

1. **One reason modern horticultural fabrics used in landscaping are said to be better than black polyethylene film is they:**
 - A Prevent moisture from penetrating too deeply
 - B Make a better base for rock mulch
 - C Completely control weeds
 - *D Allow exchange of gases between soil and air**

 2. **A privacy fence should be at least ____ feet high if the purpose is to screen the view of neighbors at ground level or others walking near the property at the same elevation.**
 - A 6
 - *B 8**
 - C 4
 - D 5

 3. **Which of the following watering systems can reduce water usage by as much as 80%.**
 - A Hand watering
 - B Impulse sprinklers
 - C Soaker Hose
 - *D Drip or Trickle irrigation**

 4. **Clay soils require:**
 - A A shorter time for absorption of irrigation water than sandy soils
 - B More or less time for absorption than sandy soils, depending on the pH of the clay
 - C About the same time for absorption of irrigation water as sandy soils
 - *D A longer time for absorption of irrigation water than sandy soils**

 5. **Which would not be part of a lawn irrigation system?**
 - *A differential valve**
 - B PVC pipe
 - C backflow valve
 - D solenoid valve

 6. **Which of the following is microscopic?**
 - *A Nematodes**
 - B Thrips
 - C aphids
 - D Spider mites

 7. **A pre-emergence herbicide is applied**
 - A to broadleaf weeds only
 - B after the weeds have germinated and emerged from the soil
 - C to grasses only
 - *D before the weed seeds germinate**

 8. **When using heat to sterilize/pasteurize soil, the soil should be heated to:**
 - *A 180°F for 30 minutes**
 - B 280°F for 1 hour
 - C 200°F for 1 hour
 - D 100°F for 1 hour
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9. **A plant pathologist studies plant:**
A Morphology
***B Diseases**
C Physiology
D Insects
10. **Scientific names generally consist of two words, the first being the genus and the second being the:**
A Order
B Cultivar
C Family
***D Specific epithet**
11. **Though not recommended, if 2-cycle engine fuel is actually used in a 4-cycle engine**
***A The engine will likely smoke a lot, but it will run**
B The engine will not start or will be hard to start
C The engine will be much louder than normal
D There is no problem, the engine will run just fine
12. **A shade loving border plant is:**
A Chrysanthemum
B Zinnia
***C Impatiens**
D Marigold
13. **The optimum germination temperature for most bedding plant seeds is:**
A 50 to 55°F
B 60 to 65°F
***C 75 to 85°F**
D 65 to 75°F
14. **Which of the following is true about lady bug beetles? They:**
***A Eat aphids**
B Often feed on vegetable plants
C Are bright green and blend-in with the foliage
D Sometimes sting gardeners
15. **An important step in properly composting landscape refuse is to:**
A Treat each layer with pesticide to control insects and weeds
B Make only small piles to keep the material cool
***C Thoroughly moisten each layer of material**
D Exclude as much air as possible from the compost pile
16. **When Alan finished sharpening his rotary mower blade, he noticed that his mower vibrated and shook so bad that he could hardly control it. What was wrong?**
A The spark plug was loose
B The blade was made from inferior metal
***C The blade was out of balance**
D The blade has been overheated, affecting its temperment

17. **Water availability, temperature extremes, and _____ should be considered when selecting trees for the landscape.**
- *A **Soil type**
 - B Buildings present
 - C Topography
 - D Slope
18. **When installing a landscape, which step (from the following list) should be completed FIRST:**
- A Build retaining walls and garden walkways
 - B Plant the trees and shrubs
 - C Add amendments to the soil
 - *D **Install the drainage system**
19. **Which of the following groups contains only deciduous plants?**
- A River Birch, Southern Magnolia, Ilex vomitoria
 - B Live Oak, Chinese Tallow, Sophora secundiflora
 - *C **Cedar Elm, Carya illinoensis, Red Oak**
 - D Taxus cuspidata, Sycamore, Bradford pear
20. **Soil around the foundation of a house is often more alkaline than surrounding soil due to which of the following?**
- A chemicals applied to prevent termites
 - B leaching from the home's paint
 - *C **leaching from the masonry mortar on the home and the masonry debris from construction**
 - D decaying wood scraps that were buried around the foundation during construction
21. **Liriope and Ajuga are generally classified as:**
- A Small flowering shrubs
 - *B **Groundcovers**
 - C Small evergreen shrubs
 - D Semi-evergreen shrubs
22. **A large perennial that provides a general effect of mass and grows in excess of five feet is:**
- A Dianthus
 - *B **Pampas grass**
 - C Primrose
 - D Yarrow
23. **Which of the following describes plants that lose their leaves during the winter?**
- A Herbaceous
 - B Evergreen
 - C Coniferous
 - *D **Deciduous**
24. **The viability of a group of seeds is measured by:**
- A Permeability of the seeds
 - *B **The germination percentage**
 - C Maturity of the seeds
 - D The number of seeds per pound

25. An “x” in the botanical name of a plant means the plant:
- A Has been grafted
 - *B Is a true hybrid**
 - C Comes true to type from only seed propagation
 - D Comes true to type from seed and vegetative propagation
26. The use of plant materials and landscaping techniques to conserve soil moisture and to reduce water usage is:
- A Waterscaping
 - B Natural landscaping
 - *C Xeriscaping**
 - D Bogscaping
27. Soil texture refers to:
- A The ratio of sand to clay in the soil
 - B The amount of humus in the soil
 - *C The size of the soil particles**
 - D The arrangement of soil particles
28. Plants usually do not grow well in poorly drained soils because:
- A Plant roots become engorged with water in poorly drained soils
 - *B Oxygen content is low in poorly drained soils**
 - C The organic matter content of poorly drained soils is too high
 - D Poorly drained soils warm too quickly in spring
29. Underground stems with scale-like fleshy leaves (leek and onion) are called:
- A Roots
 - B Stolons
 - C Tubers
 - *D Bulbs**
30. Light energy, carbon dioxide, and water enter into the process of photosynthesis, through which:
- A Respiration results
 - B Chlorophyll is formed
 - C Amino acids are formed
 - *D Carbohydrates are formed**
31. Which of the following definitions best describes “auxin?”
- A A naturally occurring plant chemical produced to deter disease organisms
 - B The capital of Texas and the home of the USDA
 - *C A naturally occurring plant hormone that promotes plant growth**
 - D A chemical used as a plant growth retardant
32. Which of the following groups contains only evergreen plants?
- *A American arborvitae, Camellia, Japanese Yew**
 - B Azalea, Ginkgo, Chinese Holly
 - C Bald cypress, Purpleleaf plum, Pecan
 - D Sweet gum, Crape myrtle, Sycamore

33. If a two-cycle engine on a weed trimmer uses a 24:1 fuel ratio, you should mix:
- A 24 parts oil to 1 part gasoline
 - *B 24 parts gasoline to 1 part oil**
 - C 24 parts gasoline to 1 part engine cleaner
 - D Equal amounts of gasoline and oil
34. Plants sold in the landscape trade are sold by _____ name.
- *A Botanical**
 - B Order and family
 - C Order and genus
 - D Family
35. Mrs. Thompson loves spring flowering bulbs. Which of the following would you suggest for Mrs. Thompson to plant?
- A Gardenia jasminoides
 - B Coleus x hybridus
 - *C Hyacinthus orientalis cv.**
 - D Lonicera japonica
36. The process in which water, grass seed, fertilizer, cellulose fiber and a glue type material are mixed together and sprayed onto the soil to establish turf is called_____.
- *A hydroseeding**
 - B top dressing
 - C Pressure spray
 - D Seed Injection
37. Which of the following best describes seed scarification?
- A placing seed capsules in the sun for natural drying
 - *B removing some of the seed coat with a file, sandpaper, or acid solution**
 - C using a dibble to spot off newly planted seedlings
 - D planting seeds in a nursery flat to a depth of two times the seed's diameter
38. A "spreader-sticker" added to a spray solution causes the chemical to:
- *A Better cover the plant surface and resist being washed off by rain and irrigation**
 - B Become more diluted in the sprayer
 - C Penetrate the cuticle to the leaf, allowing more effective sticking power
 - D Stick to the diseased areas of the plant and run-off the areas it is not needed
39. Most landscape plants like the soil pH:
- *A Slightly acidic**
 - B Strongly acidic
 - C Slightly alkaline
 - D Strongly alkaline
40. When planting a bare-rooted tree, the tree should be planted:
- A at 6 inches above the original soil level
 - *B Directly even with the original soil level**
 - C At 6 inches below the original soil level
 - D At 2 inches above the original soil level

41. **Three types of ground patterns used in landscape design are**
A Curved-line, arc-and-tangent, squiggle-line
B Curved-line, straight-line, squiggle-line
***C Curved-line, arc-and-tangent, straight-line**
D Straight-line, squiggle-line, arc-and-tangent
42. **A is a woody perennial that has more than one main trunk.**
A Flower
***B Shrub**
C Weed
D Tree
43. **Traditional garden centers, in many cases, have been able to compete with chain department stores by providing?**
***A Better service**
B Better refund policies
C Lower prices
D Cleaner stores
44. **Water _____ to help reduce disease in nursery crops**
***A Early in the morning**
B At night
C With overhead sprinklers
D Late in the afternoon
45. **Which tree has the finest textured foliage?**
***A Mesquite**
B Sweet gum
C Sycamore
D Southern magnolia
46. **An example of a creeping or prostrate coniferous evergreen is:**
A Abelia grandiflora
***B Juniperus horizontalis**
C Prunus caroliniana
D Lobularia maritima
47. **Functional roles of plants in the landscape do not include:**
A Enclosing
B Screening
C Developing the structural framework of the design
***D Greening up**
48. **Which of the following can be said about applying an herbicide to a lawn in granular form rather than as a liquid spray?**
***A There is little or no drift from the granular form**
B The liquid form is much more expensive
C The amount of active ingredients needed is greatly reduced with the granular form
D Most broadleaf weeds have developed resistance to liquid herbicide sprays

49. Shrubs planted in small groups in the landscape are generally placed in:
- A Groups of 4
 - *B Odd numbered groups (i.e. 3,5,7)**
 - C Even numbered groups (2, 4, 6)
 - D Groups of 2
50. Which one of the following plant hardiness zones is colder than Zone 6?
- A Zone 7
 - B Zone 10
 - *C Zone 3**
 - D Zone 8
51. The following plant grows from a tuber:
- A Impatiens
 - B Japanese honeysuckle
 - *C Elephant Ear**
 - D Celosia
52. The term is used in horticulture to define plant injury sometimes caused by pesticides:
- A Emulsification
 - B Expectoration
 - C Eutrophication
 - *D Phytotoxicity**
53. Trees are fertilized with granular fertilizer by spreading it within
- *A The drip line**
 - B A thirty foot radius of the trunk
 - C A four foot radius of the trunk
 - D The drip line and at least ten feet beyond the drip line
54. The four life cycle stages of beetles such as the Japanese beetle are:
- A Grub, pupae, juvenile, adult
 - B Moth, egg, grub, adult
 - C Egg, nymph, pupae, adult
 - *D Egg, grub, pupae, adult**
55. Large nursery pots are measured by the
- *A gallon, sizes are strictly regulated**
 - B height, and sizes are strictly regulated
 - C inch, and sizes are strictly regulated
 - D gallon, the exact size varies by the manufacturer
56. Plants that use less water and are tolerant of dry landscape sites are called:
- *A Xerophytes**
 - B Epiphytes
 - C Dryophytes
 - D Monoecious

57. The nursery landscape trade and related industries are sometimes referred to as the
- *A **Green Industry**
 - B United environmental industry
 - C Outdoor consortium
 - D Federated nursery industries
58. Joe's Landscaping pays rent, legal fees, utilities and insurance, all of which are classified as
- A variable costs
 - B contingency costs
 - *C **overhead costs**
 - D marginal costs
59. Damping-off is caused by:
- *A **Fungi**
 - B Viruses
 - C Bacteria
 - D Nematodes
60. Lowering the soil grade around a tree removes many of the tree's _____ roots.
- A aquatic
 - *B **Feeder**
 - C Aerial
 - D Tap
61. A plant that remains vegetative during its first season of growth and flowers in the second season is a (n):
- A Propagule
 - B Perennial
 - *C **Biennial**
 - D Annual
62. A pencil lead that is soft, prints well, erases easily, and tends to smear easily is _____.
- A 2H
 - B F
 - C 9H
 - *D **3B**
63. A landscaper in New York calls a wholesaler/grower in Tennessee to inquire about plant material for a landscape job. One of the trees he asks about is bald cypress. He wants to know if it is hardy in middle New York. The grower says, "Let me see, that is Zone 4 ..." They are talking about the:
- A Critical Zone Hardiness Index
 - B UPS Zone Index for safe shipping of plants
 - *C **USDA Plant Hardiness Zones**
 - D AAN Hardiness Zone Plan
64. Larger nursery pots are measured by the:
- *A **Gallon**
 - B Ounce
 - C Inch
 - D Height

65. Plants need ____ essential elements for proper growth and development.
- A 8
 - *B 16**
 - C 32
 - D 3
66. Fairy ring is caused by:
- A Pollen
 - *B Fungi**
 - C Nematodes
 - D Grubs
67. Plants that evolve and grow naturally in an area are termed _____ plants
- A Specimen
 - B Accent
 - *C Native**
 - D Exotic
68. Failure to firm down the soil around a newly planted tree or shrub can result in air pockets. This may cause:
- A Over-watering problems
 - *B Drying of plant roots**
 - C Disease
 - D Soil heaving in winter
69. If a container-grown nursery crop has been over watered for a long period, a grower might expect to find the roots in the following condition:
- A The roots growing through the drain holes in the bottom of the container
 - B The roots dead or absent at the top of the container but healthier in the bottom of the container
 - C The roots may be extra thick and bright white in color
 - *D The roots dead or absent at the bottom of the container but healthier in the top portion of the container**
70. Food produced in the leaves moves to other parts of a plant through the .
- A Xylem
 - B Veins
 - *C Phloem**
 - D Arteries
71. Magnesium, calcium, and sulfur:
- A Can be found in incomplete fertilizers
 - *B Are essential elements needed for plant processes**
 - C Are only needed by some plants
 - D Are micro-elements
72. Which is most likely not a benefit from using mulch?
- A Reduced water loss from the soil
 - B Reduced disease
 - C Moderated soil temperatures
 - *D Reduced insects**

73. What is one reason the container grown sector of nursery crop production has increased in recent years?
- A the plants develop circling root systems
 - *B factors affecting plant growth can be maintained at optimum levels**
 - C container plants require less care
 - D soilless media is beneficial to plant growth
74. When planting B&B plants:
- A The burlap should be pulled up and tied securely to the trunk for protection
 - B The burlap should be allowed to dry completely before planting
 - C The burlap should be completely removed from the ball
 - *D The tie string should be cut from the trunk of the plant**
75. Which type of insecticide would be most effective against sucking-type insects?
- A Aerosol
 - *B Systemic**
 - C Dust
 - D Contact
76. When should soil NOT be tilled?
- A When it is dry
 - B During spring warm-up
 - *C When it is wet**
 - D During late fall
77. What type of watering conditions would cause the clustering of turf grass roots at the top of the soil? Assume that there has been little or no rainfall.
- A infrequent soaking
 - B applied once a week
 - *C frequent, light watering**
 - D rarely watering
78. Plant diseases caused by rain splashed microorganisms from the ground can be reduced by
- A using only clean topsoil as backfill
 - *B applying mulch around and underneath plants**
 - C removing all mulch from around and underneath the plant
 - D removing all mulch outside the dripline
79. The turfgrass least tolerant of shade is:
- A St. Augustine
 - B Fescue
 - C Zoysia
 - *D Bermudagrass**
80. Natural soil is arranged in layers referred to as
- A soil texture
 - B sand, silt and clay
 - *C soil horizons**
 - D soil rings

81. Which of the following is a group of small-growing trees?
*A **Crape myrtle, Eastern redbud, Japanese black pine**
B Pecan, Sweetgum, Ginkgo
C Sweetgum, Sycamore, Southern magnolia
D Red oak, Bald cypress, Live oak
82. The terms triploid, diploid and haploid refer to
*A **number of chromosomes**
B formation of leaves
C number of flowers per stem
D number of bud breaks expected after pruning
83. Site features to consider when conducting a site survey include:
A Natural features, existing vegetation, soil conditions, and client analysis
B Topography, client analysis, natural features, and climate
C Natural features, climate, existing vegetation, and client analysis
*D **Topography, soil conditions, natural features, and existing vegetation**
84. The soil pH level primarily controls:
A Activity of soil-borne diseases
B Moisture absorption by roots
C Soil temperature
*D **Availability of essential plant nutrients**
85. Fertilizers should be added to soil
A according to the package instructions and only in the water
*B **based on soil test results**
C at 1/2 the rate of fertilizer
D every year
86. When pruning cuts are made on woody trees, one should not cut into or behind the _____. This area is where healing callus originates.
A internode
B interstitial
*C **collar**
D axil
87. All other things being equal, which diameter of pipe or combination of pipes will carry the most water?
A five 1/2" pipes
*B **one 2" pipe**
C three 1" pipes
D four 3/4" pipes
88. Flowering plants that are tetraploid have reduced maintenance costs because of the reduced need to
A water
*B **dead head**
C fertilize
D spray for insects

89. **PVC pipe for irrigation is joined by connectors/couplings that are to the pipe.**
A Soldered
***B Solvent Welded**
C Clamped
D Wired
90. **One of the best ways to speed up the rooting process of cuttings is to:**
A Keep the soil cool and the foliage warm
B Always take cuttings after midday
C Harden them off by laying them out to dry a few days before sticking
***D Provide bottom heat**
91. **Which of the following is the best definition of an F1 hybrid?**
A the first cross between the offspring of A, B, C, D, and E generations
***B the first generation of seedlings from genetically different parents**
C a plant that is genetically inferior to all other cultivars
D a plant that is genetically superior to all other cultivars
92. **Which of the following is a group of terms related to landscape design principles?**
A Hogarth, symmetrical, curvature
B Stratify, random, curvature
C Thresh, rounding, complexity
***D Focalization, proportion, simplicity**
93. **A 50 pound bag of 5-10-15 fertilizer contains pounds of nitrogen.**
A 5
B 10
C 15
***D 2.5**
94. **Which of the following serves as a food reservoir for the developing embryo within the seed of a monocot?**
A Plumule
B Radical
C Testa
***D Endosperm**
95. **Of the grasses listed below, which is most commonly used on golf greens?**
***A Bentgrass**
B Fescue
C Mondo grass
D St. Augustine grass
96. **Who is responsible for establishing the binomial system for naming plants**
A Aristotle
***B Linnaeus**
C Bernuli
D Weinberg

97. In most plants, a hormone called auxin is produced by the terminal bud. It moves downward into the shoot and inhibits the growth and development of lateral buds. This is called:
- A Lateral dominance
 - B The apex auxin complex
 - *C Apical dominance**
 - D Terminal bud inhibition
98. The basic underlying principle of using a mist propagation system is that it _____.
- A Cools the propagation medium to promote root formation and development
 - B Keeps the propagation medium uniformly moist and supplies moisture to the base of the cuttings
 - C Keeps the plant material cool
 - *D Increases humidity around the cutting and reduces transpiration**
99. Plants showing symptoms of nitrogen deficiency will show which of the following symptoms?
- A Tiny brown spots between the leaf veins
 - *B Yellowing of the entire leaf**
 - C Abnormally long internodes
 - D Purple veins in the leaves
100. A landscaper should call 811 before beginning certain landscape projects to:
- A obtain a permit before digging
 - B request a check of proper zoning
 - *C request assistance in locating underground utilities**
 - D submit their environmental impact license number and request EPA approval.
101. Some plants can release chemicals into the soil that inhibit or stop growth of plants in the surrounding soil. The effect is called _____.
- A Chemical Synpathy
 - *B Allelopathy**
 - C Reduction Oxidation
 - D Hormonal Redaction
102. Two basic types of pruning are heading-back and thinning-out. Which of the following is true about these pruning methods?
- A Heading cuts usually remove entire branches and leave no buds.
 - B Thinning cuts leave behind a good portion of the stem and many axillary buds.
 - C Heading cuts remove a portion of the stem and only terminal buds are left.
 - *D Thinning cuts are made close to a main branch or ground and few axillary buds are left.**
103. Which of the following is not a rule-of-thumb traditionally followed by landscapers?
- A Shrubs should be no closer than 2.5-3 feet from the foundation
 - B Home walkways should be wide enough for 2 people to walk side by side
 - *C Shrubs should be planted 6-12" from the foundation**
 - D Landscape plants should be dry at night, if possible.
104. Recommended service intervals for jobs such as changing the oil in motorized landscape equipment, is usually measured in ____ of operations.
- A months
 - B miles
 - C days
 - *D hours**

105. Landscape plans generally include all of the following except:
- A A north orientation marker
 - B The mature width of the plant
 - C The number of each type of plant to be planted
 - *D The mature height of the plant**
106. A plant that produces flowers that have either stamens or pistils, but not both on the same plant is called:
- A Staminate
 - B Angiosperm
 - *C Dioecious**
 - D Monoecious
107. Which is NOT a type of leaf arrangement?
- A opposite
 - B alternate
 - *C pyramidal**
 - D whorled
108. When selecting ginkgo trees for the home landscape, you should choose:
- A Male and female trees
 - *B Male trees only**
 - C Mature female trees only
 - D Female trees only
109. The main objective of root pruning is to
- A increase water absorption
 - B fit the plant in a hole
 - *C develop a compact and fibrous root system**
 - D encourage normal stem growth
110. A major advantage for producing nursery stock in containers is that it:
- A Requires less water and fertilization than field-grown crops
 - B Requires less labor than field-grown crops
 - *C Allows for transplanting any time during the growing season**
 - D Is less expensive than growing in nursery fields
111. The landscape design principle of interconnection:
- A Is the human perception of space and form related to human dimension
 - B Is the overall organization and structure of a design
 - *C Occurs when visual components are physically linked together**
 - D Is a visual break in sequence
112. The best type of sand to use in soil mixtures for container grown plants is:
- A Beach
 - B Fine-textured
 - *C Coarse textured**
 - D White, fine-textured

113. What is the function of the axillary bud on the stem?
- A To provide food storage
 - B To help heal wounds of the plant
 - *C To produce a new leaf or stem**
 - D To aid in seed dispersal
114. To increase the bushiness of a flowering plant while the plant is young, one should:
- *A Pinch the stem tips of the plant**
 - B Increase the amount of water the plant receives
 - C Apply a growth retardant
 - D Increase the nitrogen in the soil surrounding the plant
115. Plants that have been clipped or pruned into two-dimensional forms are:
- A Dynamic
 - B Balanced
 - *C Espalier**
 - D Topiary
116. The Oak Leaf Nursery advertised a group of trees with a trunk caliper of 3 inches. In the trade, it is assumed that this measurement was taken:
- A At breast height (4½ feet above the rootball)
 - *B 6 inches above ground level**
 - C 18 inches above ground level
 - D At the base of the rootball
117. A landscaper says that the soil at a home development site will not perk. What does that mean?
- A It will not crack in very cold weather
 - *B Water does not pass through the soil at an acceptable rate**
 - C The soil does not have proper form to resist slipping and cracking
 - D The soil particles do not form proper aggregates
118. When propagating woody cuttings, a growth promoting substance is sometimes applied to the base of the cuttings in order to
- A conserve moisture in the cuttings
 - B speed the healing process
 - C speed the development of roots on the cutting
 - *D all of these**
119. Some vines use _____ to support themselves as they climb.
- A Stems
 - B Aquatic roots
 - *C Tendrils**
 - D Tap roots
120. The best definition of a surfactant is a:
- A Material to protect leaf surfaces from pesticides by creating a waxy seal over the leaf
 - B Type of pesticide formulation with an oily consistency for protecting high pressure spray nozzles from wear
 - *C Material added to a liquid spray solution to reduce surface tension between the liquid and leaf surface**
 - D Type of soap used to wash off pesticide residue by increasing surface tension between the leaf and residue

121. Which of the following turf areas is mowed to the lowest height?
A Commercial lawn
***B Golf green**
C Home lawn
D Golf fairway
122. One characteristic of Roundup (glyphosate) that customers sometimes object to is
A That it is extremely toxic to pets
***B That it takes several days to kill weeds**
C Its long lasting effects
D That it temporarily stains the soil surface orange
123. A color scheme in a garden that produces a carnival-like effect is referred to as being:
A Complementary
B Analogous
***C Polychromatic**
D Monochromatic
124. Wisteria, clematis, and Japanese honeysuckle are examples of:
***A Vines**
B Groundcovers
C Trees
D Shrubs
125. Which of the following is not an important environmental requirement for germination to occur?
A Moisture
***B Carbon dioxide**
C Proper temperature
D Oxygen
126. In nursery production, a “liner” refers to
A A plastic mulch covering
B A plastic bag
***C A rooted cutting or small seedling**
D A type of garden tool
127. Which of the following would be the best response if a client calls you in October and wants to know what to do about a 20-foot Japanese pine that has turned completely brown?
A Wait until spring and see if it sprouts green needles again.
B Do nothing. Pine trees shed naturally in the fall.
***C Cut it down. It is definitely dead.**
D Do nothing. The Japanese pine is just going dormant.
128. The recommended minimum width for a residential walkway in the public area of the landscape is feet.
***A 3.5**
B 7.5
C 5
D 6.5

129. A financial plan for the future is called
- *A budget
 - B net worth statement
 - C cash analysis
 - D deed
130. The three major divisions of a soil profile are:
- *A topsoil, subsoil, and parent material
 - B mulch, clay, and parent material
 - C topsoil, clay layer, and rock layer
 - D topsoil, subsoil, and bedrock
131. Professional-grade string trimmers are usually powered by:
- A Electricity
 - B Diesel fuel
 - *C A 2-cycle engine
 - D A 4-cycle engine
132. Tree roots that are responsible for most nutrient uptake are found
- A outside the dripline
 - B within the upper 8" of topsoil
 - *C in the subsoil
 - D between 18" and 28" in depth
133. The classifications of soil particles based on size are sand, silt, and:
- A Loam
 - B Gravel
 - C Shale
 - *D Clay
134. In plants, is the process of converting stored energy into energy for plant growth:
- A Photosynthesis
 - B Transpiration
 - *C Respiration
 - D Pollination
135. Which fuel is used in chainsaws, string trimmers, and other 2-cycle engines?
- A Fuel oil
 - *B Gasoline and oil mix
 - C Gasoline
 - D Diesel
136. The road in front of Steve's house has become traffic congested in recent years. The view, and especially the noise, bothers the family. When Steve discussed this problem with a landscaper, the landscaper mentioned berms. What was the landscaper talking about?
- A His recent fishing trip where he caught several berms
 - B A special type of wall to block the noise and view of traffic on the road
 - *C Tall mounds of soil placed between the house and road to block the noise and view
 - D Trees planted in multiple rows between the house and road

137. When taking a soil sample, be sure to take cores at least _____ inches deep.
- *A 6
 - B 14
 - C 3
 - D 2
138. Which of the following grasses has the longest winter dormancy period?
- A Bluegrass
 - B Aphids
 - C Scale
 - *D Zoysia
139. Which of the following is a disadvantage of using a time clock to control an irrigation system?
- *A The plants are watered at set times, whether they need watering or not.
 - B Time clocks are very expensive
 - C Time clocks are difficult to set.
 - D When there is a power outage, the irrigation system runs continuously.
140. The most commonly used lawn grasses used in the U.S. can be divided into ___ or ___ types.
- A Perennials or annuals
 - B grasses or broadleaved
 - *C warm season or cool season
 - D spring or summer
141. The best time to prune azaleas is
- *A just after they bloom
 - B in spring before leaves appear
 - C when they are dormant
 - D just before they bloom
142. Hardiness refers to:
- A The hardness of the soil in which a plant is being planted
 - B The strength of the wood of a tree
 - C The ability of a plant to grow indoors
 - *D The quality of being strong and being able to survive in a certain region
143. What part of a lawn mower prevents dust from entering the carburetor?
- *A Air cleaner
 - B Exhaust chute
 - C Hydraulic system
 - D Crankcase
144. When mowing Bermuda grass lawns, what is the general range for the proper height of cut?
- A 4"
 - *B 1.5 to 2.5"
 - C 5"
 - D 3 to 4"

145. When trying to save trees on a construction site, cut and fill under the drip line of the trees should be limited to a depth of inches.
- A 18
 - *B 0 (Never cut or fill under the drip line of trees.)**
 - C 6
 - D 8
146. The loss of water in the form of vapor from the surface of plant leaves is referred to as:
- A Oxidation
 - *B Transpiration**
 - C Respiration
 - D Condensation
147. A landscape designer uses many _____ in developing the preliminary design for a project.
- A Problem statements
 - B Perfect plans
 - *C Bubble diagrams**
 - D Site surveys
148. Hardening-off is a term used in the nursery/landscape industry to mean:
- A Allowing herbaceous plants to become woody
 - *B Acclimatizing tender plants to harsher, outdoor conditions**
 - C Coating plants with a protective plastic-type spray prior to transplanting
 - D Acclimatizing landscape plants to coldframe conditions
149. A lawn mower with blades parallel to the surface of the ground is called a(n):
- A De-thatching mower
 - B Reel mower
 - *C Rotary mower**
 - D Electric mower
150. Soft pencil leads are indicated by the letter
- *A B**
 - B F
 - C H1
 - D H
151. What information is not contained in the legend on a final landscape plan?
- A Plant names
 - B Specific notes concerning installation
 - C Plant quantities
 - *D Designer's name**
152. The approximate range of average annual minimum temperature for Plant Hardiness Zone 5 is:
- A 20 to 30 degrees
 - *B 10 to 20 degrees**
 - C -20 to -10 degrees
 - D -30 to -20 degrees

153. **A post-emergent herbicide is applied**
A before the weed seeds germinate
B to broadleaf weeds only
C just as the weed seeds are germinating
***D after the weeds have germinated and emerged from the soil**
154. **What is one reason midday watering of lawns in the summer is usually not recommended?**
A Fast evaporation of water from plant leaves may cause disease
B Homeowners pay a premium for water if they irrigate between the hours of 8 a.m. and 5 p.m.
***C Much of the water is lost through evaporation**
D Plant roots do not readily absorb water during the daylight hours
155. **An example of an organic material is**
A Pea gravel
B Perlite
***C Leaf mold**
D Vermiculite
156. **Similar to the textural appearance of plants, _____ can be used to create spatial illusions in a perennial garden.**
A Staking
B Plant growth rate
***C Color**
D Shape
157. **Examples of cool season grasses include perennial ryegrass, bentgrass, and:**
A Zoysia
B St. Augustine
C Bermudagrass
***D Fescue**
158. **Which plant is a vine?**
A Ficus benjamina
***B Lonicera japonica**
C Ilex cornuta
D Pinus thunbergiana
159. **Which of the following propagation methods usually produces the greatest amount of genetic variation in the offspring?**
A division
B grafting
C tissue culture
***D seeding**
160. **A is a landscape designer's tool for drawing circles on a landscape plan.**
A Protractor
B Scale
***C Circle template**
D T-square

161. The synthetic growth regulator, Indole-3-butyric Acid (IBA), is used in the nursery trade as a
- *A **rooting hormone**
 - B insect control
 - C surfactant
 - D foliage preservative
162. Which is the best definition of the term understory, as used in landscaping?
- A the bottom level of a two story house
 - *B **smaller plants that grow under the canopy of a tree**
 - C shrubs and other plants planted under the eaves of a house
 - D the basement of a two story house
163. Callus is a term usually referring to:
- A The tissue on the collar of a limb
 - B A disease of plant leaves and limbs
 - *C **The first tissue to develop on a cutting just before the roots form**
 - D Deformed growth on plant limbs
164. The most common synthetic root-promoting chemicals used in rooting hormones are:
- A IBA and AAN
 - B ISO and OSB
 - *C **IBA and NAA**
 - D CCA and ACD
165. In the plant name *Ilex x meserveae* 'Blue Princess':
- A The genus is *Ilex*, the "x" means that it is patented, the species is *meserveae*, and Blue Princess is the variety.
 - *B **The genus is *Ilex*, the "x" means it is a hybrid, the species is *meserveae*, and the cultivar is Blue Princess.**
 - C The family is *Ilex*, the "x" means it is a tetraploid, the genus is *meserveae*, and the species is Blue Princess.
 - D The species is Blue Princess, the "x" means that its origin is unknown, the variety is *meserveae*, and the genus is *Ilex*.
166. Which of the following statements is NOT true?
- *A **Frost is most likely to form when there is low, heavy cloud cover and a slight cool breeze.**
 - B Frost is more likely to form in low lying areas or pockets, when temperatures are at the freezing point
 - C The heat given off from water sprinkled over plants may prevent frost from forming if the temperature is only slightly below freezing.
 - D Frost may form if the sky is clear, the air is calm and the night temperature is only slightly below freezing?
167. Which insect eats out trails between the leaf surfaces?
- A Spider mites
 - B Aphids
 - *C **Leaf miners**
 - D Thrips

168. Once they are beneath the bark surface, are difficult to control.
- A Mealybugs
 - B Aphids
 - *C Borers**
 - D Thrips
169. When installing a landscape, which step (from the following list) should be completed LAST?
- A Build retaining walls and garden walkways
 - *B Plant the trees and shrubs**
 - C Install the drainage system
 - D Add amendments to the soil
170. There are five common methods of night lighting for landscapes. They are:
- A Cross, down, up, reverse, and slope lighting
 - B Bright, dim, subdued, marginal, and transparent lighting
 - *C Walk, silhouette, shadow, up, and down lighting**
 - D Moderate, bright, dim, regular, and flash lighting
171. The analysis of fertilizer is guaranteed by the manufacturer and regulated by the:
- A IRS
 - B American Nursery and Landscape Association
 - *C USDA**
 - D Extension Service
172. Which of the following is a major reason for mulching landscape plants?
- A Attracts earthworms
 - B Supplies nutrients
 - C Increases anti-aerobic activity in the soil
 - *D Moderates soil temperature and conserves soil moisture**
173. The factor used as an indication of grade and general vigor of Hybrid Tea Rose plants sold at retail is the number of healthy
- A terminal buds
 - B leaves below the petioles
 - *C canes**
 - D lateral roots
174. Which signal word for pesticide labels indicates the lowest level of toxicity?
- A Warning
 - B Danger
 - *C Caution**
 - D Careful
175. Leaves that show interveinal chlorosis probably suffer from:
- A Water Stress
 - B Chlorine damage
 - *C Iron deficiency**
 - D Nitrogen excess

176. **Benefits of landscaping include which of the following?**
*A **landscaping does all of these**
B cooling of air and providing oxygen
C filtering of water and prevention of erosion
D absorbing pollution from the air and reducing noise levels
177. **Which of the following statements is true about applying dry fertilizer to a lawn?**
A Dry fertilizer should only be applied late in the day
*B **It is a good practice to water-in dry fertilizer applied to a lawn**
C Apply dry fertilizer just after a rain
D Apply dry fertilizer in the early morning when the grass is wet from the dew
178. **An area of the landscape that includes space for such items as a clothes line and garbage cans is the area:**
A Recreational
B Private
C Public
*D **Service**
179. **Warm season turf grasses include which of the following?**
A ryegrass
B fescue
*C **bermudagrass**
D bluegrass
180. **Which of the following is important in producing a uniform size and quality container grown nursery crop?**
A Leave a uniform water space at the top of each crop
B Use the same soil mix for the entire crop
C Tamp the soil to the same degree of firmness in each pot
*D **all of these**
181. **Divide and separate fall blooming perennials:**
*A **In early spring**
B Mid summer
C In late spring
D Early fall
182. **For maximum effectiveness, mulches should be applied about _____ deep.**
A 10-12 inches
*B **3-4 inches**
C 1 inch
D 8-10 inches
183. **Cuttings in the rooting bench should be:**
A Kept dry during the day and moist at night
*B **Kept constantly moist**
C Fertilized regularly
D Scarified before watering

184. **Blue spots along the cutting edge of a rotary mower blade after sharpening indicate**
- *A The blade was overheated during sharpening**
 - B There are dull spots remaining on the blade
 - C The metal was distorted while sharpening
 - D The blade was made of inferior metal
185. **Low-growing landscape plants should:**
- A Not be used in the landscape
 - *B Be placed in front of intermediate growing plants**
 - C Be planted under large trees
 - D Be placed behind intermediate growing plants
186. **The statement on a bag of fertilizer that lists the percentages of nitrogen, phosphorous, and potassium contained in the fertilizer is called a(n) _____ analysis.**
- A Chelated-Release
 - B Micro-element
 - C Essential element
 - *D Fertilizer**
187. **A method of fertilizer application is**
- *A Side dressing**
 - B Leaching
 - C Sterilization
 - D Pasteurizing
188. **Which of the following is the proper recommendation for pruning trees at planting:**
- *A Pruning should be limited to shaping the plant by removing dead or damaged limbs**
 - B Trees should not be pruned at all – the latest trend is to let them develop naturally
 - C Trees should not be pruned until the third year after planting
 - D Trees should be cut back to at least one-half their size to prevent stress on root systems
189. **Plowing or tilling a bed or lawn when it is excessively wet may:**
- *A Damage the structure of the soil**
 - B Stratify the soil
 - C Kill beneficial organisms in the soil
 - D Change the soil texture
190. **Some seeds are produced in the fall and remain on or in the ground until they germinate in the spring. Exposing seeds to the winter cold and moist soil is nature's method of .**
- A Sporulating
 - *B Stratifying**
 - C Acidifying
 - D Scarifying
191. _____ **drawings show an object as seen by the eyes at eye-level.**
- A Base map
 - B Section
 - C Plan
 - *D Perspective**

192. Which LD-50 rating listed is the most potentially lethal to a human, based on animal studies?
- A 945
 - B 10000
 - *C 84**
 - D 1750
193. A glyphosate is a non-selective herbicide that will kill:
- A Both annual and perennial weeds
 - B Perennial weeds
 - C Annual weeds
 - *D Any green plant that it contacts**
194. In the name *Acer palmatum* "October Glory," "October Glory" is a _____ if it did not occur as a natural mutation
- *A Cultivar**
 - B Variety
 - C Genus
 - D Species
195. Horticultural chemicals should be stored in which of the following?
- A The garage refrigerator
 - B A cool room such as the basement of a house
 - C A refrigerated storage cabinet
 - *D A free-standing, locked building**
196. Which of the following plants is commonly grafted or budded?
- *A Roses**
 - B Yew
 - C Pansy
 - D Ginkgo
197. Freshly cut bark chips and sawdust should not be used as a soil amendment because they
- A release toxic elements into the soil
 - B hold too much water around the plant
 - *C rob the soil of nitrogen during decomposition**
 - D are infested with disease
198. A group of plants located along the perimeter of a landscape use area is called a _____ planting.
- A Foreground
 - B Foundation
 - C Corner
 - *D Border**
199. Generally, during the summer months in Texas, a lawn needs about _____ inch(es) of water a week, either as rain or irrigation.
- *A 1**
 - B 3
 - C 4
 - D 2

200. The landscape profession for which you are most likely to need a license is:
- A landscape contractor
 - B landscape maintenance supervisor
 - C landscape designer
 - *D landscape architect**
201. A layer of partially decomposed stems, roots, and leaves of grass which develops above the soil's surface in the lawn is called
- A mulch
 - *B thatch**
 - C inorganic matter
 - D mineral matter
202. Leaf miners lay their eggs:
- A On the main stem
 - *B Inside the leaves**
 - C On flower buds
 - D On top of leaves
203. An individual or firm hired to install or construct a portion of a large landscape job is called a:
- A Contract specialist
 - B Contractor
 - C Maintenance specialist
 - *D Subcontractor**
204. One function of stomates is to:
- A Photosynthesize
 - *B Give off water vapor**
 - C Produce pollen
 - D Prevent disease
205. When referring to the USDA Plant Hardiness Zone map, one can determine the:
- A Humidity and microclimatic changes for an area
 - B Maximum expected temperature for an area
 - C Soil characteristics for an area
 - *D Minimum expected temperature for an area**
206. Which of the following would be most suited for a hot, dry, steep bank in the landscape?
- A Dogwood
 - B Fescue
 - *C Creeping juniper**
 - D English ivy
207. Fred was about to drive the tractor down the street to another landscape job when Alan said, "Hey, you had better put that orange triangle on the back of that tractor before you get run-over." Alan was referring to the:
- *A Slow-moving vehicle sign**
 - B Emergency vehicle sign
 - C Farm vehicle sign
 - D Wide-load sign

208. **Brown patch, dollar spot, and gray snow mold are all diseases of:**
- A Trees
 - B Azaleas
 - *C Turfgrasses**
 - D Evergreens
209. **Rod plans to start a wholesale nursery growing Japanese maples. It will take him two years to produce the first saleable crop. Which of the following will be most affected?**
- A production scheduling
 - B inventory
 - C net worth
 - *D cash flow**
210. **A friable soil is one that:**
- A Requires humus and fertilizer to be productive
 - B Is high in clay particles
 - *C Is loose and of good structure and texture**
 - D Is rich in N, P, and K
211. **Fireblight is a disease that most often affects susceptible plants:**
- A In recently installed landscapes
 - B In landscapes over four years old
 - *C During periods of rapid succulent growth**
 - D During the winter
212. **Which of the following is an indication of a fertile soil?**
- A small brown pebbles
 - B a grey or yellow subsoil
 - C grubs
 - *D earthworms**
213. **When mowing turf, it is recommended that no more than ____ of the leaf blade be removed at each cutting.**
- A two thirds
 - B one half
 - *C one third**
 - D one eighth
214. **An area that has a slightly different climate conditions than the surrounding land, such as the north side of a house which provides shelter from excess sun and wind, is called a**
- *A micro-climate**
 - B terrain specific locale
 - C macro-climate
 - D climate modified locale
215. **Dead, decaying plant and animal material in the soil is referred to as**
- A the microorganisms that are present in the soil
 - B soil reaction
 - C soil texture
 - *D organic matter**

216. Which of the following is a deciduous vine?
A Mandevilla
***B Chinese wisteria**
C English Ivy
D Rosemary
217. A major advantage for using slow-release fertilizer in container-grown nursery stock is that it:
A Can easily be leached from the soil if too much is applied
***B Supplies nutrients over a long period of time with one application**
C Can be applied without expensive equipment
D Can be injected through the irrigation system
218. Some of the salt buildup in potted plants can be removed by:
A withholding water
B adding lime to the irrigation water
***C leaching**
D adding fertilizer
219. The ideal soil is composed of
A 25% solid material, 25% air, 50% water
B 25% air, 25% nutrients, 50% water
C 25% solid material, 25% water, 50% air
***D 25% water, 25% air, 50% solid material**
220. Lawn sprinkler systems are installed so they provide even coverage. This is accomplished by:
A Using sprinkler heads with a square pattern throughout the landscape
***B Spacing the heads so that each sprinkler sprays to the next sprinkler**
C Spacing sprinklers based on needs specified in the soil test
D Using one size pipe throughout the landscape
221. In a landscape design, properly located plants and structures.
A Need to be constantly pruned and maintained
***B Can reduce heat intensity**
C Are not essential for a good landscape design
D Block the view of the front door
222. Which of the following government organizations would want to talk to you if you shipped nursery plants across state lines without a license?
A OSHA
B FBI
C IRS
***D USDA**
223. The practice of manually watering a container plant until water comes out of the drainage holes of the container is effective for helping to reduce the buildup of in the growing medium.
***A Soluble salts**
B Pesticides
C Pathogens
D Herbicide

224. **The hardscape in a landscape design is defined as:**
- A Landscapes filled with mostly hardwoods
 - *B Structures, paving, fencing, etc, incorporated into a landscape**
 - C The initial, rough landscape drawing
 - D A space with a large area of concrete
225. **A transplanted tree or shrub should be set into the ground:**
- *A At the same depth at which it was originally growing**
 - B 50 percent deeper than it was originally planted
 - C With the top of the container slightly covered
 - D So that the top roots are exposed to the air
226. **In landscaping terms, if the mower blade is set too low and the turf is not level, the mower may _____ the turf in spots.**
- A Slice
 - B Aerate
 - *C Scalp**
 - D Scorch
227. **To make the living area of a landscape appear larger, a designer should include plants that feature:**
- *A Cool-colored flowers such as blues, purples, lavenders**
 - B A combination of warm- and cool-colored flowers
 - C Warm-colored flowers such as reds, oranges, yellows
 - D All white flowers
228. _____ pruning is a pruning technique concerned primarily with the removal of branches that could lead to damage or weaken a plant's health and appearance.
- A Crotch
 - *B Natural target**
 - C Random
 - D Canopy
229. **Mowing the lawn in a different direction each time helps reduce the chance of**
- A spreading disease and insects
 - B excess wear on one part of the mower blade
 - *C soil compaction and undesirable grain set**
 - D causing excess wear on one area of the mower
230. **Informal landscapes:**
- A Contain geometric patterns and perfect balance
 - B Include sheared and sculpted hedges
 - *C Are constructed with asymmetrical balance and curved lines**
 - D Usually contain straight, not curved, lines
231. **Mr. Roberts told his horticulture class that the temperature for rooting shrubs should be no lower than 70 °F. He was referring to the:**
- A Air temperature above the bench
 - *B Temperature of the rooting media**
 - C Air temperature at bench level
 - D Temperature of the mist water

232. **A scale of 1:20 means that:**
A 5' of landscape equals 6" of blueprint
B 2' of landscape equals 1 1/2" of blueprint
***C 1" of blueprint equals 20' in the landscape**
D 1" of blueprint equals 30" in the landscape
233. **Which landscape tool is used to prune branches an inch or larger in diameter**
A ax
B hand pruner
C pruning knife
***D pruning saw**
234. **When planting ground covers grown in compressed peat containers:**
A Be sure to remove the plant completely from the peat container
B Leave the container as is
***C Make several cuts down the sides of the container before planting**
D Leave 1/2 inch of compressed peat container exposed above the soil line
235. **A landscaper has to decide whether to put in a groundcover instead of turfgrass on a site with the following characteristics. Which characteristic is the most important factor in making this decision?**
A The site has only 3 inches of topsoil
B The site is in full sun
C The site faces East
***D The landscape area has a 25% slope**
236. **A plant that dies to the ground at the end of each growing season but comes back from the same root-stock year after year is most accurately described as a(n):**
***A Herbaceous perennial**
B Perennial
C Annual
D Biennial
237. **The best time to spray a glyphosate is:**
***A When weeds are in active growth**
B Just before weed seeds germinate
C Just before a rain
D When weed growth is mature
238. **A systemic insecticide refers to an insecticide that**
A kills on contact
B is applied as a fumigant
***C is absorbed through the roots and leaves of a plant**
D does not come in a granular form
239. **If a house is painted in several colors you might be worried about the colors of the house and the plant flower color clashing. One flower choice that would be safest to use is**
A blue
B pink
C red
***D white**

240. Which is most important to the financial health of a nursery/landscape business?
A Margin cost
***B Net profit**
C Gross sales
D Cost margin
241. Many insect traps attract insects with:
***A Pheromones**
B Fresh flowers
C A strong insecticide
D Dried flowers
242. A propagator in a nursery business is responsible for:
A Increasing new accounts by spreading propaganda
B Carrying out an extensive plant breeding program and applying for plant patents
C Making sure the area used for pulling orders of container grown landscape-size plants is well stocked
***D Starting new plants from seeds, cuttings, grafting, or other means and planning the propagation schedule**
243. Large trees used to frame a one story, ranch style home can make the home seem _____ than it really is.
A closer to the viewer
B larger
C wider
***D smaller**
244. To preserve the germination ability of most seeds, store them in a:
A Cool environment after scarification
***B Cool, dry environment**
C Warm, moist environment after stratification
D Warm, dry environment
245. _____ is an example of a parasitic plant.
A Mildew
***B Mistletoe**
C Bacteria
D Rust
246. The scientific name for Heavenly Bamboo is:
A Ligustrum japonicum
***B Nandina domestica**
C Pyracantha coccinea
D Raphiolepis indica
247. When servicing the spark plug on a lawn mower, the electrode should be _____ before reinstalling it in the mower.
A cleaned, dried, and the electrode gap closed
B cleaned and coated with oil
C cleaned and filled with oil
***D cleaned and dried**

248. Which is a drawback to planting English or Virginia Creeper on the side of a wood or vinyl sided house?
- A these plants are groundcovers and are hard to train on walls
 - B the leaves turn brown in the fall and are unsightly
 - *C the adhesive tips of the ivy damage the siding or leave unsightly blemishes**
 - D it is difficult to prune ivy on siding
249. B&B in the nursery/landscape trade means:
- A Burlapped in a bag
 - *B Balled and burlapped**
 - C Bagged in burlap
 - D Bare-rooted and bagged
250. Training plants into three-dimensional ornamental forms, such as animals, is called:
- *A Topiary**
 - B Heading back
 - C Bonsai
 - D Espalier