damage done by the gypsy moth is when it is in the _____ stage.
- A. adult
 - B. pupae
 - C. egg
 - D. larva**
 - E. all of the above
943. The male gypsy moth locates the female because she _____.
- A. secretes a powerful scent called a pheromone**
 - B. is bright orange in color
 - C. is about 5 inches long and quite colorful
 - D. emits a shrill mating call
 - E. all of the above
944. Populations of gypsy moth tend to be _____.
- A. stable over many years
 - B. cyclic**
 - C. high for ten years and then low for the next ten years
 - D. very low at all times
 - E. none of the above
945. Which of the following trees is the most susceptible to gypsy moth defoliation?
- A. red cedar
 - B. cherry
 - C. black walnut

D. pines

E. oaks

946. Adult insects have 6 legs, adult mites have ___ legs.

A. 2

B. 4

C. 6

D. 8

E. 10

947. Which of the following are examples of plant sucking insects and mites?

A. sawflies, gypsy moth, bark beetle

B. grasshopper, pine needle miner, budworm

C. aphids, scales, leaf hoppers, cicada

D. all of the above

E. none of the above

948. Many aphids, the white pine aphid included, secrete a clear, sugary liquid called

_____.

A. aphid milk

B. nectar

C. honeydew

D. pollen

E. bug juice

949. The honey dew secreted by aphids is a rich medium in which _____ can grow.

A. ants

B. fungus

C. baby aphids

D. sawflies

E. wasps

950. Young aphids which hatch in spring and feed on the tender new growth are all _____.

A. males

B. females

951. Many generations of female aphids can be produced without any males until the fall of the year. The females mate with males in the fall and lay eggs, which over winter. The many generations of females is called _____.

A. homosexual

B. bisexual

C. asexual

D. part sexual

E. parthenogenesis

952. Abnormal growth on trees that is caused by insects or mites is often called _____.

A. galls

B. conks

C. whirls

D. scales

E. none of the above

953. The most economically important parasitic plant affecting forests in the U. S. is the

_____.

A. dwarf mistletoe

B. ginseng

C. clover

D. dodder

E. elm rust

954. Winterkill is the _____ of young trees and seedlings.
A. stunting
B. deforming
C. killing
D. weakening
E. non of the above
955. A Pulaski is used in firefighting for _____.
A. felling and clearing
B. grubbing and chopping
C. raking and sweeping
D. scraping and raking
E. none of the above
956. A restricted use pesticide may only be purchased and used by _____.
A. adults over 18 years of age
B. certified operators
C. cooperative extension agents
D. licensed foresters and arborists
E. none of the above
957. The greatest amount of forest plantation regeneration occurs in which region of the United States?
A. North east
B. Pacific Coast
C. Rocky Mountains
D. Southern
E. none of the above
958. If a tree farmer plants seedlings on an 8' X 10' spacing he will plant ____-seedlings per acre.
A. 450
B. 545
C. 4356
D. 5445
E. none of the above
959. Reducing a felled tree into marketable size logs is called _____.
A. bucking
B. felling
C. limbing
D. skidding
E. marking
960. The function of the cambium of the tree is _____.
A. development of leaves
B. growth in height of the tree
C. growth of wood and bark cells
D. production of carbohydrates
E. none of the above
961. How many acres are in an area 25 chains long by 20 chains wide?
A. .5 acres
B. 5 acres
C. 50 acres
D. 500 acres
E. 5000 acres
962. In a forest ecosystem a tree with a small crown receiving sunlight from above and almost none from the sides would be considered a _____ tree.

- A. co-dominant
- B. dominant
- C. inferior
- D. intermediate**
- E. wasted

963. An example of a stem canker disease is _____.

- A. chestnut blight
- B. Dutch elm disease
- C. Fomes annosus
- D. white pine blister rust
- E. none of the above

964. To determine site index the two measurements needed are _____.

- A. age and diameter
- B. age and height**
- C. diameter and distance from the closest tree
- D. diameter and height
- E. none of the above

965. Growth at the end of the stem is called _____.

- A. preliminary growth
- B. primary growth
- C. terminal growth**
- D. turgid growth
- E. none of the above

966. A very highly valued wood used in furniture construction is _____.

- A. alder
- B. hackberry
- C. black walnut**
- D. yew
- E. American elder

967. A GPS unit utilizes _____ to locate points.

- A. computerized maps
- B. Magnetic North
- C. satellites**
- D. True North
- E. the North star

968. Birch is most easily recognized by its _____.

- A. bark**
- B. form
- C. fruit
- D. leaf shape
- E. none of the above

969. Tree species that have male and female flowers on separate trees are called _____.

- A. bioecious
- B. dioecious**
- C. monoecious
- D. triecious
- E. none of the above

970. Best management practices include all of the following EXCEPT?

- A. allowing goats to graze in newly planted areas to protect seedlings from weeds**
- B. control of logging during wet seasons
- C. removing tops of trees from streams
- D. using buffers

E. all of the above are best management practices

971. Trees are planted along city streets to help increase _____.
- A. gas removal and particulate collection**
 - B. summer air temperatures
 - C. temperatures of sidewalks and road surfaces
 - D. wind velocity
 - E. none of the above
972. Which of the following would be considered a public employment opportunity?
- A. Audubon Society
 - B. Bureau of Land Management**
 - C. International Paper
 - D. Weyerhaeuser
 - E. Sharmin Paper
973. Chromated zinc chloride is superior to zinc chloride as a preservative because of its _____.
- A. lower cost
 - B. lower fire hazard
 - C. resistance to flaking
 - D. resistance to leaching**
 - E. none of the above
974. Using containerized seedlings rather than bareroot seedlings usually results in _____.
- A. a much shorter planting season
 - B. easier handling and transportation
 - C. improved rates of survival and growth**
 - D. lower initial cost for seedlings
 - E. none of the above
975. Surveys of the boundaries of a timber tract are done to _____.
- A. determine stand classification
 - B. establish exact property lines**
 - C. find the volume of timber on the tract
 - D. locate fences and firebreaks
 - E. all of the above
976. Pilings used in docks, wharves, bridges and foundations must have a minimum quality rating of _____.
- A. class A
 - B. class B**
 - C. Class C
 - D. class D
 - E. none of the above
977. The first consideration in using chemical pesticides should always be _____.
- A. ease of application
 - B. economic feasibility
 - C. safety**
 - D. timing of the application
 - E. none of the above
978. Which of the following pest management practices is categorized as a silvicultural method?
- A. harvest mature trees or stands**
 - B. paint uninfested trees with wax
 - C. use conventional pesticides on a regular basis
 - D. utilize pheromones, repellants and inhibitors

E. none of the above

979. The most widely known and used hardwood is _____.

- A. ash
- B. hickory
- C. maple
- D. oak**
- E. pine

980. Forest pathology is study of _____.

- A. forest ecosystems
- B. forest insects
- C. tree diseases**
- D. tree identification
- E. all of the above

981. Best Management Practices include all of the following EXCEPT _____.

- A. allowing goats to graze in newly planted areas to protects seedlings from weeds**
- B. control of logging during wet seasons
- C. removing tops of trees from streams
- D. using buffers
- E. all are best management practices

982. Trees are placed along city streets to help increase _____.

- A. gas removal and particulate collection**
- B. summer air temperatures
- C. temperature of sidewalks and road surfaces
- D. wind velocity

983. Chromated zinc chloride is superior to zinc chloride due to its _____.

- A. lower cost
- B. lower fire hazard
- C. resistance to flaking
- D. resistance to leaching**
- E. it is NOT superior

984. Using containerized seedlings rather than bareroot seedlings usually results in _____.

- A. a much shorter planting season
- B. easier handling and transportation
- C. improved rates of survival and growth**
- D. lower initial cost of seedlings
- E. none of the above

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- B. establish exact property lines**
- C. find the volume of timber in the tract
- D. locate fences and firebreaks
- E. none of the above

986. Pilings used in docks, wharves, bridges and foundations must have a minimum quality of _____. A. Class A **B. Class B** C. Class C D. Class D
E. none of the above

987. The width of the cut made by a saw is called the _____. A. cant
B. gap **C. kerf** D. notch E. all of the above

988. The first consideration in using chemical pesticides should always be _____.

- A. ease of application
- B. economic feasibility
- C. safety**
- D. timing of the application
- E. none of the above

989. Which of the following pest management practices is categorized as a silvicultural method?
A. harvest mature trees or stands
 B. paint uninfested trees with wax
 C. use conventional pesticides on a regular basis
 D. utilize pheromones, repellants and inhibitors
 E. none of the above
990. The most widely known and used hardwood is _____. A. ash B. hickory
 C. maple **D. oak** E. pine
991. The weight of the complete tree that can be used to produce energy is called _____.
A. biomass B. energy flow C. energy fuel value D. thermal unit
992. The oldest and most common method of remote sensing use in forestry is _____.
A. aerial photography B. electromagnetic radiation C. ground cruise
 D. thermal scan E. none of the above
993. John's normal pace is 3.9 feet long. How many paces would he need to measure 3 chains? A. 12 B. 36 **C. 51** D. 66 E. none of the above
994. Which of the following is NOT considered a primary wood industry?
A. furniture manufacturing B. plywood plant C. pulp mill
 D. sawmill E, all are primary wood industries
995. Which of the following forest insects is NOT a serious problem in the NE U. S.?
 A. forest tent caterpillar B. gypsy moth caterpillar
C. mountain pine beetle D. spruce budworm E. all are serious threats
996. Which of the following is true with regard to crown fires?
A. they almost always start as surface fires
 B. they are common in deciduous forests
 C. they are the most common type of forest fire
 D. they are the slowest spreading of all fires
 E. none of the above
997. As a general rule the market demand for hardwood _____.
 A. far exceeds that of softwood B. has been declining since the 1980's
 C. is greatest in the southeast **D. varies between regions**
 E. none of the above
998. The 1986 Tax Reform Act affected forest investments by _____.
 A. allowing forest owners to charge annual management costs against current income
 B. establishing differential tax rates for all types of long-term capital gains
 C. keeping the economic climate for long-term forest investments the same
D. phasing out differential tax rates for all types of long-term capital gains
 E. none of the above
999. Which of the following is NOT true with regard to the topographic Abney level?
 A. it contains a scale that directly corresponds to the correction graduations on a slope tape.
B. it is used primarily on normal terrain
 C. it is used of supplement slope tapes on very steep terrain
 D. It measures the angle between the horizontal plane and the line of sight along the slope
 E. none of the above
1000. A growth removal ratio of 1:27 means that _____.
A. growth exceeded removal by 27% B. removal exceeded growth by 27%

- C. 27 trees were planted for every 1 cut
- D. one tree was planted for every one cut
- E. none of the above

1001. The current trend in Forest Service ecosystem management policy is _____.
 A. allocation of resources B. clear cutting as much as possible
C. holistically assessing each situation
 D. implementing geographical boundaries to separate various uses
 E. none of the above
1002. Oriented Strand Board (OSB) is _____. A. made from recycled plastic chips
B. made from wood chips C. more expensive to produce than plywood veneers
 D. shows a rapid decline in use in the US E. none of the above
1003. Abnormal tissue growth on trees that is caused by insects or mites is called _____.
 A. conk B. fungus **C. gall** D. pitch
 E. all of the above
1004. Which of the following is NOT considered a naturally durable wood?
 A. black walnut B. cedar C. white oak **D. white pine**
 E. all are NOT durable
1005. Which of the following is true with respect to forest ecosystems?
 A. a disease outbreak is likely to do more damage to a mixed ecosystem than to a single species plantation
 B. a single species plantation is more resistant to insect damage than a mixed one
 C. One natural disaster in the stand will not result in a total loss of timber resources
D. the more diverse the ecosystem, the more resistant it is to insect damage
 E. all of the above
1006. The life span of the adult gypsy moth is usually about _____.
 A. 1 day **B. 7 days** C. 15 days D. 45 days
 E. none of the above
1007. The most damaging pollutant in the US is currently thought to be _____.
 A. lead B. nitrates **C. ozone** D. zinc
 E. none of the above
1008. The part of the logging operation in which logs are dragged from where they were cut to a central location for loading is called _____.
 A. bucking B. felling C. snagging **D. skidding** E. kerfing
1009. In rangeland management, an animal unit month (AUM) is _____.
 A. the amount of organic fertilizer deposited by a 1000 lb. cow in one month
B. the amount of forage needed to feed a 1000 lb. cow for one month
 C. the number of cattle grazing in a specific area for one month
 D. the number of cattle sold during one month
 E. none of the above
1010. The first chief of the US Forest Service was _____. A. Franklin B. Hough
B. Gifford Pinchot C. James Audubon D. John McSweeney
 E. none of the above
1011. A compass needle points to magnetic north, which is the same as _____.
 A. the North Pole B. true north **C. 1300 miles from true north**
 D. 13000 miles from true north E. none of the above
1012. Removing trees that have been or may be killed or damaged by insects, ice, fire and other agents is called _____. A. liberation B. pruning

- C. salvage** D. sanitation E. none of the above
1013. Paper was first made from ground mulberry bark by the _____.
 A. American Indians **B. Chinese** C. Egyptians D. Incas
 E. none of the above
1014. Water contained within the cell wall of wood is called _____.
A. bound water B. fiber water C. free water
 D. suppressed water E. none of the above
1015. Which of the following is NOT usually considered as a part of fire management?
 A. presuppression B. prevention **C. regarding** D. suppression
 E. none of the above
1016. The most destructive of all forests insects are the _____.
A. borers B. gall mites C. leaf feeders
 D. plant sucking mites E. none of the above
1017. The scientific name for post oak is _____. A, Quercus falcate
 B. Quercus lyrata C. Quercus phellos **D. Quercus stellata**
 E. none of the above
1018. Of all the environmental factors that influence the growth of trees, which of the following is the most limiting? A. topography **B. moisture**
 C. soil quality D. temperature E. none of the above are limiting
1019. Which of the following is NOT a correct procedure to use in planting seedlings?
 A. always pack soil firmly around the roots B. plant only one tree per spot
C. plant seedlings in an upright position with the roots doubled up
 D. plant seedlings slightly deeper than they grew in the nursery
 E. none of the above is correct
1020. Which of the following would NOT make you more successful in a forestry career?
 A. demonstrating knowledge and skill
B. doing everything by yourself, including team assignments
 C. good communication skills
 D. looking professional
 E. none of the above
1021. Which of the following is NOT a common method of testing improved seeds or seedlings? A. clone testing B. progeny testing
 C. provenance testing **D. regulation testing** E. none of the above
1022. Which of the following is an accurate portrayal of the stages of succession?
A. annual weeds, perennials, shrubs, young trees
 B. annual weeds, shrubs, perennials, young trees
 C. annual weeds, young trees, shrubs, perennials
 D. perennials, annual weeds, shrubs, young trees
 E. none of the above
1023. The Material Safety Data (MSD) sheet contains information about all of the following EXCEPT _____.
 A. chemical make-up **B. cost per application** C. first aide instructions
 D. proper disposal E. none of the above

