

2014 National FFA Forestry Career Development Exam

Directions: Select the best answer and bubble it in on the answer sheet provided. You may write on the test booklet, if needed.

1. A beetle is an insect that belongs to the _____ order, and feeds on plant and animal matter.
A. Lepidoptera
B. Isoptera
C. Coleoptera
D. Hymenoptera
2. Which part of the tree produces nuts and fruits?
A. Roots
B. Trunks
C. Crown
D. None of the above
3. Which of the following is non-porous?
A. Eastern Red Cedar
B. Douglas Fir
C. Lodgepole Pine
D. Black Walnut
4. Which state established the first forestry agency in the United States?
A. Colorado
B. Ohio
C. California
D. New York
5. A _____ is a device attached to a cable for securing logs.
A. Chokers
B. Canthook
C. Caliper
D. Baseplate
6. As part of 1933's "New Deal", President Franklin D. Roosevelt created the Civilian Conservation Corps (CCC). This program employed about two million people to _____.
A. Cut fire breaks in our forest.
B. Clear cut our National forest.
C. Perform prescribed burns in our National Forest.
D. plant trees, build campgrounds and shelters.
7. All owners of forest land in excess of _____ acres may qualify for membership in the American Forest Foundation's Tree Farm System.
A. 5
B. 10
C. 20
D. 50
8. _____ are the most widely-sold specialty forest product nationwide, and enjoy year-round popularity.
A. Decorative bowls
B. Baseball bats
C. Shredded hardwood bark
D. Evergreen wreaths

9. Various forest layers such as the upper canopy, saplings, and small herbaceous plants near the forest floor are indicative to....
- A. Zonation
 - B. Diversity
 - C. Stability
 - D. Stratification
10. _____ is a form of amorphous carbon, used for fuel, and produced when wood, peat, cellulose, or other carbonaceous substances are heated with little or no air present.
- A. Charcoal
 - B. Spalted wood
 - C. Burls
 - D. BTUs
11. Mycorrhiza can be found attached to pine _____.
- A. Needles
 - B. Bark
 - C. Roots
 - D. Twigs
12. In a Silvopastoral system a landowner is able to integrate trees with _____.
- A. the production of grapes
 - B. the production of forage and livestock
 - C. the production of corn and wheat
 - D. all of the above.
13. Xylem cells carry water and nutrients from the _____ to _____.
- A. Crown to roots
 - B. Roots to crown
 - C. Crown to trunk
 - D. Both A & C
14. Which layer of the forest is made up of the tallest trees that rise above all others?
- A. Emergent layer
 - B. Understory layer
 - C. Canopy layer
 - D. Forest floor
15. Which flower part does not make up the pistil?
- A. Stigma
 - B. Style
 - C. Filament
 - D. Ovary
16. Evergreens retain their leaves, scales or needles throughout the year. As new leaves are produced, the tree gradually sheds the oldest ones and maintains its green appearance. An exception is the _____, which sheds all of its leaves each year.
- A. Pitch Pine
 - B. Western Hemlock
 - C. Western Red Cedar
 - D. Baldcypress
17. Which language is used for taxonomy?
- A. Latin
 - B. French
 - C. Spanish
 - D. Portuguese

18. What type of leaf margin does the Sycamore tree have?
A. Lobed
B. Lanceolate
C. Sinuate
D. Crenate
19. An apple is an example of a _____.
A. Drupe
B. Pome
C. Capsule
D. Samara
20. _____ refers to the growth and development of single trees, and the forest as a biological unit.
A. Silvics
B. Ecosystem
C. Biodiversity
D. Reforestation
21. _____ would be applicable to survey states, countries, continents, or oceans.
A. Plane survey
B. Boundary survey
C. Elevation survey
D. Geodetic Survey
22. Which of the following activities would **not** be in a forest management plan?
A. Loans
B. Harvesting
C. Site preparation
D. Regeneration
23. Five chains is the equivalent of _____.
A. 330 ft
B. 400 ft
C. 66 ft
D. 132 ft
24. Which harvesting method involves a three-stage removal of crop trees over a period of years. It includes a preparatory cut, establishment cut and a removal cut.
A. Clearcut
B. Shelterwood Cut
C. Seedtree Cut
D. Selection Cut
25. The reverse bearing of N34W is _____.
A. S34W
B. S34E
C. N43E
D. N13W
26. How many species of the bark beetles of the genus *Dendroctonus* attack forest trees?
A. 3
B. 7
C. 5
D. 9

27. This pest migrated to the U.S. from France. Now it infests white and red oak trees in the Northeast.
- A. Gypsy Moth
 - B. Tent Caterpillar
 - C. Douglas Fir Tussock Moth
 - D. Sawfly
28. _____ is used to measure pulpwood and fence posts. Measures 128 cubic feet.
- A. Board Foot
 - B. Cord
 - C. C-Unit
 - D. Basal Area
29. The Cicada is a large insect that is typically black with green markings. The nymph lives _____.
- A. In trees and feeds on the leaves
 - B. In the ground and feeds on roots
 - C. In trees and sucks juices from the petioles of leaves
 - D. In the ground during the day and feeds on leaves at night.
30. How many square miles is in a township?
- A. 36
 - B. 160
 - C. 40
 - D. 640
31. The _____ is a rotating ring graduated from 0 to 360 degrees, and labeled with cardinal directions (N,S,E, and W) and quadrants (NE, NW, SE, SW)
- A. Bezel
 - B. Capsule
 - C. Baseplate
 - D. Index Mark
32. Magnetic North is continually shifting, so a compass must be adjusted using East or West declination, a factor indicating the difference between true North and magnetic North. _____ charts show the number of degrees, East or West, of this shift.
- A. Azimuths
 - B. Topographic
 - C. Bearings
 - D. Isogonic
33. _____ are primarily found in the upper soil layer and break down plant and animal matter to be repeatedly recycled by green plants.
- A. Decomposers
 - B. Consumers
 - C. Producers
 - D. None of the above
34. _____ is an expression of a tree's taper, used to select the appropriate local volume table for a stand.
- A. Form Class
 - B. Log Rule
 - C. DBH
 - D. declination

35. Which type of forest fire is the easiest to control?
- A. Ground Fire
 - B. Surface Fire
 - C. Crown Fire
 - D. Brush Fire
36. Which of the following is not a safety feature that a modern chainsaw must be fitted with?
- A. Kickback guard & chain brake
 - B. Throttle lock & chain catcher
 - C. Bar stop & thumb grip
 - D. Right-hand guard & easy accessible stop control
37. _____ is the process by which water vapor leaves a living plant and enters the atmosphere.
- A. Respiration
 - B. Circulation
 - C. Transpiration
 - D. Photoperiodism
38. The chain brake should be activated when you start the chainsaw.
- A. True
 - B. False
39. How do you check the chain lubrication function before starting work?
- A. Rub the chain with a paper towel to check for oil.
 - B. If the chain smokes during operation it is functioning properly.
 - C. Start the chainsaw. Hold the saw over a stump and rev up the engine. Chain lubrication is working if there is a line of oil left on the stump.
 - D. All of the above
40. When limbing, Husqvarna recommends that you....
- A. Always stand on the left side of the tree trunk and limb from the roots to the top end.
 - B. Always stand on the left side of the tree trunk and limb from the top end to the roots.
 - C. Always stand on the right side of the tree trunk and limb from the roots to the top end.
 - D. Always stand on the right side of the tree trunk and limb from the top end to the roots.
41. What happens if the depth gauge clearance is too small?
- A. It will cut too deeply into the wood
 - B. The cut is more aggressive with high vibrations as a result.
 - C. The risk of kickback increases and the chainsaw is exposed to unnecessary stress.
 - D. It cuts a very small amount of wood

42. Which of the following is not a disadvantage of natural regeneration?
- A. Less control of spacing and stocking
 - B. Generally lower yield
 - C. Low cost establishment
 - D. No genetic improvement
43. Which of the following is not a common topographic map scale?
- A. 7.5 minute 1:24,000 scale, 1 inch represents 2,000 feet
 - B. 1:44,440 scale, 1 inch represents 1 mile
 - C. 1:100,00 scale, 1 inch represents about 1.6 miles
 - D. 1:250,000 scale, 1 inch represents about 4 miles
44. The trunk grows in diameter by means of cell division in the _____.
- A. Heartwood
 - B. Cambium Layer
 - C. Outer bark
 - D. Roots
45. Which of the following is not a dendrometer?
- A. Biltmore Stick
 - B. Tree Calipers
 - C. Clinometer
 - D. Diameter Tape
46. When planting trees, a spacing of 6 x 6 feet will result in how many trees per acre?
- A. 340
 - B. 1015
 - C. 605
 - D. 1210
47. Piling 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
48. Which of the following is not a factor effecting felling direction?
- A. Direction of dead branches
 - B. Lean of tree
 - C. Bend
 - D. Wind direction
49. Soil with a pH of 7.5 is considered _____.
- A. Acidic
 - B. Alkaline
 - C. Neutral
 - D. None of the above
50. The depth gauge has the words soft and hard stamped on it. The depth gauges should be filed using the _____ setting when cutting conifers.
- A. Soft
 - B. Hard
 - C. Both A and B can be used
 - D. Alternate one soft and the next one ha

2014 National FFA Forestry Career Development Exam – Answer Key

1. C
2. C
3. D
4. C
5. A
6. D
7. A
8. D
9. D
10. A
11. C
12. B
13. B
14. A
15. C
16. D
17. A
18. C
19. B
20. A
21. D
22. A
23. A
24. B
25. B
26. B
27. A
28. B
29. B
30. A
31. A
32. D
33. A
34. A
35. B
36. C
37. C
38. A
39. C

- 40. A
- 41. D
- 42. C
- 43. B
- 44. B
- 45. C
- 46. D
- 47. B
- 48. A
- 49. B
- 50. A

2015 National FFA Forestry Career Development Exam

Directions: Select the best answer and bubble it in on the answer sheet provided. You may write on the test booklet, if needed.

1. The first plants to grow naturally in a burned or cleared area are called _____.
 - a. Softwoods
 - b. Pioneers
 - c. Hardwoods
 - d. Succession
2. Management of forests and their environments for the commercial production and harvest of trees for lumber and other wood products is called _____.
 - a. Silviculture
 - b. Reforestation
 - c. Horticulture
 - d. Forest regeneration
3. Which of the following is not a needle-leave shape?
 - a. Flat
 - b. Four-angled
 - c. Three-angled
 - d. Cylindrical
4. When the attachment of the leaflets is at the end of the leafstalk, the leaf is _____.
 - a. Palmately Compound
 - b. Pinnately Compound
 - c. Bipinnately Compound
 - d. All of the above
5. The _____ is a cell structure that contains materials capable of capturing energy from the sun as the plant produces sugars and starches.
 - a. Protoplasm
 - b. Cytoplasm
 - c. Chloroplast
 - d. Vacuole
6. _____ are long, tapered cells that have pits in their cell walls through which water is able to flow from one cell to another.
 - a. Paranchyma
 - b. Collenchyma
 - c. Tracheids
 - d. Pholem

7. _____ develop long, thin, threadlike projections called root hairs that extend out into the soil.
- Endodermis cells
 - Parenchyma cells
 - Cambium cells
 - Epidermal cells
8. Which of the following does not constitute a flower's pistil?
- Stigma
 - Anther
 - Style
 - Ovary
9. _____ is a waste product from the photosynthesis process.
- Oxygen
 - Carbon Dioxide
 - Water
 - Glucose
10. The first stage of active cell reproduction is known as _____.
- Interphase
 - Metaphase
 - Prophase
 - Anaphase
11. The phase of photosynthesis during which carbon dioxide reacts with ATP and NADPH forming simple sugars is:
- Respiration
 - Dehydration Synthesis
 - Light Reactions
 - Calvin cycle
12. The _____ horizon is where most of the organic matter in the form of humus is added to the soil profile.
- O
 - A
 - E
 - C
13. Which of the following is a primary consumer?
- Great Horned Owl
 - Whitetail Deer
 - Canada Lynx
 - Red-tailed Hawk

14. A soil order that is high in concentrations of calcium, magnesium, sodium, and potassium is:
- Alfisol
 - Ultisol
 - Spodosol
 - Humus
15. Which of the following is not a biotic disease?
- Drought conditions
 - Temperature extremes
 - Acid precipitation
 - Fungi
16. Some plants release chemicals into the area close around them that provide small doses of poison to young plants that invade their territory. This defensive plant response is known as:
- Allelopathic Effect
 - Germicide
 - Herbicide
 - Chemical Warfare
17. Lines that run north-south in a rectangular survey system are considered to be known as:
- Baselines
 - Principal meridians
 - Standard parallel
 - Base meridians
18. Which log scale system accounts the amount of wood in the taper of the log from the small end to the large end?
- Scribner
 - Doyle
 - Scribner Decimal C
 - International Log Rule
19. How many cords of firewood are there in a stack of wood 14' long, 4' high, and 4' wide?
- 1.5 cords
 - 1.75 cords
 - 2 cords
 - 2.25 cords
20. A partially decayed fuel that is found on the forest floor is called:
- Duff
 - Charcoal
 - Peat
 - Litter

21. Hardwoods are _____ in density than softwoods due to the amount of cell wall material in a given volume of wood.
- Lesser
 - Higher
 - Identical
 - None of the above
22. The first cut on each of the four sides of a log removes an exterior piece of wood called a _____.
- Cant
 - Debarking
 - Slab
 - Plank
23. A _____ is a piece of wood that measures $1\frac{7}{8}$ – 4” in thickness and greater than 11” in width.
- Lumber
 - Board
 - Plank
 - Beam
24. The strength of wood along the long axis of a tree is called:
- Toughness
 - Density
 - Ductile strength
 - Tensile strength
25. Which state established the first forestry agency in the United States on March 3, 1885?
- California
 - Colorado
 - Ohio
 - New York
26. A monocot has _____ cotyledon(s).
- One
 - Two
 - Three
 - None
27. Fruit structures for elm, ash, and maple are known as Samara. Samara are _____.
- Dehiscent
 - Indehiscent
 - Aggregate
 - Multiple

28. Which tree species has blossoms that appear after the leaves?
- Dogwood
 - Ash
 - Elm
 - Cottonwood
29. The total tree environment involves a very complex interaction between a variety of physical and biological factors. Which of the following is not a physical factor?
- Climate
 - Pyric Activity
 - Soil
 - Fungi
30. _____ is the most important commercial tree species in the United States. It grows in nearly all western states, from the Rocky Mountains to the Pacific Coast.
- Red Alder
 - Bigtooth Aspen
 - Yellow Pine
 - Douglas-Fir
31. Which of the following is not a characteristic of ecosystems?
- Stratification
 - Zonation
 - Diversity
 - Succession
32. On deciduous trees, _____ is the most important identification feature in the dormant winter period.
- Twigs
 - Bark
 - Fruit
 - Leaves
33. What are four types of roots in a complete root system?
- Tap root, lateral roots, fibrous roots, root hairs
 - Tap root, lateral roots, fibrous roots, deeply descending roots
 - Tap root, lateral roots, deeply descending roots, cambium
 - Root cap, lateral roots, fibrous roots, deeply descending roots
34. Which is not part of the fire triangle?
- Hydrogen
 - Fuel
 - Heat
 - Oxygen

35. The basal area per acre is _____ if one has tallied 7 trees with a 10 factor prism.
- 7 sq. ft
 - 70 sq. inches
 - 700 sq. ft
 - 70 sq. ft
36. Which statement is true about carrying a chainsaw?
- Engine stopped, brake engaged, guide bar/chain to the front
 - Engine stopped, guide bar/chain to the rear, muffler away from body
 - Engine stopped, brake engaged, guide bar/chain to the rear, muffler away from body
 - None of the above
37. In an all-aged forest, the dominant trees may damage the growth of the overall stand. Removal of dominant trees to maximize timber volume produced is called _____.
- Liberation
 - Sanitation Cutting
 - Thinning
 - Salvage Cutting
38. John's step factor is 2.75 feet. How many steps does John take to measure the distance of one chain?
- 22 steps
 - 23 steps
 - 24 steps
 - Not enough information
39. Ferns and grasses generally represent which of the following strata in a forest?
- Canopy
 - Herb layer
 - Understory
 - Shrub layer
40. Electricity that is produced using harvested plant materials as fuel to produce heat is called:
- Induced power
 - Nuclear power
 - Biomass power
 - Hydropower
41. A plant structure that transports dissolved materials across the wood section of a stem is called:
- Apical meristem
 - Pith
 - Sieve tube
 - Vascular ray

42. A leaf margin with sharp teeth pointing outward is:
- Dentate
 - Crenate
 - Serrate
 - Revolute
43. The scientific name for Eastern Hemlock is....
- Juglans nigra*
 - Pinus taeda*
 - Tsuga Canadensis*
 - Acer rubrum*
44. Which of the following states does not have a tropical forest region?
- Arizona
 - Florida
 - California
 - Utah
45. If a foresight bearing reading is N56E, what would be the backsight bearing?
- N56E
 - S58E
 - S58W
 - N58W
46. Specific gravity of wood is largely influenced by...
- Amount of gum in the wood
 - Size of the wood's cell cavities
 - Thickness of the wood's cell walls
 - All of the above
47. _____ is cut parallel to the radius of the log.
- Endgrain-sawn wood
 - Quarter-sawn wood
 - Plain-sawn wood
 - None of the above
48. Which of the following is not an important factor affecting felling and cutting-to-length outputs?
- Volume per acre and size of timber to be cut
 - Amount of defect in the timber
 - Season of the year.
 - Type of forest soil

49. Which of the following is not a common wood preservative?
- a. Chromated Cooper Arsenate Type I
 - b. Creosote, coal-tar
 - c. Copper naphthenate
 - d. Acid zinc arsenate
50. _____ cause abnormal tissue growths on any part of a plant.
- a. Borers
 - b. Leaf feeders
 - c. Gall insects and mites
 - d. Plant-sucking insects

2015 National FFA Forestry Career Development Exam – Answer Key

- | | |
|-------|-------|
| 1. B | 26. A |
| 2. A | 27. B |
| 3. D | 28. A |
| 4. A | 29. D |
| 5. C | 30. D |
| 6. C | 31. D |
| 7. D | 32. B |
| 8. B | 33. B |
| 9. A | 34. A |
| 10. C | 35. D |
| 11. D | 36. C |
| 12. A | 37. A |
| 13. B | 38. C |
| 14. A | 39. B |
| 15. D | 40. C |
| 16. A | 41. D |
| 17. B | 42. A |
| 18. D | 43. C |
| 19. B | 44. D |
| 20. A | 45. C |
| 21. B | 46. D |
| 22. C | 47. B |
| 23. C | 48. D |
| 24. D | 49. D |
| 25. A | 50. C |

**2016 National FFA Forestry
Career Development Event
Knowledge Exam**

Directions: Select the best answer and bubble it in on the score sheet provided. You may write on test booklet, if needed.

1. Which tree species can be described as a deciduous broad-leaf with a simple leaf type? (PS.01.01)
 - a. Hickory
 - b. Eastern White Pine
 - c. Sweetgum
 - d. Sitka Spruce

2. Land owners of more than _____ acres of forest may qualify for membership in the American Forest Foundation's Tree Farm System. (NRS.02.06)
 - a. 2
 - b. 5
 - c. 10
 - d. 25

3. Oxygenic photosynthesis occurs in the _____ located in the plant cell and absorbs blue and red wavelengths of lights. (PS.01.03.01.c)
 - a. Mitochondrion
 - b. Golgi Apparatus
 - c. Nucleus
 - d. Chloroplast

4. Axial parenchyma cells originate from the _____ forming a network of living cells around the tree. They transport sugars (food) to the parenchyma cells within the growth ring, and they store starch. (PS.01.03)
 - a. Heartwood
 - b. Cambium
 - c. Sapwood
 - d. Seriate

5. A leaf _____ is the space or indentation between the lobes of a leaf blade. (PS.01.02.04.a)
 - a. Sinus
 - b. Margin
 - c. Apex
 - d. Midrib

6. Which species of wood can be used to produce axe handles? (NRS.03.01)
 - a. Sycamore
 - b. White Birch
 - c. Bald Cypress
 - d. Hickory

7. _____ is a byproduct of the photosynthesis process in tree leaves? (PS.01.03.01.a)
 - a. Sugar
 - b. Carbon Dioxide
 - c. Water
 - d. Radiant Energy

8. Which of the following is not a surface-rooted tree species? (PS.01.02.02.a)
- a. Black Walnut
 - b. Eastern Hemlock
 - c. Black Birch
 - d. Elm
9. _____ occurs when a branch tip touches the ground and develops roots that produce a new tree. (PS.03.01)
- a. Sexual Reproduction
 - b. Grafting
 - c. Layering
 - d. Suckering
10. The _____ is the tube through which a developing pollen gran grows downward to reach the ovary in a flower. (PS.03.01.01.a)
- a. Style
 - b. Stigma
 - c. Pistil
 - d. Filament
11. Which of the following statements is not true about monocots? (PS.01.01.01.a)
- a. Monocot seeds have one cotyledon.
 - b. Monocot flower parts come in multiples of 4 and 5.
 - c. Monocot leafs have parallel venation.
 - d. Monocots have scattered vascular bundles in the stem.
12. Which fruit structure is one-seeded with the center part being fleshy, but the inner part is stony? (PS.01.02.06.b)
- a. Legume
 - b. Berry
 - c. Pome
 - d. Drupe
13. Identify the correct way to mix two cycle engine oil and gasoline. (PST.01.02.01.b)
- a. Add ½ of desired amount of gas, then oil, mix, and add remaining gasoline.
 - b. Add engine oil, then gasoline, and mix contents.
 - c. Add gasoline, then oil, and mix contents.
 - d. Add ½ of desired oil, then gas, mix, and add remaining oil.
14. A Gypsy Moth is an insect that belongs to the _____ order, and feeds plant leaves. (NRS.04.03.01.a)
- A. Lepidoptera
 - B. Isoptera
 - C. Coleoptera
 - D. Hymenoptera
15. _____ introduce the Gypsy Moth to North American in the late 1860s with aspirations of establishing a silk industry in Massachusetts. (NRS.02.06.07.b)
- a. Charles Darwin
 - b. Leopold Trouvelot
 - c. Carl Linnaeus
 - d. Gifford Pinchot

24. Which phase of mitosis is characterized by chromatids being pulled apart by the spindles as the cell elongates? (PS.01.03)
- a. Prophase
 - b. Metaphase
 - c. Anaphase
 - d. Telophase
25. A new gamete formed through meiosis consisting of one chromatid from each original chromosome pair is a _____. (PS.01.03)
- a. Diploid
 - b. Monoploid
 - c. Haploid
 - d. None of the above
26. Which of the following is the smallest of the mineral particles? (NRS.01.02)
- a. Clay
 - b. Sand
 - c. Silt
 - d. Humus
27. A complete soil profile includes the following horizons.... (NRS.01.01)
- a. A, E, B, C, P, H
 - b. O, A, E, B, C, R
 - c. B, E, C, N, P, K
 - d. T, O, F, P, M, V
28. Alfisols are high in calcium, magnesium, sodium, and potassium. Which tree species is not typically grown in the Alfisols soil order? (NRS.01.01)
- a. Ponderosa Pine
 - b. Western Hemlock
 - c. Hickories
 - d. Oaks
29. The order of soils known as _____ are products of cold, damp climates and coarse silica parent material. These are acidic soils that tend to be light in color. (NRS.01.02)
- a. Alfisols
 - b. Spodosols
 - c. Ultisols
 - d. Histosols
30. In a food chain, plants are usually considered _____. (NRS.01.01)
- a. Primary Consumers
 - b. Secondary Consumers
 - c. Producers
 - d. Omnivores
31. Which of the following is not an Abiotic Disease in trees? (NRS.04.02)
- a. Drought Conditions
 - b. Acid Precipitation
 - c. Fungi
 - d. Poisonous Effects

32. The Pole stage of growth in trees can be characterized by a diameter range of
- (NRS.01.02, NRS.02.03)
- a. Up to 3 inches
 - b. Diameter of 4 inches
 - c. Diameter 4 to 10 inches
 - d. Diameter 10 to 24 inches
33. In the rectangle survey system developed by Thomas Jefferson, _____ run east-west. (NRS.02.02)
- a. Principal Meridians
 - b. Secondary Meridians
 - c. Guide Meridians
 - d. Baselines
34. How many square feet are represented by 1 acre? (NRS.02.02)
- a. 5000
 - b. 36000
 - c. 43560
 - d. 44100
35. Which of the following standard lumber sizes are correct? (NRS.03.01)
- a. $2 \times 3 = 1 \frac{1}{2} \times 2 \frac{1}{4}$
 - b. $2 \times 10 = 1 \frac{1}{2} \times 9 \frac{1}{4}$
 - c. $2 \times 12 = 1 \frac{1}{2} \times 11 \frac{1}{2}$
 - d. $1 \times 8 = 1 \times 7 \frac{1}{4}$
36. _____ boards are press-bonded between heated steel plates, resulting in a density range for this product of .5 to 1.3 grams/cubic centimeter. (NRS.03.01.02.b)
- a. Fiberboard
 - b. Particleboard
 - c. Hardboard
 - d. Plywood
37. _____ is a form of asexual reproduction of a forest in which all of the trees are cut and new forest growth is generated from the stumps of the harvested trees. (PS.03.01)
- a. Coppice Method
 - b. Grafting
 - c. Layering
 - d. Tissue Culture
38. Which pesticide is used to control rodents? (NRS.04.03.01.c)
- a. Herbicide
 - b. Miticide
 - c. Rodenticide
 - d. Insecticide
39. _____ is a silviculture practice that is used to improve the forest by removing some of the trees to provide enough space for the remaining trees to grow. (NRS.02.04)
- a. Salvage Cutting
 - b. Shelterwood Cutting
 - c. Clear Cutting
 - d. Intermediate Cutting

40. _____ is a dependable log scaling method that is used to estimate the amount of solid wood in a log by using a formula that takes into account the log length and measurements from both ends of the log. (NRS.03.01.02.b)
- Scribner's Rule
 - Doyle's Rule
 - Smalian's Formula
 - International Log Rule
41. A young tree that is generated from seed in a container filled with soil is a: (PS.03.01)
- Containerized Seedling
 - Sapling
 - Cutting
 - Twig
42. A saw that makes two or more cuts at the same time is called a: (CS.08.01)
- Band Saw
 - Head Rig
 - Circular Saw
 - Gang Saw
43. The strength of wood along the long axis of a tree is called: (PS.01.02)
- Ductile Strength
 - Tensile Strength
 - Toughness
 - Density
44. _____ is a type of reproduction in certain types of insects in which mature females produce female offspring without mating with a male. (NRS.02.06.07.b)
- Division
 - Parthenogenesis
 - Sexual
 - Metamorphosis
45. The pericycle is the outer layer of the vascular cylinder of a _____; lateral growth develops from this tissue. (PS.01.02.02.a)
- Root
 - Heartwood
 - Cambium
 - Petiole
46. Which of the following would not be a direct attack method to suppress a wildfire? (NRS.04.01.01.b)
- Applying water from an aircraft
 - Applying fire retardants from trucks
 - Establishing firebreaks
 - Smothering flames with fire flaps

47. How many degrees are represented in the North East quadrant of a compass?

(NRS.02.02)

- a. 45
- b. 90
- c. 180
- d. 360

48. How many board feet are present in a 2 inch thick, 12 inch wide, 14 foot long board?

(NRS.03.01.02.b)

- a. 28
- b. 14
- c. 336
- d. 2

49. A canker is a plant infection that: (NRS.04.02)

- a. Causes red or brown discoloration
- b. Affects only conifer trees
- c. Kills patches of tissue on the trunk or branches
- d. Prevents insects from boring into trees

50. The petiole is a plant structure found in a: (PS.01.02.04.a)

- a. Flower
- b. Leaf
- c. Stem
- d. Root

**2016 National FFA Forestry
Career Development Event
Knowledge Exam Key**

- | | |
|-------|-------|
| 1. C | 36. C |
| 2. B | 37. A |
| 3. D | 38. C |
| 4. B | 39. D |
| 5. A | 40. C |
| 6. D | 41. A |
| 7. A | 42. D |
| 8. A | 43. B |
| 9. C | 44. B |
| 10. A | 45. A |
| 11. B | 46. C |
| 12. D | 47. B |
| 13. A | 48. A |
| 14. A | 49. C |
| 15. B | 50. B |
| 16. B | |
| 17. C | |
| 18. C | |
| 19. A | |
| 20. B | |
| 21. D | |
| 22. D | |
| 23. C | |
| 24. C | |
| 25. C | |
| 26. A | |
| 27. B | |
| 28. B | |
| 29. B | |
| 30. C | |
| 31. C | |
| 32. C | |
| 33. D | |
| 34. C | |
| 35. B | |

**2017 National FFA Forestry
Career Development Event
Knowledge Exam**

Directions: Select the best answer and bubble it in on the score sheet provided. You may write on test booklet, if needed.

1. Which of the following statements is MOST TRUE with respect to forest ecosystems?
NRS.01.02.01
 - a. A disease outbreak is likely to cause more damage to a mixed-species ecosystem compared to a single-species plantation.
 - b. A single-species plantation is more resistant to insect damage compared to a mixed-species ecosystem.
 - c. One natural disaster will not result in a total loss of the timber resource.
 - d. The more diverse the ecosystem, the more resistant it is to insect damage.

2. Which tree species is the most tolerant to flooding?
NRS.01.02.01
 - a. Shortleaf Pine
 - b. Black Walnut
 - c. Red Oak
 - d. Green Ash

3. Which of the following is an accurate portrayal of the stages of succession? NRS.01.05.01
 - 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

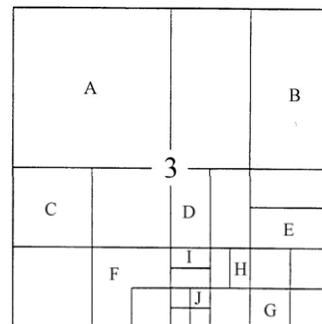
4. Of the environmental factors listed below, generally the MOST limiting one for a shade intolerant species is _____. NRS.01.05.01
 - a. Moisture
 - b. Sunlight
 - c. Soil Quality
 - d. Temperature

5. Which of the following site characteristics are less favorable for tree growth? NRS.01.01.01
 - a. Deep soil, fine texture, good drainage
 - b. Gentle slopes
 - c. Broad ridges and lower slopes
 - d. South and west facing slopes

6. One acre contains how many square feet? NRS.03.02.01
 - a. 34,650
 - b. 43,560
 - c. 43,600
 - d. 36,350

7. Name the regeneration system where healthy, large-crowned trees are left and the new stand is established under the partial shade of the older trees. NRS.01.01.01
 - a. Clearcut
 - b. Seed Tree
 - c. Shelterwood
 - d. Single-tree

8. Using the picture provided, which represents a section of land, what is the correct way to describe the area marked “E”. NRS.03.02.01
- N $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 22, T.5N, R.7W
 - S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 22, T.5N, R.7W
 - W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 22, T.5N, R.7W
 - E $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 22, T.5N, R.7W



9. Using the picture above, how many acres are represented in the area marked “B”? NRS.03.02.01
- 640 acres
 - 160 acres
 - 80 acres
 - 20 acres
10. When planting trees, a spacing of 8 x 8 feet will result in how many trees per acre? NRS.01.05.03
- 340
 - 680
 - 889
 - 1,210
11. The study of insects and their relationship with the forest is called _____. CS.05.01.02
- Dendrology
 - Forest Pathology
 - Forest Hydrology
 - Forest Entomology
12. Abnormal tissue growth on trees that is caused by insects or mites is called a _____. PS.03.03.01
- Conk
 - Fungus
 - Gall
 - Pitch
13. Defoliators are insects that attack the _____ of the tree. PS.03.03.01
- Bark
 - Buds
 - Roots
 - Leaves
14. Which of the following is true with regard to crown fires? NRS.04.04.01
- They almost always start as surface fires.
 - They are more common in deciduous forests.
 - They are the most common type of forest fires.
 - They are the slowest spreading of all fires.

15. Which is NOT a function of those plants growing next to the stream in a riparian forest buffer? NRS.01.05
- Slow surface water runoff from farm field converting concentrated flow to sheet flow.
 - Reduce velocity of over-the-bank floodwaters.
 - Shade the stream and moderate water temperatures.
 - Storage and breakdown of NPS pollutants.
16. Windbreaks are most effective when oriented at what angle to prevailing or troublesome winds? NRS.01.05.03
- 30 degrees
 - 45 degrees
 - 60 degrees
 - 90 degrees
17. The most widely known and used hardwood is _____. NRS.01.02.01
- Ash
 - Hickory
 - Maple
 - Oak
18. What part of a timber sale contract depends upon the harvesting objective? NRS.01.05.03
- Preamble
 - Description of sale area
 - Conditions of payment
 - Designation of which trees to cut
19. A standard cord of wood measures _____. NRS.02.04.01
- 128 cubic feet
 - 128 square feet
 - 160 cubic feet
 - 160 square feet
20. Which of the following species is NOT considered a naturally durable wood? NRS.01.02.01
- Eastern Redcedar
 - White Oak
 - Black Walnut
 - Cottonwood
21. In general, wood contains _____, _____, and _____.
ESS.01.02.01
- 77% volatile matter, 20% fixed carbon, 2% ash
 - 6% hydrogen, 52% carbon, 43% oxygen
 - 70% hydrogen oxide, 25% carbon, 5 % volatile matter
 - None of the above.
22. A _____ is a region where water from rain and snow are absorbed into the soil.
NRS.01.05
- Biological value
 - Shrub layer
 - Watershed
 - Forest floor
23. Growth in the diameter of a root is _____. PS.02.02.03
- Primary growth
 - Secondary growth
 - Root hairs
 - Root cap growth

24. A tensiometer is an instrument that measures the amount of _____ in the soil. CS.03.04.02
- a. Fertility
 - b. Dryness
 - c. Pressure
 - d. Moisture
25. An animal with a diet of plants only, is called a _____. NRS.01.02.03
- a. Herbivore
 - b. Predator
 - c. Carnivore
 - d. Omnivore
26. Which of these forestry practices is illegal in the United States? CE.03.04.03
- a. Transplanting
 - b. Pruning
 - c. Mechanical Pulping
 - d. Spiking
27. Some of the best hardwood logs are sawed into thick pieces of high-quality wood for veneers, these pieces are called _____. NRS.02.04.01
- a. Flitches
 - b. Veneer
 - c. Plywood
 - d. Beam
28. A hydropulper is a machine that reduces _____ into pulp. CS.06.04.02
- a. Plastics
 - b. Wood particles
 - c. Recycled paper
 - d. Water
29. Cytoplasm includes all of the cell contents except for the _____. PS.02.02
- a. Vacuole
 - b. Chloroplast
 - c. Nucleus
 - d. Golgi Body
30. _____ is the flower organ in which pollen grains develop and mature. PS.02.02
- a. Filament
 - b. Sepals
 - c. Stigma
 - d. Anther
31. When the photosynthesis process is interrupted, the enzyme reacts with oxygen and reverses the process of photosynthesis. This process is called _____. PS.02.02.04
- a. Calvin Cycle
 - b. Respiration
 - c. Transpiration
 - d. Dehydration Synthesis
32. A forest that has been regenerated from the roots, stumps, or branches of other trees is known as a _____. NRS.01.05.01
- a. High Forest
 - b. Low Forest
 - c. Medium Forest
 - d. Old Forest

33. Which of the following is the MOST significant reason species have become threatened or endangered? CS.04.01.01
- | | |
|------------------------|-------------------------|
| a. Controlled as pests | c. Illegal Killing |
| b. Pesticides | d. Landscape Alteration |
34. A problem associated with log skidding and road construction resulting in contamination of surface water is known as _____. CS.04.01.01
- | | |
|------------|--------------|
| a. Bucking | c. Siltation |
| b. Scaling | d. Skidding |
35. This is the most important source of biomass across the globe. NRS.02.04.03
- | | |
|-----------------------|---------------------------|
| a. Agricultural crops | c. Forests |
| b. Crop residues | d. Crop processing wastes |
36. If a forested area is cleared to grow crops and then is allowed to revert back to its natural ecological environment it is called _____. NRS.01.05.01
- | | |
|-------------------------|--------------------------|
| a. Primary succession | c. Pioneer succession |
| b. Secondary succession | d. Ecological succession |
37. The hollowed-out interiors of these dead cells become passages for transporting dissolved nutrients to other parts of the tree. PS.02.02.03
- | | |
|--------------|-----------------|
| a. Xylem | c. Collenchymas |
| b. Epidermis | d. Tracheids |
38. This is a method of propagating plants asexually by reproducing entire plants from a single plant cell. PS.02.02
- | | |
|---------------------|-------------|
| a. Tissue culture | c. Layering |
| b. Sprouting method | d. Division |
39. Which of the following trees has bipinnately compound leaves? NRS.01.02.01
- | | |
|--------------|------------------|
| a. Hickories | c. Yellow Poplar |
| b. Mesquites | d. Pecan |
40. This oval shaped structure contains the hereditary material through which a living organism passes its traits to its offspring. PS.02.02
- | | |
|---------------|-----------------|
| a. Cytoplasm | c. Nucleus |
| b. Golgi Body | d. Mitochondria |
41. These soils are high in calcium, magnesium, sodium and potassium and support oaks, hickories, Ponderosa pine and Lodgepole pine. NRS.01.05
- | | |
|-------------|--------------|
| a. Humus | c. Spodosols |
| b. Ultisols | d. Alfisols |

42. Heart rot is a type of _____ which is also a _____ disease. PS.03.03.01
- | | |
|-----------------------|-----------------------|
| a. White rot, biotic | c. Brown rot, biotic |
| b. White rot, abiotic | d. Brown rot, abiotic |
43. How many cords of wood are in a stack of wood 16' long by 6' high by 4' wide?
NRS.02.04.01
- | | |
|---------|--------|
| a. 1.76 | c. 3.0 |
| b. 2.3 | d. 3.2 |
44. This tree is considered the densest of all trees in North America. NRS.01.02.01
- | | |
|-------------------|--------------|
| a. Pignut hickory | c. Black oak |
| b. Black walnut | d. Pecan |
45. The actual size of a 2" x 8" piece of lumber is _____. NRS.02.04.01
- | | |
|----------------|----------------|
| a. 1 ¼" x 7 ½" | c. 1 ¼" x 7 ¼" |
| b. 1 ½" x 7 ¼" | d. 1 ½" x 7 ½" |
46. This process creates the highest yield of paper but the lowest paper strength. NRS.02.04.01
- | | |
|--------------------------|-----------------------------|
| a. Chemical pulping | c. Mechanical pulping |
| b. Semi chemical pulping | d. Bleaching before pulping |
47. Which of the following is NOT a basic assumption applied to partial cruises to ensure the accuracy of the results? ESS.01.02.02
- | |
|--|
| a. Teams of two cruisers work together, one taking measurements, one recording the data. |
| b. The sample must be representative of the entire forest. |
| c. Enough samples should be tallied to reduce the chance that errors will occur. |
| d. The plot size should be large enough to tally 15-20 trees per acre. |
48. Which rule for scaling logs takes into account the amount of wood in the taper of the log from the small end to the large end? CS.06.04.02
- | | |
|-------------|------------------|
| a. Scribner | c. International |
| b. Doyle | d. None of them |
49. The rule of thumb for calculating the rate of spread is $R=W^2$. R=rate of spread and W=wind speed. If the wind is blowing 20 mph what is the rate of spread? NRS.04.04.01
- | | |
|-------|--------|
| a. 40 | c. 200 |
| b. 80 | d. 400 |
50. A type of cutting that is used to prevent the spread of a disease or insect problem to other vulnerable trees in an area is called _____. NRS.04.01
- | | |
|-------------------------|-----------------------|
| a. Cleaning operation | c. Salvage cutting |
| b. Intermediate cutting | d. Sanitation cutting |

**2017 National FFA Forestry
Career Development Event
Knowledge Exam Answer Key**

- | | |
|-------|-------|
| 1. D | 26. D |
| 2. D | 27. A |
| 3. A | 28. C |
| 4. B | 29. C |
| 5. D | 30. D |
| 6. B | 31. B |
| 7. C | 32. B |
| 8. B | 33. D |
| 9. C | 34. C |
| 10. B | 35. C |
| 11. D | 36. B |
| 12. C | 37. D |
| 13. D | 38. A |
| 14. A | 39. B |
| 15. A | 40. C |
| 16. D | 41. D |
| 17. D | 42. C |
| 18. D | 43. C |
| 19. A | 44. A |
| 20. D | 45. B |
| 21. A | 46. C |
| 22. C | 47. A |
| 23. B | 48. C |
| 24. D | 49. D |
| 25. A | 50. D |

**2018 National FFA Forestry
Career Development Event
Knowledge Exam**

Directions: Select the best answer and bubble it in on the score sheet provided. You may write on test booklet, if needed.

1. An example of a job performed by a forester with a Bachelor of Science (undergraduate) degree is _____. (KI, p.38) CS.05.01.02.a
 - a. Research Scientist
 - b. Urban Forester
 - c. Forestry Technician
 - d. Fire Fighter

2. The smallest portion of timberlands in the United States belongs to _____. (KI, p.31) NRS.02.04.02.b
 - a. Private Landowners
 - b. Public Lands
 - c. Forest Industry
 - d. Wilderness Areas

3. Several layers of vegetation found in a forest is called the _____. (FS, p.6) NRS.01.05.01.b
 - a. Strata
 - b. Canopy
 - c. Herb layer
 - d. Shrubs

4. An example of a nonrenewable resource is _____. (FS, p.11) PST.01.01.01.a
 - a. Forest
 - b. Wildlife
 - c. Coal
 - d. Crops

5. _____ are considered to be better sources for fuelwood. (FS,p.15) PST.01.01.01.a
 - a. Softwoods
 - b. Hardwoods
 - c. Low-density woods
 - d. Medium density woods

6. _____ is the movement and removal of soil caused by human and animal activities, or catastrophic natural events. (KI, p. 5) CS.04.01.01.b
 - a. Erosion
 - b. Natural Erosion
 - c. Accelerated Erosion
 - d. Soil Degradation

7. _____ is an obligate parasite, and while trees usually do not die from the infestation, their growth is restricted. (KI, p.129) NRS 04.02.01.a
 - a. Slime Flux
 - b. Rust
 - c. Nematode
 - d. Heart Rot

8. Which is not a degree of relative crown density? (FF, p. 123) NRS.01.05.01.b
 - a. Thin
 - b. Closed
 - c. Open
 - d. Partial

9. What is the rotating ring on a compass, graduated from zero to 360 degrees, and labeled with cardinal directions and quadrants called? (KI, p. 7) NRS.03.02.01.a
 - a. Dial
 - b. Bezel
 - c. Hozzle
 - d. Ring

10. Which tree species produce achene fruit? (KI, p.75) NRS.01.02.01.b
- a. Ash
 - b. Sycamore
 - c. Black Cherry
 - d. Black Walnut
11. The _____ is sometimes known as the boreal forest. (FS,p.28) NRS.01.05.03.c
- a. Northern Hardwoods Forest
 - b. Pacific Coast Forest
 - c. Bottomland Hardwood Forest
 - d. Northern Coniferous Forest
12. A _____ is formed through meiosis consists of one chromatid from each original chromosome pair. (FS, p.119) PS.02.02.01.b
- a. Haploid cell
 - b. Diploid cell
 - c. Tetrad cell
 - d. Mother cell
13. A forest that has been regenerated from the roots, stumps, or branches of other trees is known as a _____. (FS,p.122) NRS.01.01.01c
- a. High forest
 - b. Low forest
 - c. Bottom forest
 - d. Canopy forest
14. Which of the following DOES NOT influence the color of soil? (FS,p.136) CS.04.01.01.b
- a. Amount of organic matter
 - b. Drainage of the soil
 - c. Minerals in the soil
 - d. Amount of silt
15. Illuviation, the buildup of translocated soil components, is located in the _____. (FS,p.139) CS.04.01.01.b
- a. A soil horizon
 - b. B soil horizon
 - c. C soil horizon
 - d. E soil horizon
16. Pulpwood being processed for paper is debarked then chipped into pieces about _____ in size. (KI, p. 34) CS.02.02.02c
- a. 1
 - b. 2
 - c. 3
 - d. 4
17. The price of timber sold may be established in all except? (FF, p. 200) NRS.02.04.02.b
- a. Diameter
 - b. Tree Scale
 - c. Load Scale
 - d. Lump Sum
18. To use the _____, a forester pushes or drives the cutting edge through the bark until it reaches wood, then pushes the guard against the tree or log for a measurement. (KI, p.93) ESS.01.02.02.a
- a. Bark Gauge
 - b. Increment Borer
 - c. Tree Caliper
 - d. Soil Auger

19. Which of the following is not considered a natural firebreak? (FF, p. 320) NRS.04.04.01.b
- a. Streams
 - b. Logging Roads
 - c. Wind breaks
 - d. Highways
20. A complete soil profile includes these horizons in what order? (FS,p.139) CS.04.01.01.b
- a. A,B,C,E,O,R
 - b. B,A,C,O,E,R
 - c. O,A,E,B,C,R
 - d. R,O,A,C,E,B
21. _____ are responsible for heart rot. (FS,p.159) NRS.04.02.01.a
- a. Bacteria
 - b. Fungi
 - c. Viruses
 - d. Microplasmata
22. _____ include damage caused to trees by conditions such as drought, heat, cold and other conditions, they are not contagious, but they may affect large number of trees in an area. (FS,p.166) NRS.04.02.01.a
- a. Abiotic diseases
 - b. Biotic diseases
 - c. Fungus
 - d. Parasites
23. _____ is a method of controlling harmful insects and is proving to be a more practical approach to insect control.(FS,p.181) NRS.04.03.01.a
- a. Mechanical control
 - b. Chemical control
 - c. Genetic engineering
 - d. Integrated pest management
24. What causes the largest impact to species that have been listed on the threatened and endangered list?(FS,p.202) NRS.03.01.07.a
- a. Regulated hunting
 - b. Illegal killing
 - c. Landscape alteration
 - d. Competition from introduced species
25. _____ maps are color-enhanced photographic images that show land features. (KI, p.141) NRS.03.02.01.a
- a. Orthophoto
 - b. Physical
 - c. Relief
 - d. Road
26. Which species of wood does not have the most notable effects of spalting? (KI, p. 48) NRS.02.04.01.a
- a. Red Maple
 - b. Black Birch
 - c. American Beech
 - d. Yellow Poplar
27. Which species has the highest heating value per standard green cord? (FF, p. 371) PST.01.01.01a
- a. Hickory
 - b. White Oak
 - c. Red Maple
 - d. Eastern Cottonwood
28. The major commercial use for mushrooms is _____. (KI, p. 51) NRS.02.04.01.a
- a. Toxin control
 - b. Dyes for textiles
 - c. Medical Research
 - d. Food

29. Magnetic North is continually shifting, so a compass must be adjusted using _____ / _____ declination. (KI, p. 146) NRS.03.02.01.a
- a. North / South
 - b. East / West
 - c. South / West
 - d. North / West
30. The _____ is made up of trees, shrubs, and vines growing beneath the canopy. (KI, p. 60) NRS.01.05.03.c
- a. Emergent Layer
 - b. Canopy Layer
 - c. Understory Layer
 - d. Forest Floor
31. Some kinds of plants maintain their dominance over other plants by releasing chemicals into the area close around them that provide small doses of poison to invading plants. This is called _____. (FS,p.221) NRS.01.05.03.c
- a. Allelopathic effect
 - b. Adaptive behavior
 - c. Carbonization process
 - d. Dendrication
32. The first priority in any fire suppression effort is _____. (FS,p.294) NRS.04.04.01.b
- a. Fire crew safety
 - b. Evaluating the value of resources threatened
 - c. Evaluating the availability of firefighting resources
 - d. Deciding whether to suppress the fire or letting it burn
33. Which of the following terms best describes the mode of action of a firefighter who is setting backfires during a wildfire? (FS,p.297) NRS.04.04.01.b
- a. Direct attack
 - b. Incendiarism
 - c. Indirect attack
 - d. Prescribed burn
34. Resin ducts are openings in the wood through which resin moves within a live tree. They are present in _____.(FS,p.331) PS.02.02.03.a
- a. Softwoods
 - b. Hardwoods
 - c. Heartwood
 - d. Sapwood
35. The density of wood depends on the ratio of _____ to the volume of wood. (FS,p.331) PS.02.02.03.a
- a. Weight of wood
 - b. Cell wall material
 - c. Texture of wood
 - d. Plant vascular tissue
36. _____ is site preparation that effectively clears a site of unwanted vegetation and woody debris with minimal soil disturbance. (KI, p.107) NRS.03.01.01.c
- a. Chemical
 - b. Mechanical
 - c. Prescribed Burning
 - d. Clearcutting
37. _____ is a lengthwise separation of the wood, which usually extends across the rings of annual growth, commonly resulting from stresses set up in wood during seasoning. (FF, p. 460) PS.02.02.03.a
- a. Cant
 - b. Catface
 - c. Check
 - d. Conk

38. Trees directly influence the yield of a watershed by extracting water from the soil by _____. (KI, p. 63) PS.01.01.03.b
- a. Osmosis
 - b. Diffusion
 - c. Capillary Action
 - d. Transpiration
39. _____ thinning is useful in plantations because of their planting layout of rows and space within the row. (KI, p.109) NRS.03.01.01.c
- a. Geometric
 - b. Commercial
 - c. Pre-commercial
 - d. Crown
40. If a sample plot is $\frac{1}{4}$ acre in size, what is the plot radius? (KI, p. 147) ESS.05.01.01.c
- a. 37.25 feet
 - b. 52.7 feet
 - c. 58.9 feet
 - d. 66 feet
41. Windbreaks should be long in relation to their height; a _____ ratio is recommended. (KI, p. 63) NRS.04.01.02.c
- a. 2:1
 - b. 5:1
 - c. 10:1
 - d. 12:1
42. The _____ migrated to the United States from France, and now infests white and red oak trees in the Northeast. (KI, p.121) NRS.04.03.01.a
- a. Tent Caterpillar
 - b. Gypsy Moth
 - c. Douglas Fir Tussock Moth
 - d. Spruce Budworm
43. Which of the following snakes is not a pit viper? (KI, p. 163) NRS.01.02.03.b
- a. Rattlesnake
 - b. Cottonmouth
 - c. Copperhead
 - d. Coral Snakes
44. Which of the following is not a characteristic of an angiosperm? (KI, p. 70) NRS.01.02.01.b
- a. Broadleaves
 - b. Dry or Fleshy Fruit
 - c. Dendritic
 - d. Resin Ducts
45. According to OSHA, ear muffs or plugs are required for workers exposed to _____ decibels per hour or higher. (KI, p. 166) CS.03.04.01.a
- a. 75
 - b. 85
 - c. 95
 - d. 105
46. Which species and bark type is incorrect? (KI, p. 74) NRS.01.02.01.b
- a. American Beech – Smooth
 - b. Eastern White Pine – Scaly
 - c. Hickory – Blocky
 - d. Black Oak – Furrowed
47. How many seedlings are needed to plant 10 acres at 6' x 8'? (FF, p.175) NRS.04.01.02.c
- a. 480
 - b. 9075
 - c. 10000
 - d. 210

48. _____ is a chemical that kills fungi or prevents them from causing diseases, usually on plants of economic importance. (FF, p. 465) NRS.04.02.01.a
- a. Pesticide
 - b. Fungicide
 - c. Insecticide
 - d. Rodenticide
49. Axial parenchyma cells originate from the _____ forming a network of living cells around the tree. They transport sugars (food) to the parenchyma cells within the growth ring, and they store starch. PS.02.02.01.c
- a. Heartwood
 - b. Cambium
 - c. Sapwood
 - d. Seriate
50. _____ are unthickened portions of cell walls through which sap passes from ray cells to fibers, or vice versa. (FF, p. 229) PS.02.02.01.c
- a. Bordered Pits
 - b. Medullary Rays
 - c. Vertical Resin Duct
 - d. Simple Pits

**2018 National FFA Forestry
Career Development Event
Knowledge Exam**

Irwin, K. M. and American Association for Vocational Instructional Materials. 2004. Science of Forestry Management. AAVIM. (KI)
Burton, L. D. 2000. Introduction to Forestry Science. Delmar. (FS)
Rolfe, G. L., Edgington, J., Holland, I., & Fortenberry, G. 2003. Forests and Forestry. Interstate Publishing. (FF)

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|-------|-------|-------|
| 1. B | 18. A | 35. B |
| 2. C | 19. C | 36. C |
| 3. A | 20. C | 37. C |
| 4. C | 21. B | 38. A |
| 5. B | 22. A | 39. A |
| 6. C | 23. D | 40. C |
| 7. B | 24. C | 41. C |
| 8. D | 25. A | 42. B |
| 9. B | 26. D | 43. D |
| 10. B | 27. A | 44. D |
| 11. D | 28. D | 45. B |
| 12. A | 29. B | 46. C |
| 13. B | 30. C | 47. B |
| 14. D | 31. A | 48. B |
| 15. B | 32. A | 49. B |
| 16. A | 33. C | 50. D |
| 17. A | 34. A | |