

**NATIONAL FFA NURSERY/LANDSCAPE
CAREER DEVELOPMENT EVENT
GENERAL KNOWLEDGE EXAM
2015**

Directions: Select the best answer for each item and mark your selection on the answer sheet provided. Using a #2 pencil, completely darken in the letter on the answer sheet that corresponds to your answer for each item.

1. In most interiorscapes, such as those found in indoor malls and large office buildings, the most limiting factor in maintaining good plant health is usually:
A. soil nutrition
* B. light
C. daily variation in temperature
D. water
2. Which of these plants die to the ground each fall and reemerge in the spring from the same root system in most areas of the US?
* A. Peony
B. Marigold
C. Wax begonia
D. Zinnia
3. Which of these plants bloom naturally in the fall only?
* A. Chrysanthemum
B. Marigold
C. Wax begonia
D. Zinnia
4. After the agriculture class planted hollies on each side of the entrance to the school, it was noticed that those plants on the right of the entrance produced colorful berries while those on the left never produced berries. What is the most likely explanation?
A. Hollies on the left and right are most likely different cultivars.
B. The soil on the right side has better structure.
C. Plants on the left side of the entrance probably did not receive enough fertilizer.
* D. Hollies are dioecious and the plants on the left are likely male.
5. Which area of turf on a golf course is usually mowed shortest and generally receives the most care?
A. collar and apron
B. fairway
* C. green
D. rough
6. When a golf ball lands on the green, the ball may dig into the turf requiring repair of the ____ by the greensworker.
A. backspin path
* B. ball mark
C. ball shot dip
D. greens dip

7. Which of the following statements is most correct about soils of the US?
- A. Soil pH is usually acidic.
 - B. Soil pH is usually alkaline.
 - * C. Soil pH varies widely by region.
 - D. Soils vary widely in nutrition but all require the addition of lime to some degree.
8. Which description of job duties most accurately matches those of an arborist?
- * A. Maintains, prunes, removes, plants, and performs general care of trees.
 - B. Maintains landscapes, performing such tasks as fertilization, pruning, mowing, and mulch application.
 - C. May plan and install specific portions of a landscape or entire landscape jobs including irrigation, walls, plant materials, landscape features, hardscapes, and softscapes.
 - D. Mainly plans and designs landscapes including grading, installing drainage, and irrigation systems. A four-year or higher college degree is required.
9. Which of the plants below are considered invasive plants?
- A. White pine and Japanese maple
 - * B. English ivy and bamboo
 - C. Bermuda grass and Japanese holly
 - D. Winged euonymus and spirea
10. A soil with a pH of 7.5 would probably be too _____ for most landscape plants.
- * A. alkaline
 - B. acidic
 - C. dry
 - D. high in potash
11. If the _____ are pruned from a plant, the plant can generally be expected to become bushier.
- A. stamens
 - B. lateral buds
 - C. petioles
 - * D. terminal buds
12. Which description of job duties most accurately matches those of a Landscape Contractor?
- A. Maintains, prunes, removes, plants, and performs general care of trees.
 - B. Maintains landscapes, performing such tasks as fertilization, pruning, mowing, and mulch application.
 - * C. May plan and install specific portions of a landscape or entire landscape jobs including irrigation, walls, plant materials, landscape features, hardscapes, and softscapes.
 - D. Mainly plans and designs landscapes including grading, installing drainage, and irrigation systems. A four-year or higher college degree is required.
13. Which description of job duties most accurately matches those of a Landscape Architect?
- * A. Plan and design landscapes. They hold bachelors or higher academic degrees. They are often involved in larger projects such as planning the building site, grading, drainage, and landscape features for an office complex before construction on the buildings begin.
 - B. Maintains landscapes, performing such tasks as fertilization, pruning, mowing, and mulch application.
 - C. May plan and install specific portions of a landscape or entire landscape jobs including irrigation, walls, plant materials, landscape features, hardscapes, and softscapes.
 - D. Mainly plans and designs landscapes including grading, installing drainage, and irrigation systems. A two-year or higher college degree is required.

14. Which of the following is an example of an unethical business practice?
- A. A nurseryman offers a 20% discount to a landscape company purchasing large numbers of plants.
 - B. A nurseryman accepts sample plants from a grower's sales representative.
 - * C. A landscape estimator exaggerates the need for repairs to a customer's landscape after a storm.
 - D. A turf management company creates an advertisement that highlights their strengths and states that other companies cannot perform to their standards.
15. In which of the following situations does the Occupational Safety and Health Act (OSHA) protect workers from disciplinary action if they refuse to perform a job that may be hazardous?
- A. All the workers agree that the work is too difficult.
 - B. The workers have been informed of the type of disciplinary action that might be taken.
 - C. The workers are paid less than \$20 per hour.
 - * D. The workers believe in good faith that they are in imminent danger and have informed their employer.
16. Which of the following best describes an entrepreneurial opportunity with the greatest opportunity for high personal profit, but also with the greatest chance for personal financial loss?
- A. A career as the sales representative for a plant biotechnology company.
 - B. A position as the marketing manager of a large, incorporated landscape company.
 - C. A position as head accountant for a newly franchised business that is not incorporated.
 - * D. A career as the owner of a small landscape maintenance company.
17. Which of these is the best description of an invoice?
- A. A bill sent to a supplier by the purchaser authorizing shipment of a product to the customer at a specified price and terms.
 - B. A document sent to a vendor requesting prices and quantities of materials available and terms of payment for selected products.
 - C. A document sent by the selling company describing their products or services for sale and terms of payment available.
 - * D. A bill sent by the business providing a product or service to the purchaser which establishes an obligation on the part of the purchaser to pay for the products or services.
18. Which signal word on a pesticide label indicates the least serious hazard and is often found on pesticides sold to homeowners?
- * A. Caution
 - B. Warning
 - C. Danger
 - D. Harmful
19. How many trees can be grown on an acre if they are planted in rows that are 5 feet apart with trees in the row spaced 3 feet apart?
- A. 1,401
 - B. 1,560
 - * C. 2,904
 - D. 4,215

20. Which of these is a pest control system in which some pest damage is tolerated before pesticides are applied?
- * A. integrated pest management
 - B. zero tolerance pest management
 - C. pre-treatment pest management
 - D. fumigation pest management
21. The most important type of insurance that a landscaper should have to help protect the property owner as well as themselves includes:
- A. collision and conversion insurance
 - B. life insurance on each worker
 - C. income protection insurance
 - * D. business liability insurance
22. Which of these is a beneficial organism in the landscape?
- A. Spider mites
 - B. White grubs
 - * C. Earth worms
 - D. Aphids
23. Which of these is a complete fertilizer?
- A. 46-0-0
 - B. 33-0-0
 - C. 0-46-0
 - * D. 5-10-15
24. Which of these fertilizer formulations would be best to use in a situation where root growth stimulation and flower production was desired instead of foliage growth?
- A. 46-0-0
 - * B. 3-20-20
 - C. 20-20-20
 - D. 33-0-0
25. On a topographic map, lines are drawn to represent vertical elevation (slope of the property). These are referred to as:
- A. vertical detail lines
 - B. common elevation bench marks
 - * C. contour lines
 - D. lines of symmetry
26. Plants, such as irises and daffodils, which produce foliage and flowers during the growing season, die back to the ground during winter, and re-sprout the next spring are called:
- A. Flowering annuals
 - B. Woody perennials
 - * C. Herbaceous perennials
 - D. Herbaceous annuals

27. Landscape soils that are _____ are generally best for plant growth.
- A. sandy
 - * B. loamy
 - C. high in silt content
 - D. high in clay content
28. The following notes were given for a landscape installation project. Which is **not** within standard recommendations?
- A. The walk to the front door should be 42 inches wide.
 - * B. The front drive should be 6 feet wide.
 - C. Foundation plants should be a minimum of 3 feet from the foundation.
 - D. The mature shrub height should not be high enough to cover windows.
29. Which of the following types of organic matter generally should **not** be used in the landscape planting holes?
- A. Peat moss
 - B. Composted leaves
 - C. Aged, ground, pine bark
 - * D. Fresh sawdust
30. Three of the six landscape design principles are: rhythm, unity, and focalization. What are the other three?
- * A. Balance, proportion, and simplicity
 - B. Orientation, texture, and pattern
 - C. Line, form, and ray
 - D. Spacing, color, and line
31. Which of the following plants is most often propagated by budding or grafting?
- A. Azalea
 - * B. Hybrid Tea Rose
 - C. Sweet Gum
 - D. Red Maple
32. Some of the most important topics of discussion affecting the nursery and landscape industry in recent years include:
- * A. water use restrictions, green roofs/walls, and noise pollution control.
 - B. temperature inversion, fertilizer analysis, and irrigation water temperature.
 - C. biological propagation, topsoil restriction, and recycling safety.
 - D. hazards of sharp equipment, diesel mowers, and carbon toxicity.
33. One of the long recognized retail techniques to help with retail sales is to:
- A. place no more than nine products before the customer to choose from.
 - B. show the customer every possible product to meet their needs.
 - * C. let the customer hold, examine, and get the feel of the product.
 - D. always point out the product specification on the side of the box.
34. Which of the following is undesirable in landscape trees?
- A. Terminal buds
 - * B. V-shaped crotches
 - C. Lenticels
 - D. Internode growth

35. If a home owner applied lime, nitrogen, phosphate, and potash at recommended rates to his lawn one year, which nutrient is he almost certain to have to reapply the next year?
- A. Lime
 - * B. Nitrogen
 - C. Phosphorus
 - D. Potash
36. The most common type of landscape plan drawing prepared by designers is the _____. In this type of drawing, the viewer observes the site and landscape objects as though they are above the site, looking downward.
- * A. plan view
 - B. elevation view
 - C. perspective view
 - D. axonometric view
37. Which of these is a good procedure when planting large balled and burlapped trees in the landscape?
- A. Remove all the burlap and any string or rope around the ball or tree trunk prior to placing the tree in the planting hole.
 - * B. Set the tree in the planting hole, then remove ropes or string securing the burlap to the root ball and roll the burlap back from the trunk.
 - C. At planting, leave the burlap and securing ropes and twine in place on the root ball for 6 to 12 months before removal.
 - D. At planting, re-tighten the rope or twine securing the burlap to the root ball; leave the burlap and securing ropes and twine in place for approximately 6 to 12 months or until the tree is well established.
38. Which of the grass types below will be less likely to increase in width of the grass plant and completely cover an area when planted at less than optimal rate?
- A. warm season grasses
 - B. grasses with rhizomes
 - C. grasses with stolons
 - * D. bunch type grasses
39. A homeowner has been on vacation for 3 weeks and comes home to an out-of-control lawn with the grass 5 to 6 inches tall. She normally keeps the grass cut to about 2 inches high. What is the best advice for this homeowner?
- * A. cut off no more than 1/3 of the growth at one time until the grass is back to the desired height
 - B. make sure the mower blade is very sharp; cut the grass to two inches but water and fertilize heavily after mowing
 - C. cut the grass to two inches high in the late afternoon and water heavily to prevent sun scorch
 - D. fertilize and water the grass about two days before mowing to make sure the grass is in good health, then cut to two inches high
40. At maturity, a large deciduous tree planted at the _____ corner of a home in North America will provide summer afternoon shade while allowing the winter sun to warm the home.
- A. northwest
 - B. southeast
 - * C. southwest
 - D. northeast

41. Suppose a landscaper has a client who wants more unusual plants in their home landscape. They have found photos of plants they like on the internet and sent them to the landscaper. After identifying the plants, the landscaper should consult _____ to determine the likelihood of the plants surviving in the client's landscape.
- A. the National Oceanic and Atmospheric Administration (NOAA) national weather map
 - B. the National Weather Service Rainfall Map for that area
 - C. an Extension Service Weather Map
 - * D. the USDA Plant Hardiness Zone Map
42. Characteristics of the bare-root system of packaging of landscape plants for sale and transplanting include all of the following **except**:
- * A. The transplanting season is extended through summer, much longer than container and balled and burlapped plants.
 - B. Bare-root packaged plants are lighter in weight than container plants and balled and burlapped plants.
 - C. Bare-root packaged plants are generally smaller plants and less expensive compared to container and balled and burlapped plants.
 - D. The plants sold by this method are usually deciduous species.
43. Although methods vary by grower, there are basic guidelines for preparing containers of soil for seeding. Which of these is one acceptable method of firming the seedbed in the nursery trade?
- * A. Pack the soil in the container with the palms of the hand as tightly as possible to remove water and air.
 - B. Lightly tamp the soil-filled contain on the bench two to three times to settle the soil.
 - C. Firm the soil with the hands; water thoroughly and apply more hand pressure so the soil is very firm.
 - D. None of the above. Soil in containers for seeding should be loose and contain as much air as possible.
44. Which category of plants below fit this definition best? *"A naturally aggressive plant species introduced to a new habitat. It colonizes easily in new areas and usually gains an ecological advantage over plants native to the area because the insects, diseases, and foraging animals that naturally keep its growth in check in its native habitat are not present in its new habitat."*
- A. domesticated plants
 - B. bryophytes
 - * C. invasives
 - D. epiphytic plants
45. Which of the following statements is true about plant propagation by cuttings?
- * A. Remove any leaves that will be under the soil or touching the soil when the cutting is stuck.
 - B. Remove all lenticels and any leaves that will be under the soil when the cutting is stuck.
 - C. Treat each node and bud on hard-to-root cuttings with the appropriate rooting hormone.
 - D. Avoid placing any of the cutting nodes under the soil surface.
46. A homeowner is having trouble with rodents and occasionally snakes around their compost pile. Which of these would be a good recommendation to alleviate this problem?
- A. Once the manure pile is constructed, do not disturb the organic matter.
 - B. Keep the manure pile as dry as possible by covering with a water-proof tarp or plastic cover.
 - * C. Do not add meat scraps and similar food materials to the compost pile.
 - D. All the above.

47. A group of foliage plants were taken from the nursery where they had received optimal light, nutrition, water, and other conditions for rapid growth and shipped to a contractor installing these and other plants in a large indoor shopping mall. The plants were installed in the interiorscape project within 3 days of leaving the nursery. In a few weeks these once healthy plants began to show signs of failing health such as leaf drop, yellowing leaves, and general unthriftiness. Which of these is the likely problem?
- * A. the plants were not properly acclimated
B. the plants were over fertilized
C. a disease from other plants in the interiorscape infected the new plants
D. the plants were getting too much light in the mall interiorscape
48. The school agriculture department created a plant replica of the school mascot, a tiger, by training and pruning a plant into the shape of a tiger. This type of specialized plant art is best known as:
- A. residual pruning
B. heading-back
* C. topiary
D. micro-pruning
49. A sidewalk in a high traffic area of a public site that would allow two people to walk together or pass each other comfortably should be about ____ feet wide minimum.
- A. 12
B. 10
C. 8
* D. 5
50. In the botanical name *Echinacea purpurea* 'Magnus', Magnus is the:
- A. family
* B. cultivar
C. genus
D. species

End
FBF

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KEY

Directions: Select the best answer for each item and mark your selection on the answer sheet provided. Using a #2 pencil, completely darken in the letter on the answer sheet that corresponds to your answer for each item.

1. Which of these best describes an invasive plant species?
 - A. Any plant that invades the landscape from the native environment of the area.
 - * B. Exotic plants that have become naturalized and damage the environment and landscape.
 - C. Native plants that grow out of control, becoming weed-like and damaging the environment.
 - D. Native plants of the US that have become naturalized.

2. A homeowner trained the branches of an upright ornamental shrub to grow flat against a brick wall while supported on a lattice. This special plant art form is known in horticultural terms as:
 - A. Wall art
 - B. Topiary
 - C. Lattice lining
 - * D. Espalier

3. What is the most likely scenario for the damage shown in Figure 1, which shows a tree trunk with a large limb removed and bark stripped away underneath the cut?
 - A. The procedure for collar removal was not performed properly.
 - B. The sawing motion was too slow to allow for a clean cut.
 - C. The saw was dull, resulting in limb-tearing that ripped the bark.
 - * D. The three-cut method of pruning was not performed properly.

4. A client wishes to have the most luxurious lawn available with a highly manicured look. This calls for a thick turfgrass with high maintenance required such as might be performed on a golf green. The turf should be cut with a __ mower to achieve the finely manicured look desired.
 - A. Vertical
 - * B. Reel
 - C. Rotary
 - D. Flail

5. Variable costs in the operation of a nursery would include:
 - A. Land payments
 - B. Equipment payments
 - * C. Nursery liners
 - D. Assets

6. The recommended method of preparing disposable foam earplugs before inserting into the ear is to:
 - A. Apply one drop of baby oil before insertion
 - B. Fold the plug, compressing it with the thumb and forefinger before insertion
 - * C. Roll the earplug in the hands and insert immediately
 - D. Moisten the earplug with water and insert immediately



Figure 1

7. The phenomenon of mushrooms growing in a circular pattern in the lawn (Figure 2) is known as _____. It is a turfgrass disorder caused by fungi growing on deteriorating stumps or other wood buried underground.

A. Toad circles
* B. Fairy ring
C. Frog steps
D. Hypericum blight



Figure 2

8. A garden center purchases \$1000 worth of plants from a wholesale nursery to resale to homeowners at their retail store. If the sales tax in this area is 5%, how much sales tax would the wholesale nursery charge the garden center?

A. \$5
B. \$50
C. \$0 – sales tax is only paid by the wholesaler on their production inputs
* D. \$0 – sales taxes are paid by the ultimate consumer

9. Which of these would be involved in research and control of pathogenic organisms in plants? A plant :

A. Ornithologist
* B. Pathologist
C. Ichthyologist
D. Primatologist

10. Foundation plants of a home landscape should generally be arranged to move the viewer's eye to the front door of the home. This is an application of the principle of design termed:

A. Diversity
B. Balance
* C. Focalization
D. Simplicity

11. It is recommended to remove no more than ____ of the turfgrass leaf-blade height at each mowing.

A. 1 inch
B. 1/8
* C. 1/3
D. 4 inches

12. Soils should be tested for pH among other characteristics. The pH of soils should be adjusted, if necessary, for optimum plant growth and health. The primary purpose of adjusting soil pH is to:

A. Control soil structure
* B. Improve availability of plant nutrients
C. Control diseases caused by nematodes
D. Control soil moisture levels

13. Lady bug beetles are important beneficial insects in the landscape. They are especially known and valued for feeding on:

* A. Aphids
B. Nematodes
C. Lace wings
D. Spiders

14. Which of these is correct about the depth at which you should plant bare root and containerized plants in the landscape?
- * A. Both bare root and container plants should be planted to the same depth they were originally growing.
B. Bare root plants should be planted deeper and container plants should be planted shallower than originally growing.
C. Container plants should be planted deeper and bare root plants should be planted shallower than originally growing.
D. Both bare root and container plants should be planted one to two inches deeper than they were originally growing.
15. Suppose a homeowner applied the recommended rate of 10-10-10 and lime to her lawn, and during the next three days her area received a tremendous amount of rainfall. Which of these elements is most likely to be depleted by the rain?
- * A. Nitrogen
B. Magnesium
C. Potassium
D. Phosphorus
16. The 'leaves' on junipers are best described as:
- A. Compound
B. Fascicles
C. Lenticels
- * D. Scales or awls
17. At the end of the year, employers issue their full-time and most part-time workers a _____. This is an IRS form which employers use to report wage and salary information for employees to the IRS. This form also tells the employee the amount of federal, state, and other taxes withheld from their paycheck. Employees use the information on this form to prepare their personal income tax return.
- * A. W-2
B. W-4
C. Schedule C
D. Form 1040 or 1040EZ
18. When propagating plants by leafy stem cuttings, why should leaves that will be below the soil line, or touching the top of the soil, be removed during preparation of the cuttings?
- A. Leaves under or touching the soil may root, forming suckers that will compete with the main plant.
B. These leaves will sap energy from the cutting since they receive little or no sunlight.
- * C. They may decompose and spread disease to the cutting and remaining leaves.
D. All leaves, including these, should always be removed during cutting preparation.
19. A local nursery installed a system of growing plants in which one empty pot is buried in the field in soil up to the upper rim, then a containerized plant of slightly smaller pot size is set/nested into the pot in the soil. This system of nursery production is known as the _____ production system.
- * A. Pot-in-pot
B. Healed-in
C. Pot nested
D. Soil-banked

20. The new growth on pine trees is known in horticultural terms as:
- A. Bud extensions
 - * B. Candles
 - C. Adventitious twigs
 - D. Lateral scales
21. Which of the following is a properly written botanical name for Japanese maple?
- A. Japonica palmatum
 - B. JAPONICA PALMATUM
 - C. Acer Palmatum
 - * D. *Acer palmatum*
22. A type of landscaping that utilizes plants, materials, and techniques to conserve water and moisture in the landscape while reducing or eliminating the need for supplemental water from irrigation is:
- A. Pondscaping
 - * B. Xeriscaping
 - C. Irriscaping
 - D. Waterscaping
23. A 50 pound bag of a 10-12-15 fertilizer contains ____ pounds of nitrogen.
- A. 2.5
 - * B. 5
 - C. 10
 - D. 12
24. In which of these systems are plants most likely to have roots damaged during harvest, which may slow their growth when transplanted?
- A. Containerized plants grown in deep pots
 - B. Containerized plants in shallow pots
 - * C. Bare root plants
 - D. Plants grown in the Root Control bag system
25. Which of these best describes the natural turfgrass propagation process shown in Figure 3?
- * A. This grass is spreading through stolons.
 - B. This grass is spreading through rhizomes.
 - C. This grass is spreading through air layering.
 - D. This grass is reproducing through crown enlargement.
26. Dead heading is a labor intensive process for landscapers as well as homeowners. The major objective of dead heading is to:
- A. Collect seeds for additional crops
 - B. Reduce maintenance costs
 - C. Control insects that feed on the heads
 - * D. Encourage additional blooms to develop

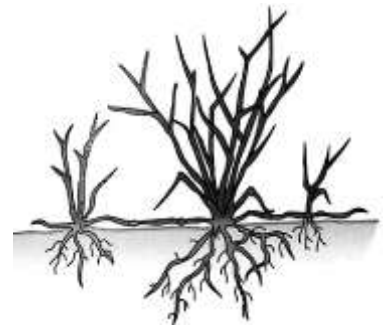


Figure 3

27. This tool is a basic landscape drawing tool. When used on a drawing board or drawing table with four 90-degree corners, it can be used to accurately draw horizontal or vertical lines. It can also be used as a base to support triangles and lettering templates.

A. Easel

* B. T-square

C. Compass

D. Protractor

28. The _____ view of a proposed landscape project, as shown in Figure 4, allows better visualization of the designer's intentions than any other view, with the exception of a 3-D model of the project.

A. Plan

B. Elevation

C. Plot

* D. Perspective



Figure 4

29. Items in the landscape such as walls, water features, paving, and fencing, are referred to as part of the:

A. Landscape media

B. Elevation materials

C. Utility network

* D. Hardscape

30. Barbara is preparing to design the landscape around a family's newly built residence. In the initial interview, she is collecting information to design a landscape that will be most useful and enjoyable to the homeowners. Which question below is **NOT** relevant to information needed for this purpose?

A. How many automobiles are in the family?

* B. Where does the family like to go on vacation?

C. Does the family do outdoor entertaining?

D. What do family members enjoy doing outdoors?

31. The service area of the home landscape might include a:

A. Patio and hot tub

B. Good view of the street and a welcoming walkway to the front door

* C. Dog yard, cut flower garden, and storage shed

D. Swimming pool and children's sandbox

32. If the landscape slopes 18 feet over a horizontal distance of 100 feet, the slope of the site is said to be ____ percent.

A. 8

* B. 18

C. 82

D. 118

33. A pH of 5.0 is 10 times more acidic than pH 6.0, and ____ times more acid than a pH of 7.0.

A. 5

B. 10

C. 20

* D. 100

34. A Hozon is a siphon-type device often used as a proportioning device by small scale growers to dispense _____ into irrigation water for nursery plants.
- * A. Fertilizer
 - B. Pelleted limestone
 - C. Perlite
 - D. Thatch inhibitors

35. Which is the best caption for Figure 5?
- A. Trees should be fertilized to produce heavy summer shade at maturity.
 - * B. Trees should not dwarf the home at maturity.
 - C. Trees should frame the home while providing slight overlap of the roof.
 - D. At maturity, trees should never be taller than the eaves of the house.



Figure 5

36. When should azaleas, hydrangeas, dogwoods, and other trees and shrubs that bloom on old wood (last year's growth) be pruned?
- * A. Right after they bloom
 - B. Late winter
 - C. Early spring before bloom buds swell
 - D. Just after they are fertilized
37. A landscape architectural firm was hired to design and oversee a landscape project for a new mall. The firm designed the project and hired other companies to install specific portions of the project including the irrigation system and landscape features. In this case, those who installed these items are best termed:
- A. Landscape managers
 - B. Landscape sub-dividers
 - * C. Landscape subcontractors
 - D. Landscape architects
38. A recommended size for home compost piles is generally:
- A. That they be as large as possible.
 - B. That several small piles be used, with each roughly 2 foot square, rather than one larger pile.
 - * C. That they be no smaller than 3 feet X 3 feet X 3 feet, and no larger than 5 feet X 5 feet X 5 feet.
 - D. Size is not important for the success of the home compost pile.
39. When fertilizing trees in the landscape, it is generally recommended to:
- * A. Spread the fertilizer evenly within the drip line
 - B. Spread half the fertilizer just inside the drip line and half just outside the drip line
 - C. Spread the fertilizer in a circular pattern 2-3 feet outside the drip line
 - D. Apply the fertilizer in four radial lines from the trunk to the drip line, creating a plus sign shape
40. Which of these is the formula for photosynthesis (when in the presence of light energy)?
- * A. $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 - B. $2\text{NH}_4 + 4\text{O}_2 \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
 - C. $2\text{NO}_2 + \text{O}_2 \rightarrow 6\text{H}_2\text{O} + 6\text{H}_2\text{O}$
 - D. $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{H}_2\text{O} + 6\text{H}_2\text{O}$

41. The color of hydrangea blooms (*Hydrangea macrophylla*) is closely related to:
- * A. Soil pH
 - B. The amount of water applied
 - C. The type pruning technique used
 - D. The type and amount of mulch applied
42. Which of the following is an example of an unethical business practice?
- A. A nurseryman advertises on the hometown website that her prices and service are better than other area nurserymen.
 - B. A nurseryman finds a mutation of a common plant and secretly propagates and grows it in a secluded area of their nursery.
 - C. A landscaper, installing sod for a client, tells them that armyworms have been found in the area and that they should watch for any infestation. Also, to call their company for control recommendations.
 - * D. A turf maintenance company owner convinces the other turf maintenance companies in their town to charge a standard price that is agreed upon by the company owners and guarantees them a good profit.
43. The best definition of hydroseeding is:
- * A. Applying seed in a liquid mix of seed, fertilizer, cellulose fiber, and an adhesive substance by spraying it onto the soil.
 - B. Applying seed in a watery mixture through a high pressure spray system with enough force to inject seed into the soil at least one inch for quick and easy germination.
 - C. Applying partially germinated seed through a high pressure system, providing for quick germination.
 - D. Providing a hydropathic treatment to seed that forces water and fertilizer into the seed for quick germination and establishment in the landscape.
44. A dense mesh fabric used for erosion control that allows water through while holding back sediment in the runoff water (Figure 6) is known in the landscape trade as:
- A. Erosion fabric
 - B. Black fence
 - C. Ground cover
 - * D. Silt fence
45. There are several reasons for staking and guying newly planted trees in the landscape. Which of these is **NOT** a reason for staking and guying trees?
- * A. To promote growth in tree trunk circumference.
 - B. To anchor the tree in the desired location.
 - C. To protect the tree from strong winds.
 - D. To provide general support until roots are well established.
46. At maturity, a large deciduous tree planted on the north side of a south facing home in the continental United States will:
- A. Provide summer afternoon shade
 - B. Protect the home from winter winds blowing from the north
 - * C. Provide little or no shade for the home in summer
 - D. Provide cooling shade for the home during hot summer mornings



Figure 6

47. A growing structure that is similar to a greenhouse but has no heat or ventilation and is generally used only for winter plant protection is called a:
- A. Cold space
 - * B. Cold frame
 - C. Pot frame
 - D. Warm shed
48. How many trees can be grown on one acre if they are planted in rows that are 6 feet apart with trees in the rows spaced 4 feet apart?
- A. 1,060
 - B. 1,304
 - * C. 1,815
 - D. 3,137
49. Which of the following soil ingredients should **NOT** be used in a potting mix for nursery stock?
- A. Moist peat moss
 - * B. Fresh sawdust
 - C. Pine bark over two years old
 - D. Vermiculite
50. Which of the following groups of plants are most often propagated by seed?
- A. Deciduous shrubs
 - B. Large evergreen shrubs
 - C. Small evergreen shrubs
 - * D. Trees

End
FBF

**NATIONAL FFA NURSERY/LANDSCAPE
CAREER DEVELOPMENT EVENT
GENERAL KNOWLEDGE EXAM
2017**

Directions: Select the best answer for each item and mark your selection on the answer sheet provided. Using a #2 pencil, completely darken in the letter on the answer sheet that corresponds to your answer for each item.

1. A disease caused by a bacterial infection in trees, commonly causing death to the tips of tree branches and leaves is _____. It is very common in ornamental pears as well as pears grown for fruit, in quince, and sometimes crabapple and pyracantha.
 - * A. Fireblight
 - B. Cedar-Apple Rust
 - C. Botrytis
 - D. Canker
2. All the needles on a white pine in Roberta's landscape turned completely brown this October.
 - A. This is a natural cycle of White Pine.
 - B. This is due to a lack of water. She should water heavily now and fertilize in the spring.
 - * C. She should remove the plant. It is almost certainly dead.
 - D. She should prune away the dead limbs and needles so that new growth may emerge.
3. Flowering plants need to be pollinated to reproduce from seeds, either by self-pollination or between plants of the same species for cross-pollination. There are two main methods of moving pollen from the male to the female flower parts for pollination. These are _____ and _____, and in some instances by water and animals.
 - A. heat and wind
 - B. rain and bees
 - * C. insects and wind
 - D. rain and wind
4. In an end of the year business analysis, which of these indicates the most significant loss for a business?
 - * A. Loss of equity
 - B. Reduced inventory
 - C. Reduced liability
 - D. Increased labor cost
5. Which of these plants is generally least tolerant of severe pruning?
 - * A. Pines
 - B. Forsythia
 - C. Chinese holly
 - D. Japanese holly
6. A loam is best described as a soil that has:
 - A. a ratio of 3:1 sand to organic matter.
 - B. less than 25% organic matter.
 - C. a wide range of both organic and mineral matter.
 - * D. approximately equal amounts of clay, silt, and sand.

7. A producer found a limb on one of the shrubs she was growing to be strikingly different in its shape and color. It was attractive and looked like no other shrub on the market. She recognized the opportunity to asexually propagate this plant from cuttings off the limb and to introduce an exciting new plant to the market. The limb she found is best described as a _____.
- A. clone
 - * B. mutation
 - C. change replica
 - D. change agent
8. Which of these is true about the insect pictured in Figure 1?
- A. This is an adult army beetle, which is highly destructive in the landscape.
 - B. In the larval stage, this pest is especially damaging to landscape plants.
 - C. This is a harmless visitor to gardens; a larva of monarch butterflies.
 - * D. This is a highly valuable garden insect; a larva of the lady beetle.
9. Which of the following is most important for a landscape designer or landscaper to know when designing a residential landscape?
- * A. If the home has a septic tank and its location
 - B. The location of the nearest fire department
 - C. Police surveillance availability and frequency of patrols
 - D. The day of household garbage pickup
10. Which of these tells the most about a plant's ability to survive summer heat in a given area?
- A. Gardener's Heat Tolerance Scale
 - B. Heat-Hardiness Scale
 - * C. AHS Plant Heat Zones
 - D. USDA Hardiness Zone
11. Why should a landscaper call 811?
- * A. To prevent damage to gas, electric, communications, water, and sewer lines
 - B. To report an injury at the workplace
 - C. To check the toxicity of a specific chemical
 - D. All the above
12. Suppose the weather is unseasonably cold; about 30 degrees Fahrenheit with light snow. Which of the following plants in the landscape would you expect to receive the least cold damage?
- A. Wax begonia
 - * B. Pansies
 - C. Marigold
 - D. Pothos
13. A homeowner has a bare spot in their lawn that is shaded for extended periods during the day. Which of the following suggestions is the best choice to plant in that area?
- A. Annual bluegrass
 - B. Annual ryegrass
 - * C. A groundcover such as lilyturf
 - D. A grass that is shade-tolerant such as bermudagrass



Figure 1

14. Suppose you are a salesperson in a garden center when a customer presents a long, confusing scenario about a landscape problem and requests your assistance. A good sales technique you should use is:
- A. Without verbal response, go immediately and select the product that you think will solve the problem.
 - * B. Restate in your own words what you heard and ask them to confirm that you've understood them correctly.
 - C. Call the manager over to help you interpret the problem.
 - D. Ask the customer to go to the garden center library to more accurately define the problem.
15. While helping prepare his nursery and landscape team, the teacher devised a game about landscape plants called, "Three Truths and a Lie". Which of the following was the lie?
- A. Some plants can develop viable seeds without sex in a process called apomixis.
 - B. Some holly plants are males and some are females, but only female plants have berries.
 - C. *Ginkgo biloba* is one of the oldest living tree species. It dates to about 250 million years!
 - * D. Climbing roses are one of a few plants that grow and bloom well in sun or shade.
16. When pollen from the flower of one plant is transferred to the stigma of a flower on another plant, _____ has occurred.
- A. Cross-respiration
 - * B. Cross-pollination
 - C. Embryonic transfer
 - D. Fertilization
17. Division is a commonly used method of propagation for some plants. Which of these plants would be **most difficult** to propagate by division?
- * A. Snapdragon
 - B. Hosta
 - C. Lilyturf
 - D. Daylily
18. Which of these is usually the factor contributing most to problems with pesticide drift?
- A. Air temperature
 - B. Rainfall
 - * C. Wind
 - D. Soil temperature
19. When producing plants from seed, which of these is usually the most important for seed germination?
- * A. Temperature of the soil
 - B. pH of the irrigation water
 - C. Fertilizer type applied
 - D. Fertility of the germination mix
20. What can be said about the differences in climates between the USDA Plant Hardiness Zones 5 and 6?
- * A. The average annual minimum winter temperature in Zone 6 is about 10 degrees F higher than in Zone 5.
 - B. Plants that survive, but are marginal in Zone 5, would be less likely to survive in Zone 6.
 - C. The average annual minimum summer temperature in Zone 5 is about 10 degrees F higher than in Zone 6.
 - D. All the above.
21. Which of these is NOT a step recommended in pruning trees?
- A. Remove dead limbs
 - B. Remove crossing branches
 - * C. Cut limb collars flush with the trunk
 - D. Remove suckers

22. To help decrease the chance of disease development in nursery crops, overhead irrigation should be done _____ when practical.
- A. late in the day, just before sundown
 - B. at night, 9 pm to 3 am
 - * C. in the morning
 - D. during mid-day
23. Generally, meat scraps, bones, grease, and dairy products should not be added to a compost pile because these materials:
- A. Acidify the soil.
 - B. Increase the alkalinity to an undesirable level.
 - C. Increase the number of earth worms.
 - * D. Attract rats and mice.
24. Which of these would be easiest to propagate by simple or serpentine layering?
- A. White Fir
 - * B. Forsythia
 - C. White Pine
 - D. *Nyssa sylvatica*
25. It is well known in horticulture that diverse types of soils hold various amounts of water, with sandy soils holding the least and clay soils holding the most water. Which factor explains why clay soils hold more water than sandy soils, disregarding organic matter?
- A. The alkalinity of clay soils accounts for most of its high water holding capacity.
 - B. The acidic nature of clay soils accounts for its high water holding capacity.
 - C. The surface area of sandy soils is much higher than the same volume of clay soils.
 - * D. The surface area of clay soils is greater than the same volume of sandy soils.
26. Waylon had \$4.32 per pot invested in his crop of 1500 junipers. A landscape company offered him \$6.50 per pot, but he rejected their offer and soon sold the entire crop at his asking price of \$7.25 per pot. What was his net profit on the crop?
- A. \$10,875
 - B. \$9,750
 - * C. \$4,395
 - D. \$1,125
27. Heather needs to remove a piece of wire that has wrapped around her rotary mower blade. One thing that she should do as a safety measure is:
- A. tilt the mower back at 30 to 50 degrees.
 - * B. remove the spark plug wire.
 - C. readjust the cutting height.
 - D. remove the air filter.
28. A good rule of thumb for mowing grass is to:
- A. secure the emergency cut-off bar with wire on string.
 - * B. remove no more than 1/3 of the leaf blade at any one time.
 - C. cut around trees in the lawn area in a clockwise manner when practical.
 - D. use a vertical mower on slopes over 15 percent.
29. Which of these is an LD-50 rating that would be most toxic to humans?
- A. 43
 - * B. 19
 - C. W-93
 - D. 3000

30. The principles of xeriscaping would be best exemplified by a homeowner who:
- A. installs a sprinkler system that operates on a timer.
 - * B. replaces non-native ornamentals with native plants that do not require irrigation.
 - C. lowers the lawn mower blade to reduce the height of the turf.
 - D. adjusts the pH of the soil to a desirable level for the turf being grown.
31. A gasoline and oil mix at a ratio in the range of 20:1 to 50:1 is most likely intended for a:
- * A. Two-cycle engine
 - B. Three-cycle engine
 - C. Four-cycle engine
 - D. Eight-cylinder tractor
32. Which of these helps keep a retaining wall from collapsing from the force of the soil behind the wall?
- * A. Deadmen
 - B. Wall bolts
 - C. Lag screws and wall bolts
 - D. The gravel bed the wall is set upon
33. A homeowner wanted Bermudagrass established in her yard but was concerned about the cost. The landscaper suggested a process where pieces of Bermuda sod are chopped into sections of stems containing one or more nodes. These pieces are distributed over the site and covered lightly by disking and rolling. What method of turf establishment does this describe?
- A. Sodding
 - * B. Stolonizing
 - C. Cultipacking
 - D. Rasterizing
34. The purpose of the edging trench cut between the Bermudagrass and pine straw mulch in Figure 3, is to help:
- * A. prevent stolons and rhizomes from invading the mulch bed.
 - B. direct water onto the sidewalk for adequate drainage.
 - C. direct water into the mulch bed for irrigation purposes.
 - D. anchor the pine straw during heavy rains and wind.
35. Which of these is **NOT** a benefit of a mulched area around established landscape trees?
- A. Mulch around trees protects the base of the tree from mowers.
 - B. Mulch provides a neat appearance when properly maintained.
 - * C. Mulch around trees provides a barrier to insects and disease.
 - D. Mulch around trees increases the overall speed of mowing.
36. One of the major problems in maintaining interior plantscapes is:
- A. the increased nutrient requirement of indoor plants.
 - * B. the substantial reduction in the quality and intensity of light.
 - C. the quality and quantity of the irrigation water required.
 - D. the lack of natural breezes bringing warmth to the plant.



Figure 3

37. The measure of the soil's ability to hold positively charged ions is a very important soil property that influences the soil structure, nutrient availability, soil pH, and the soil's reaction to fertilizer applications. This is referred to as:

- * A. Cation exchange capacity
- B. pH upgrade capacity
- C. Soil amelioration
- D. Ion degeneration and supplementation

38. What is wrong with the tree planting diagram shown in Figure 2?

- A. The hole is not deep enough.
- B. The 3-inch mulch cover is too thick.
- C. The hole was dug too wide.
- * D. None of the above.

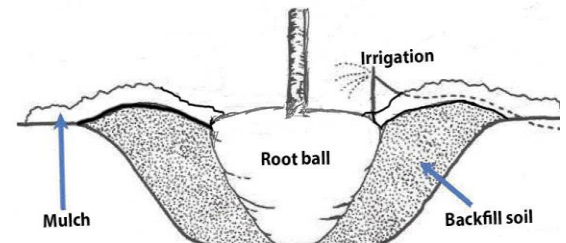


Figure 2

39. Most of the feeding roots of established trees in the landscape are:

- * A. in the top 12 inches of soil.
- B. between 12 and 30 inches deep.
- C. between 30 and 50 inches deep.
- D. over 50 inches deep.

40. Which of the following would make the best general-purpose soil mix for a potted nursery crop?

- A. 30% peat, 70% sand
- * B. 70% bark, 20% peat moss, 10% sand
- C. 50% vermiculite, 10% sand, 40% topsoil
- D. 70% topsoil, 30% sand

41. This type of insurance provides protection to the business if you, your employees, your products, or your services cause bodily injury or property damage to a third party.

- A. Commercial auto insurance
- * B. Liability insurance
- C. Workers compensation insurance
- D. Property insurance

42. This type of insurance provides wage replacement and medical benefits to employees who are injured on the job.

- A. Commercial auto insurance
- B. Liability insurance
- * C. Workers compensation insurance
- D. Property insurance

43. A homeowner will soon establish a new lawn by seeding at his home. However, the slope is about 4% and he is worried about erosion prior to germination of his grass seed. A good practice in this situation might be to plant _____ along with his lawn seed. This plant germinates quickly and will hold the soil in place until the turfgrass seeds germinate and become established.

- A. Bermudagrass
- B. Bentgrass
- * C. Annual ryegrass
- D. Annual bluegrass

44. Which plant would not likely need staking when planted in the landscape?

- A. White pine, 4-5', container grown
- B. Sweet gum, 8-10', B & B
- C. Red maple, 8-10', B & B
- * D. Japanese holly, 2 gallon, container grown

45. How often is agricultural lime applied to the lawn?
- A. Once per year
 - * B. When a soil test indicates it is needed
 - C. Anytime that phosphorus levels are in the high to very high range
 - D. Each time the turf is aerated; generally, every one to two years
46. Battery operated landscape equipment such as string trimmers and hedge trimmers have been much improved in recent years. These powerful and convenient tools are used by both homeowners and professionals. Battery powered tools have become popular because they:
- A. are quiet.
 - B. are lightweight.
 - C. do not emit exhaust fumes.
 - * D. all the above
47. If you find an ootheca (egg mass) of a praying mantis in your landscape, you should:
- A. Spray the plant with an oil-based insecticide.
 - B. Wait until the eggs hatch and then spray with an insecticide.
 - * C. Not disturb the egg mass.
 - D. Prune off the plant parts with the egg mass and burn them.
48. This resource serves as a standard for the measurement of nursery stock. These standards provide buyers and sellers common terminology, and standards in plant size (caliper, height, branching height) in order to facilitate transactions involving nursery crops.
- A. United Standard for Landscape Materials
 - * B. American Standard for Nursery Stock
 - C. United Standard for Landscape Materials
 - D. American United Measurement Standards
49. A rule-of-thumb in landscaping is that the walkway leading to the front door of a residence should generally accommodate two adults walking side by side, which is at a minimum about ____ feet wide.
- A. 2
 - B. 3
 - * C. 4
 - D. 7
50. Katelyn had to sharpen her rotary lawnmower blade, including removing a large nick in one end after hitting a piece of metal in the lawn. Her Ag teacher reminded her to _____ the blade before reinstalling it or the mower would probably vibrate and possibly cause damage to the engine.
- A. lubricate
 - B. temper
 - * C. balance
 - D. differentiate

End
FBF

**NATIONAL FFA NURSERY/LANDSCAPE
CAREER DEVELOPMENT EVENT
GENERAL KNOWLEDGE EXAM
2018**

Directions: Select the best answer for each item and mark your selection on the answer sheet provided. Using a #2 pencil, completely darken in the letter on the answer sheet that corresponds to your answer for each item.

1. Which of these is generally the most important condition for ensuring success when propagating shrubs from softwood cuttings?
 - * A. Maintaining high humidity around the cuttings
 - B. Keeping the soil saturated and the leaves of the cutting dry
 - C. Maintaining high soil fertility
 - D. Spraying the cuttings periodically with rooting hormone
2. A home builder is preparing a newly constructed house for sale and plans to have an open house in about a week. They want the landscape to look complete and well established with the lawn looking as if it has been growing for months. If cost is not a concern, the landscaper should:
 - A. plant the best seed available and water and fertilize heavily.
 - B. use hydro-seeding with a complete fertilizer and ryegrass as a nurse crop.
 - * C. install sod.
 - D. use ryegrass as a nurse crop for a fast start and over-seed with fescue.
3. A tractor driven on public roads should always have:
 - * A. a slow-moving-vehicle sign on the back.
 - B. roll bars around the entire driver area.
 - C. an oversized load sign on the back of the tractor.
 - D. a USDA issued tractor license plate on the back.
4. Which of the following is true about sticking softwood cuttings?
 - A. The base of the cutting should touch the bottom of the container.
 - * B. The media should be firmed around the base of the cutting.
 - C. The media should be left uncompacted and as loose as possible to maintain the maximum amount of air.
 - D. The media for cutting propagation should be 6 to 12 inches deep in the container.
5. In the landscape plant production business, ____ has almost been abandoned as an ingredient in the growing mix.
 - * A. topsoil
 - B. bark
 - C. coir
 - D. perlite
6. From the statements below about a horticulture business, which statement tells us the most about the financial health of this company?
 - A. The company had gross sales of \$800,000 last year.
 - * B. The company made a net profit of \$182,000 last year.
 - C. The company expanded into the hard-goods business in January.
 - D. The company expanded into the landscape installation business in February.
7. Which of these groups are all deciduous trees?
 - A. *Cercis canadensis*, *Fagus sylvatica*, *Pinus strobus*
 - B. *Magnolia grandiflora*, *Quercus rubra*, *Abies concolor*
 - C. *Tulipa* spp. cv., *Acer rubrum*, *Tsuga canadensis*
 - * D. *Taxodium distichum*, *Liquidambar styraciflora*, *Acer palmatum*

8. Depending on the climate of the area, most nursery growers in the US must provide some type of winter protection for their potted crops. Which of these is **NOT** a method used for winter protection.
 - A. Moving the plants tightly together, commonly known as pot-to-pot
 - B. Putting the plants inside a cold frame
 - C. Growing in the field in a system known as pot-in-pot
 - * D. Filling the water space of the pots with insulating fiber

9. This company sells mostly large balled-and-burlapped shrubs and trees. You would expect their harvest and delivery season to be from:
 - * A. late fall through late spring.
 - B. early summer through fall.
 - C. late summer through late fall.
 - D. spring through late summer.

10. Before digging to install a landscape you should:
 - A. call the utility companies that services the area.
 - * B. dial 811.
 - C. post "Danger" signs along the perimeter of the work area.
 - D. require the property owner to sign a liability release for the utilities.

11. Which group of plants below is likely to have the least problems with insect and disease infestation and will generally suffer less from drought and environmental conditions?
 - A. oriental plants
 - B. open pollinated plants
 - C. hybrid plants
 - * D. native plants

12. A customer purchases a Yellow Poplar and a Sweetgum tree to plant in their landscape. They ask how far these trees should be planted from their house. Of the following answers, which is the best rule-of-thumb and advice for this customer?
 - * A. Plant large trees such as these at least 20 feet from the house.
 - B. Mature height for these trees is about 70 feet, so they should be planted 70 feet from the home.
 - C. These trees can grow to a diameter of 12" in 12 years, so plant them 144 feet from the house ($12 \times 12 = 144$).
 - D. These excellent shade trees should be planted about 10 to 12 feet from the foundation.

13. A customer purchased some shrubs and wants to know how far he should plant them from the foundation of his home. If these shrubs are in 1-gallon pots, and grow to a mature height of 4 feet and 4 feet in diameter, which of the following is the best response?
 - A. Plant them 16 feet from the foundation (4 ft. wide X 4 ft. high).
 - B. Plant them 1 foot from the foundation – one foot for each gallon in size.
 - * C. Plant them at least 2 feet on-center from the foundation, and 3 feet if space is available.
 - D. As with all foundation shrubs, plant them no closer than 6 feet on-center from the foundation.

14. Growers help maximize profits by maximizing growing space. One grower has a coldframe that is 100 feet long and 20 feet wide. She has filled the house to capacity with only a walkway down the middle not filled with plants. The walk is 4 feet wide running the entire length of the house. What percent of the house is used to produce plants?
 - A. 95
 - * B. 80
 - C. 75
 - D. 60

15. Most landscape experts do not recommend using lawn aeration equipment that has solid tines or spikes. They recommend aeration equipment that removes soil cores during the aeration process because:
- A. spikes do not allow for fertilizer penetration because the holes are smaller.
 - B. spike aerators leave larger holes that are difficult to fill.
 - C. core aeration leaves holes in the lawn that can be filled with compost.
 - * D. spikes may increase soil compaction as the soil is compressed to all sides by the force of the spikes.
16. A homeowner described a problem they are having with their lawn. The grass is gradually thinning, yellowing, and weakening, and there are scattered, irregular dead patches. The turf feels spongy when walked on in the affected areas. When the affected sod is pulled, it easily lifts out of the ground because it has very few roots. What is the most likely culprit?
- A. mealy bugs.
 - B. white flies.
 - C. aphids
 - * D. white grubs
17. Plants that suffer from too much sun in the hot afternoons may be planted on the ____ side of the house to provide protection in the afternoon.
- A. west
 - B. south
 - * C. north
 - D. south-west
18. This landscape operation is performed to evaluate the general landscape requirements of the property, including the needs of the family, to determine topography and drainage, and to note structures for removal, replacement, or renovation.
- * A. site analysis
 - B. plant inventory
 - C. exterior expedition
 - D. visionary planning
19. The golf course superintendent announced at the morning meeting of employees that the mowing heights for the day would be .125 inches, .7 inches, and 2 inches. The crew knew to mow the three main sections of the golf course as follows:
- * A. greens at .125 inches, the fairways at .7, and the roughs at 2 inches.
 - B. fairways at .125 inches roughs at 2 inches, and greens at .7 inches.
 - C. greens at .125 feet, roughs at .7 inches and the fairways at 2 inches.
 - D. fairways at 1.25 inches, greens at .7, and roughs at 2 inches.
20. Pines are often identified by their needle length and the number of needles per bundle (fascicle). The white pine has ____ needles to the bundle, making it easy to identify.
- A. 2
 - B. 3
 - C. 4
 - * D. 5
21. Which of the following propagation methods is likely to produce the greatest variability in the genetic makeup of the new plants?
- * A. Plants grown from seed.
 - B. Plants propagated from stem tip cuttings.
 - C. Plants grown from tissue culture.
 - D. Plants propagation by division.

22. Growers are careful to give potted crops plenty of space to grow. Most plants are spaced in the growing area so that the leaves of one plant do not touch leaves of neighboring plants. The main reason this is done is to prevent:
- A. the movement of insects from plant to plant.
 - B. the spread of disease.
 - * C. tall, leggy growth of the plants.
 - D. deterioration of the containers from damp and moist conditions.
23. A ____ mower will generally give the cleanest and smoothest cut to a turf area.
- A. rotary
 - B. flail
 - * C. reel
 - D. vertical
24. A customer tells the sales person that they want some foundation plants for an area in front of their home. Which of these is the most appropriate response of the salesperson to this request?
- A. You should plant azaleas. Let me show you the great new varieties we have.
 - * B. How much sun does the area get per day, and is it afternoon or morning sun?
 - C. Do you have a water hose that will reach that area. If not, what length do you need?
 - D. Let me help you with some lime first. I am sure your soil will need it.
25. Which of the following has the greatest effect on iron availability in the soil?
- * A. pH
 - B. soil temperature
 - C. phosphorus
 - D. soil texture
26. In the name *Acer Rubrum* cv. October Glory, 'October Glory' is a ____ name.
- A. family
 - * B. cultivar
 - C. species
 - D. cultivated variant
27. Which of these flower parts is male?
- * A. anther
 - B. style
 - C. stigma
 - D. pistil
28. Many plants root easily while others are difficult to root and benefit from the addition of a rooting hormone. One of the first root-promoting hormones discovered is a natural plant substance known as ____.
- A. B-Nine
 - B. root growth powder
 - * C. indoleacetic acid
 - D. bio-stimulant acid
29. What effect, if any, does the terminal bud have on lateral buds of plants?
- A. Terminal buds impede development of lateral buds by shading them.
 - * B. Hormones from the terminal bud suppresses growth of the lateral buds.
 - C. Hormones from the terminal bud promotes growth of the lateral buds.
 - D. Terminal buds have no effect on lateral buds.

30. Whiteflies are major pests of ornamental plants as well as agronomic crops. They have ____ mouth parts.
- * A. piercing-sucking
 - B. chewing
 - C. rasping
 - D. scratching-sapping
31. Oaks are commonly propagated commercially by ____.
- * A. seeds
 - B. cuttings
 - C. grafting
 - D. tissue culture
32. The blooming period of many annual flowers can be extended by:
- A. providing bees for pollination.
 - B. providing butterflies.
 - C. providing night lights.
 - * D. deadheading.
33. Which of the following has outstanding bark for visual effect in the winter landscape?
- * A. Chinese elm
 - B. oaks
 - C. red maple
 - D. mugo pine
34. Only male cultivars of this tree should be propagated and sold for planting in the landscape. The female of this species produces foul smelling fruit.
- A. pin oak
 - * B. ginkgo
 - C. flowering crabapple
 - D. flowering dogwood
35. Which of the following trees produces spiky balls bearing seed in the fall, creating a nuisance as they fall onto managed landscape areas?
- A. Drake elm
 - * B. American sweetgum
 - C. eastern redbud
 - D. flowering dogwood
36. The _____ determines the flower color of *Hydrangea macrophylla* (Bigleaf Hydrangea).
- A. amount of sunlight
 - * B. pH level of the soil
 - C. level of nitrogen in the soil
 - D. level of moisture and nutritional content of the soil
37. One symptom of iron deficiency in plants is:
- A. interveinal necrosis of older leaves.
 - B. elongation of the internodes.
 - C. general chlorosis of young leaves.
 - * D. interveinal chlorosis of young leaves.

38. Entire leaf margins are best described as _____ while serrated leaf margins are _____.
 A. long; lobed
 B. spine-like; rough
 * C. smooth; saw-toothed
 D. wavy; lobed
39. Bagworms often infest which of the following plants?
 A. hollies
 B. bluegrass
 * C. junipers
 D. maples
40. A landscaper has a client who wants unusual plants installed in her landscape. She found photos of plants she likes on the internet and sent them to the landscaper. The landscaper should consult the USDA Plant Hardiness Zone Map and the _____ to determine the likelihood of the plants surviving in the client's landscape.
 A. National Oceanic and Atmospheric Administration (NOAA) national weather map
 B. National Weather Service Rainfall Map
 C. Extension Service Weather Map
 * D. American Horticultural Society Heat Tolerance Zone Map
41. This shrub grows 8 to 15 feet or higher and is often trained against a wall as an espaliered specimen. In the fall, it produces colorful orange to red pea-sized fruit.
 A. Chinese juniper
 B. Japanese holly
 * C. Firethorn
 D. American arborvitae
42. A plant that has two leaves emerge from one node on a stem, one leaf directly across from the other, is said to have _____ leaf arrangement.
 * A. opposite
 B. alternate
 C. pinnate
 D. whorled
43. Generally, although laws vary widely, most items purchased for resale by retail garden centers and raw materials used to grow plants in commercial nurseries are exempt from _____ tax, although the ultimate consumer is usually required to pay this tax.
 * A. sales
 B. income
 C. wholesale
 D. liability
44. Which of the following is **NOT** true about root hairs?
 A. Root hairs are often called feeder roots.
 B. Root hairs provide the primary root surfaces that absorb water and nutrients from the soil.
 C. When transplanting, it is important to protect and prevent drying of the root hairs.
 * D. Mycorrhizae often attack root hairs and cause great harm to the root system.
45. A good soil mix, under ideal conditions, contains roughly 50% solid matter, ____% air, and ____% water.
 * A. 25; 25
 B. 10; 40
 C. 5; 45
 D. 15; 35

46. Which of these is **NOT** an item used to aid in soil erosion control?
- A. silt fence
 - B. retention pond
 - C. vegetative cover
 - * D. hozon siphon
47. A common type of landscape plan drawing prepared by designers is the _____ view. In this type of drawing, the viewer observes the site in 3-D as though they are looking at the site live.
- A. plan
 - B. vertical
 - * C. perspective
 - D. axonometric
48. Naturalized plants are plants that:
- A. entered the country as exotics.
 - B. are not native to the US.
 - C. have escaped cultivation and become established among native US plants.
 - * D. all of these describe naturalized plants.
49. A rain garden is best defined as:
- A. a grouping of landscape plants that survive and thrive on natural rainfall without irrigation.
 - * B. a garden area designed to capture and infiltrate rainwater into the landscape.
 - C. a water basin designed to direct rainwater to the sewer system.
 - D. an area designed to direct excess rain water away from the house.
50. If you plant large trees that reach 90 feet tall at maturity next to a small one-story home, the principle of _____ has not been followed.
- A. simplicity
 - * B. scale
 - C. balance
 - D. emphasis

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Nursery/Landscape Career Development Event

Created: Feb-20

Directions: Select the best answer for each item and mark your selection on the answer sheet provided. Using a #2 pencil, completely darken in the letter on the answer sheet that corresponds to your answer for each item.

GENERAL KNOWLEDGE EXAM

1. Which of these is NOT a benefit of using mulch around landscape plants?
*
 - A. add nutrients to the soil
 - B. help control weeds
 - C. help prevent bark damage when string trimming
 - D. conserve soil moisture

2. Propagating plants using seeds that have a hard seed coat often involves scratching the seed coat in a process known as:
 - A. Grafting
 - B. Stratification
 - C. Gradation
 - *D. Scarification

3. Correcting low soil pH can be achieved by applying:
*
 - A. Lime
 - B. Potassium
 - C. Phosphorus
 - D. Nitrogen

4. Fertilizer is often applied through the irrigation system. This is often referred to as:
*
 - A. Fertigation
 - B. Chemigation
 - C. Post-fertilization
 - D. Fertilizer enhancement

5. While the desirable soil pH for plants varies by species, a general range for most landscape plants is:
- A. 1.0 to 7.0
 - B. 5.0 to 10
 - * C. 5.5 to 6.5
 - D. 1.0 to 14
6. Which of the following is a naturally occurring plant hormone which causes the elongation of cells in shoots and is often used as a root-promoting substance on cuttings used for propagation?
- A. Ethylene
 - * B. Auxin
 - C. Citric acid
 - D. Portulaca
7. The amount of a pesticide required to kill half of a population is referred to as:
- * A. LD50
 - B. The re-entry level of a pesticide
 - C. The half-life of the pesticide
 - D. The 50-50 rating
8. A tree planted in the landscape that will grow up to 70 feet tall at maturity should be planted no closer than _____ feet from the house.
- A. 5 to 10
 - B. 10 to 15
 - * C. 20 to 25
 - D. 80 to 90
9. Iron chlorosis may be effectively treated with a product called _____ iron.
- A. Chlorotic
 - B. Anti-deficiency
 - * C. Chelated
 - D. Formosan

10. This is a common disease caused by fungi and found throughout the United States. It is easily recognized by a white to gray powdery growth, usually on the upper leaf surface.
- A. Mealy fungi syndrome
 - * B. Powdery mildew
 - C. Cedar-apple rust
 - D. Powdery scale
11. One key to developing an effective integrated pest management program (IPM) is:
- A. the systematic use of insecticides and herbicides
 - B. to use biological controls on a weekly basis
 - C. the systematic use of slow-release fertilizers
 - * D. to closely monitor pest populations
12. The flower color of some hydrangeas can be changed by:
- A. Increasing the fertilization rate
 - * B. Changing the pH of the soil
 - C. Decreasing the fertilization rate
 - D. Adjusting the amount of sunlight the plant receives
13. During pollination, pollen grains are moved from the _____ of a flower to the _____.
- A. Stigma: Filament
 - * B. Anther: Stigma
 - C. Style: Filament
 - D. Sepal: Anther
14. Stem tissues that conduct water and dissolved minerals from the roots to the rest of the plant is _____.
- * A. Xylem
 - B. Phloem
 - C. Stigma
 - D. Style

15. Suppose a home landscape is balanced, but the plants to the right and left side of the front door are not the same. They vary in number, species, size, and shape. This landscape is said to be _____ balanced.
- A. Symmetrically
 - * B. A-symmetrically
 - C. Formally
 - D. Compositely
16. A 10-20-15 fertilizer analysis indicates that it contains:
- A. 10% Potassium, 20% Nitrogen, 15% Inert Nutrients
 - B. 10% Nitrogen, 20% Potassium, 15% Micro-Nutrients
 - C. 10% Potassium, 20% Nitrogen, 15% phosphorus
 - * D. 10% Nitrogen, 20% Phosphorus, 15% Potassium
17. In landscape design, _____ lines are often used to add a feeling of peace, calm, and restfulness.
- A. Vertical
 - B. Horizontal
 - * C. Curved
 - D. Diagonal
18. Which of these terms/phrases is NOT used in landscape design?
- A. Symmetry
 - B. Visual weight
 - C. Texture
 - * D. Virtual placement
19. Traditional plant retail nurseries often compete with so-called big box store nursery and garden centers by providing better:
- A. Prices
 - B. Shopping conditions
 - C. Equipment
 - * D. Service

20. Which of the following methods of propagation is most likely to result in genetic variation in the offspring?
- A. air layering
 - B. T-budding
 - C. cleft grafting
 - * D. reproduction by seeds
21. A homeowner was ordering topsoil for his garden. He determined he needed 54 cubic feet. To place the order through the companies' website he was required to enter his order in cubic yards. How many cubic yards does he need?
- * A. 2
 - B. 4
 - C. 6
 - D. 18
22. A nurseryman uses a device that mixes a concentrated fertilizer solution into the water line during irrigation. This device is a type of:
- A. Concentration meter
 - * B. Proportioner
 - C. Odometer
 - D. Fertilizer pump
23. Sallie is preparing an application to use when she is screening and hiring new employees. Which information below can she NOT request on the application or in the interview?
- A. Education level
 - * B. Religious affiliation
 - C. Telephone number
 - D. Previous employers

24. One guideline for good customer service in a retail nursery is to:
- A. Put the customer's bill used for payment into the register before counting any change back to them
 - B. Dress very casually to project the persona of a working person
 - C. Acknowledge the customer as they enter the business after finishing with the task you are involved with
 - * D. Acknowledge the customer as they enter the business, even if you are busy with another customer
25. Which of these soils will dry quickest after irrigation or a rain?
- A. Clay
 - B. Loam
 - * C. Sandy loam
 - D. Clay loam
26. *Bacillus thuringiensis* is:
- * A. A microbe found naturally in soil and used to control insect larvae
 - B. The genus and species name for black walnut
 - C. A difficult to control disease of trees, often called fire-blight
 - D. A recently introduced variety of Mentor Barberry
27. Soil pH is measured on a scale that ranges from:
- A. 5 to 8
 - B. 2 to 20
 - C. 0 to 20
 - * D. 1 to 14
28. The main advantage of producing plants from cuttings is that:
- * A. The genetics of the parent plant are passed to the new plant without variation
 - B. Seedling variation often results in new varieties from cutting
 - C. Propagation from cuttings is always easier than seed production
 - D. Plants propagated from cuttings are more disease resistant

29. After cuttings are rooted and repotted, they may be hardened-off by:
- A. increasing heat and reducing water
 - B. increasing frequency of watering and applying heavy fertilization
 - * C. reducing irrigation and moving them to an area with cooler temperatures
 - D. placing them in heavy shade for several weeks
30. Which of these plants is most tolerant of partial shade?
- * A. Dogwood
 - B. Juniper
 - C. Japanese Black Pine
 - D. Scotch Pine
31. The USDA plant hardiness zone map may be used to:
- * A. Determine if a plant can withstand the lowest temperatures of the area
 - B. Categorize plants into genus and species
 - C. Determine if a plant can withstand the highest temperatures of the area.
 - D. Determine if a plant is adaptable to rainfall in the area
32. A good soil is often described in terms of the percentage of air, water, and mineral and organic matter (solid matter). Which ratio below is most desirable?
- A. 40% air, 25% water, 35% solid matter
 - B. 50% air, 5% water, 45% solid matter
 - * C. 25% air, 25% water, 50% solid matter
 - D. 10% air, 10% water, 80% solid matter
33. Why is a landscape fabric more desirable to use around landscape plants and under mulch than black polyethylene film? Landscape fabric:
- A. Prevents moisture from penetrating too deeply and holds it in the root zone
 - B. Makes a better base for all mulch types and hold the materials in place
 - C. Completely controls weeds, but polyethylene may let weeds pass through
 - * D. Allows the exchange of gases between soil and air and the infiltration of water

34. If you use a motorized tiller in garden soil while the soil is still wet after a rain, the:
- A. Tines on the tiller could be damaged
 - * B. Structure of the soil may be damaged
 - C. The nutrients may be drained out of the root zone
 - D. Dormant weed seed may be brought to the surface and germinate
35. A precursor to root formation on hardwood cuttings of some plants is a growing mass of unorganized plant cells called ____.
- * A. Callus
 - B. Adventitious knots
 - C. Nodules
 - D. Lenticels
36. If an Extension Agent is unable to identify a plant disease problem, they might consult the state plant _____ to assist in disease identification and control.
- * A. Pathologist
 - B. Morphologist
 - C. Ornithologist
 - D. Ichthyologist
37. In which month listed are hardwood cuttings generally taken?
- A. April
 - B. May
 - C. June
 - * D. October
38. Suppose you receive several thousand bareroot hardwood trees at your nursery during the winter. These dormant trees are to be potted in three-gallon pots. However, they arrive at a busy time and it may be a couple of weeks before you have time to pot them. Which of these would be the best plan to preserve the trees?
- * A. Heal them in
 - B. Store the unopened boxes of trees in the greenhouse at 70 degrees
 - C. Store the trees in buckets of water in a warm greenhouse
 - D. Open the boxes and store the trees in a warm building with the roots covered with damp straw

39. Although methods and techniques of nursery plant propagation from cuttings vary by plant species and grower preferences, which of these is NOT a correct procedure?
- A. Cutting length may vary as desired and based on plant type. However, make all cuttings the same length.
 - B. If wounding of the cuttings is desired, cut the base of each cutting using a knife, the blade of a pruner, etc.
 - C. If a hormone treatment is to be used, liquid or powder formulations may be used.
 - * D. Take the cutting above a node ensuring nodes are not covered in the rooting medium.
40. Why are newly stuck cuttings sometimes covered with a sheet of polyethylene? To:
- * A. help keep humidity high around the cuttings
 - B. reduce the light intensity
 - C. prevent disease
 - D. prevent insects and disease
41. Which of these conditions is most likely to encourage nursery cuttings to root faster?
- A. Leaving as many leaves as possible on the cutting
 - B. Leaving flowers and flower buds on the cutting
 - * C. Providing gentle bottom heat
 - D. Keeping the soil cool and the temperature of the air around the cutting high
42. While producing nursery crops in containers has many advantages, one disadvantage is that:
- * A. the root system may be poorly shaped and become pot-bound
 - B. containerized plants are heavier than balled and burlapped plants
 - C. the plants are harder to keep pruned
 - D. the survival rate is lower than bareroot plants when planted in the landscape

43. Which of these plants is most likely to be propagated by division of the crowns?
- * A. Liriope
 - B. Red maple
 - C. Bluegrass
 - D. Pines
44. In the botanical name *Syringa vulgaris*, *vulgaris* is the ____ name.
- A. family
 - * B. species
 - C. cultivar
 - D. genus
45. The measure of a soil's ability to hold positively charged ions is an important soil property. It affects soil structure, nutrient availability, soil pH, and the soil's reaction to fertilizer applications and other soil improvements. This is referred to as:
- * A. the cation exchange capacity.
 - B. the pH upgrade capacity.
 - C. soil amelioration.
 - D. ion expectoration.
46. Three layers or horizons of a normal soil profile are:
- A. sand, silt, and clay.
 - B. topsoil, bedrock, and foundation material.
 - * C. topsoil, subsoil, and parent material.
 - D. loam, clay, and parent material.
47. Asymmetrical balance is sometimes referred to as _____ balance.
- A. formal
 - * B. informal
 - C. prescribed
 - D. conventional

48. One purpose of a berm in the landscape is to:
- A. level a landscape prior to planting.
 - * B. discourage or redirect rainwater runoff and increase infiltration.
 - C. provide fish to control weeds in the rain garden and to provide recreation for the owner.
 - D. increase the speed of runoff from rainwater.
49. General maintenance of annuals in landscape color beds includes fertilization, weeding, irrigation, and:
- A. over-seeding
 - B. cultivation each week
 - * C. dead-heading
 - D. root pruning
50. Which of the following is NOT used in either the monitoring or control of insect pests?
- A. Integrated Pest Management
 - B. Sticky cards
 - C. Sex attractant pheromones
 - * D. Surfactants

End
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