

**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

End
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Nursery/Landscape Career Development Event

Created: Feb-20

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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

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1. Most containerized shrubs suitable for planting the landscape are measured by:
 - A. total plant height.
 - B. diameter of the shrub at the widest portion.
 - C. stem caliper.
 - * D. pot size in gallons.

2. Non-verbal skills are important in salesmanship and client relations. One non-verbal signal that helps indicate that you are listening intently to the client is:
 - A. Crossing your arms.
 - * B. Leaning slightly forward as the client speaks.
 - C. Asking the client to repeat themselves.
 - D. Maintaining an emotionless facial expression as the client speaks.

3. Mulching of landscape plants has several benefits. Which of these is **NOT** a benefit of mulching?
 - A. Controlling of weeds
 - B. Reducing water loss from the soil
 - * C. Controlling of scale insects
 - D. Moderating of soil temperatures

4. Landscape and nursery plants are sold by the ____ name to help assure that the plants being purchased are the expected type, mature size, color, etc.
 - * A. Genus, species, and sometimes cultivar
 - B. Family and Order along with genus
 - C. Common name used in that area
 - D. The most widely used common name

5. Some plants used in the landscape have adapted well to the area where they were planted and have escaped and now grow as nuisance or weed plants, competing with native plants in the area. These plants are called ____ plants.
 - A. Hostile
 - * B. Invasive
 - C. Specimen
 - D. Agnostic

6. Landscape plants are rated by hardiness zones which identify geographical areas by climate and are used to determine where a plant species will grow best. Which of these publishes the most widely used plant hardiness zone map?
 - A. National Nursery and Landscape Association
 - B. National Association of Landscape Professionals
 - C. United States Department of Weights and Measures
 - * D. United States Department of Agriculture

7. While plants vary in their ideal pH range, plant nutrients are generally most available with a soil pH in the ____ range.
- * A. 6.5
 - B. 5.0
 - C. 4.0
 - D. 7.5
8. Which of these is a naturally occurring plant hormone which promotes and regulates plant growth.
- * A. Auxin
 - B. Tannins
 - C. Resin
 - D. Alkaloids
9. The agriculture teacher was explaining to the class why a holly plant in the school landscape produces beautiful red fruit while the holly plant beside it never produces fruit. He told the class that the one without fruit has staminate flowers, which means that the plant:
- A. had no anthers.
 - * B. was a male.
 - C. was a gymnosperm.
 - D. was an angiosperm.
10. A landscape planner is preparing a list of hardscape items to be installed. Which of these items should **NOT** be included on the hardscape list?
- A. Patio
 - B. Fountain
 - C. Flagstone walk
 - * D. Hedge
11. A homeowner brought a turf sample to the nursery stating that his lawn looked like the grass tips were dead. Upon examination, it was determined that the grass tips were indeed dry, brown, frayed, and unattractive. The most likely cause is:
- A. pushing the lawn mower too slow.
 - * B. a dull lawn mower blade.
 - C. the blade is not turning fast enough.
 - D. the grass was mowed in the late afternoon.
12. What is a common cause of scalping in turf?
- A. pushing the mower too slowly
 - * B. setting the cutting height too low
 - C. uneven coverage of irrigation water
 - D. inconsistency of fertilizer application
13. Which of these is seldom used in commercial nursery potting media?
- * A. Topsoil
 - B. Perlite
 - C. Peatmoss
 - D. Bark
14. A new employee accidentally applied double the recommended rate of fertilizer to the potted shrubs in the nursery. Fearing it was enough to severely damage or kill the plants, the best course of action might be to:
- A. apply an herbicide.
 - B. apply lime.
 - * C. leach the soil.
 - D. cover the crop with heavy shade until they recover.

15. A crop of annual bedding plants had been produced during the winter in the greenhouse and were growing rapidly in the warm environment and the increasing day length of spring. The grower began reducing watering, and fertilization, and to lower the greenhouse temperature to prepare the plants to be planted in the landscape. In horticultural terms she was:
- * A. hardening off the plants.
 - B. frost-proofing the plants.
 - C. inducing bloom buds.
 - D. roughing the edges of the plants.
16. A heavy nitrogen application to a crop is likely to cause:
- A. faster blooming.
 - B. yellowing of the leaves.
 - C. defoliation of the top-most leaves.
 - * D. excessive vegetative growth.
17. What is the most likely causes of tall, spindly growth of container-grown nursery plants?
- * A. overcrowding in the growing area or heavy shade
 - B. overfertilizing and under watering
 - C. low nutrition and under watering
 - D. low calcium and magnesium in the soil
18. Which of these is **NOT** commonly used in fertilization of landscape plants or container nursery plants?
- A. constant liquid feed
 - B. slow release fertilizer
 - C. granular fertilizer
 - * D. nutrient sublimation
19. All the following are plant diseases caused by a virus, fungus, or bacteria **EXCEPT** _____.
- A. mildew
 - B. fusarium
 - * C. chlorosis
 - D. rust
20. Before attempting maintenance or repairs on a push mower, always turn the mower off and:
- A. switch off the air filter.
 - B. place the mower on blocks high enough that the wheels do not reach the floor or ground.
 - * C. disconnect the spark plug wire.
 - D. remove the fuel tank.
21. A rule-of-thumb for mowing turfgrasses is to mow often enough that no more than ____ of the leaf blade is removed during each mowing.
- A. one-half
 - * B. one-third
 - C. one-fourth
 - D. One-fifth
22. Pesticide products with the signal word ____ are the most toxic.
- A. CAVEAT
 - * B. DANGER
 - C. WARNING
 - D. CAUTION

23. The most limiting factor in maintaining interior plantscapes is usually:
- A. controlling pests without contaminating the indoor environment.
 - B. increased fertilization needs.
 - * C. providing the amount of light required for proper plant health.
 - D. the need for visits by a technician for plant grooming, fertilization, and irrigation.
24. The outermost circumference of a tree canopy where water drips from and onto the ground is called the:
- * A. drip line
 - B. arch line
 - C. limb line
 - D. rain line
25. This type of insurance provides wage replacement and medical benefits to employees injured in the course of employment.
- A. Umbrella insurance
 - B. Liability insurance
 - * C. Workers compensation insurance
 - D. Property insurance
26. What is the primary purpose of the publication "American Standard for Nursery Stock?"
- * A. To provide buyers and sellers common terminology and standards in plant sizes
 - B. To provide proper nomenclature for nursery stock to facilitate sales
 - C. To facilitate the transportation of nursery stock across state lines.
 - D. To establish standards for hardscape materials.
27. Which of these is **NOT** terminology used in the safety precautions for pesticides?
- A. REI - Restricted Entry Interval
 - B. LD50 – Lethal Dose
 - C. PPE – Personal Protective Equipment
 - * D. STA – Safety Time Assessment
28. A customer has been told that the plants they purchased require full-sun. The customer asked, "What does "full sun" mean?" Which of the following is the best answer? Full sun generally means ___ hours or more per day of unobstructed sunlight.
- A. 12
 - B. 10
 - * C. 6
 - D. 4
29. It is desirable for landscape plants to have deep roots and are therefore better able to withstand temporary periods of drought. Which of these practices will encourage plants to become more deeply rooted?
- * A. Deep watering on a less frequent basis, perhaps every 3–5 days depending on conditions.
 - B. Light watering each day until the plant becomes established.
 - C. Heavy watering each day until the plant becomes established.
 - D. Watering each morning and afternoon until the plant is established.
30. It is important to have one sprayer that is only used for _____ and one or more other sprayers for different types of pesticides.
- A. fungicides
 - B. miticides
 - C. insecticides
 - * D. herbicides

31. Newly planted trees are often supported with stakes, wires, rope, nylon cords etc. Leaving cords or wires around the tree trunk too long may lead to a condition known as ____ where the tree grows around the supporting materials.
- * A. girdling
 - B. choking
 - C. weeping
 - D. strangling
32. The best example listed of an indirect cost for a landscape installation business is:
- A. shrubs
 - B. trees
 - C. mulch
 - * D. truck
33. The front yard area of a residence is sometimes referred to as the ____ area.
- A. private
 - B. service
 - * C. public
 - D. living
34. Which type of mower is best to use on highly manicured turfgrass areas such as golf greens and in other high maintenance turf sites?
- A. flail
 - B. rotary
 - * C. reel
 - D. zero-turn
35. Which of these is the primary purpose of installing landscape fabric?
- A. To moderate soil temperature.
 - * B. To prevent weed growth.
 - C. To encourage soil air exchange.
 - D. To hold newly planted groundcovers in place.
36. Generally, which of the following is true about the foliage texture of landscape plants?
- A. Large leaved plants provide a fine visual texture.
 - * B. Coarse textured plants should be used sparingly in small areas.
 - C. Only fine textured plants should be used in plantings for screening large areas.
 - D. Only coarse textured plants should be used in foundation plantings.
37. Which of these statements is **NOT** true?
- * A. A wilting plant is always an indication of a lack of water.
 - B. Weeds use soil moisture that might otherwise be used by the crop.
 - C. Mulch around plants in the landscape helps conserve water in the soil.
 - D. Potted plants are generally irrigated until water runs out the bottom of the pot.
38. Gasoline blowers have been banned in many communities because:
- * A. The decibel rating is high, causing noise pollution and possible hearing loss.
 - B. Gasoline blowers have been rated as a fire hazard due to the highly flammable nature of gasoline.
 - C. The weight associated with the machine and pressure exerted onto the soil.
 - D. Some states have banned the use of fossil fuels in horticulture.

39. This plant disorder covers the leaves with a whitish material. It rests on the leaf surface and absorbs sap from plant cells. Infected leaves are often twisted and gnarled.
- A. Mealy mold
 - B. White bluish
 - C. Silver mildew
 - * D. Powdery mildew
40. A customer wants flowering bedding plants for the home landscape that can be planted in the fall in Indianapolis and can best withstand freezing weather and provide color late into the fall. Which of these choices would be the best plants to suggest to this customer?
- A. wax begonias and clematis
 - B. impatiens and periwinkle
 - C. coleus and marigolds
 - * D. pansies and snapdragons
41. Which of these is generally recognized as the most expensive method of lawn establishment?
- A. seeding
 - B. sprigging
 - * C. sodding
 - D. hydroseeding
42. A client wants a turfgrass that is extremely heat tolerant. Which of these would be the best choice?
- A. Bentgrass
 - B. Kentucky Bluegrass
 - * C. Bermudagrass
 - D. Fountain grass
43. One reason nutsedge is especially difficult to control by mechanical means such as tilling and hand-pulling is because it:
- A. reproduces by spores that spread easily in the wind.
 - B. is toxic to animals.
 - C. can grow easily from leaf-piece cuttings.
 - * D. produces underground tubers that are difficult to kill.
44. This pest control method utilizes a combination of pest management techniques designed to minimize the use of hazardous pesticides.
- A. APHIS
 - B. PPE
 - C. LD₅₀
 - * D. IPM
45. This agency is responsible for ensuring safe and healthy working conditions. It enforces workplace standards, provides training, and inspects businesses to ensure that employers provide a workplace that is free from recognized hazards that are likely to cause harm to the employees.
- A. American Community and Workplace Administration
 - * B. Occupational Safety and Health Administration
 - C. Cooperative Extension Service
 - D. Hazard and Health Prevention Administration

46. Which of these would **NOT** be appropriate when replying by email to a client of the company?
- * A. typing in all upper case to emphasize important points
 - B. addressing the recipient by Mr., Ms., Dr., etc.
 - C. concluding the message by inviting them to write back if they have further questions
 - D. writing the email in language similar to that used in business letters
47. When installing a landscape or nursery crop irrigation system from a potable water source, this device should be installed to prevent water from flowing back into the system and contaminating the drinkable water supply.
- A. On/Off valve
 - * B. Backflow prevention valve
 - C. Reduced pressure valve
 - D. Dual-flow prevention valve
48. An accurate inventory of tools and equipment that includes the number of each item, condition, cost, and depreciation should be kept to assure an accurate record of company assets and:
- * A. maintenance schedule.
 - B. consumable list.
 - C. client satisfaction.
 - D. routing schedule.
49. Which of these instruments is a tool **NOT** normally useful in landscape and nursery businesses?
- A. Global Positioning System (GPS)
 - B. Global Information System (GIS)
 - * C. Sling psychrometer
 - D. Laser level
50. Turfgrasses are cut to specific heights based on the type of grass, season, use, etc. No matter the turfgrass species, most are cut higher than normal during ____ to prevent water loss.
- A. Spring
 - * B. Summer
 - C. Fall
 - D. Winter

End
FBF

**NATIONAL FFA NURSERY/LANDSCAPE
CAREER DEVELOPMENT EVENT
GENERAL KNOWLEDGE EXAM
2022**

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 designer paired a red/purple barberry with a yellow sunshine ligustrum near the front door. These evergreen shrubs grow to similar size. Which of these was the designer probably trying to achieve?
 - A. Rhythm
 - * B. Focalization
 - C. Simplicity
 - D. Symmetrical balance

2. Which of these statements is true about early spring flowering shrubs?
 - A. They should be pruned in mid-winter.
 - * B. Their flower buds develop on wood from the previous growing season.
 - C. Early spring pruning means more flowers, which develop quickly.
 - D. They develop flowers on new spring growth.

3. Which of these is an herbaceous perennial?
 - A. Mahonia
 - B. Spiraea
 - * C. Hosta
 - D. Azalea

4. Non-verbal communication skills are important in salesmanship and client relations. One non-verbal signal that helps indicate that you are listening intently to the client is:
 - * A. Eye contact
 - B. Looking outside the sales space
 - C. Hands on hips
 - D. Wrinkling the nose

5. Mulching landscape plants has several benefits. Which of these is **NOT** a significant benefit of mulching?
 - A. Winter protection
 - B. Reducing water loss from the soil
 - * C. Nutrient modification
 - D. Moderation of soil temperatures

6. In the landscape plant botanical name, *Acer saccharum cv.*, the 'cv.' stands for:
 - A. Color variation
 - B. Cultivar vitae
 - C. Common variety
 - * D. Cultivar

7. A landscape plant is tagged "Zones 5-9". What does this mean?
 - * A. That the plant will survive the winters in USDA Climatic Zones 5-9.
 - B. That the plant will survive with natural rainfall in Zones 5-9.

- C. That the plant will survive in the National Association of Landscaper's Zones 5-9.
D. That the plant will survive all naturally occurring conditions in Zones 5-9.
8. Lawn grasses vary in their ideal soil pH range, but a general range for best nutrient availability is:
* A. 6.5 to 7.0
B. 5.0 to 6.0
C. 4.5 to 5.5
D. 5.5 to 5.7
9. Auxin is important in plant production. It is best described as:
A. A naturally occurring resin for stem elongation.
* B. A plant hormone used to stimulate the rooting of cuttings.
C. A synthetic herbicide.
D. A city in Texas with a huge international nursery trade.
10. When using a walk-behind mower on a steep sloping lawn, it is safest to mow:
* A. across the slope
B. in a crosshatch pattern
C. up and down the slope
D. up the slope only
11. While on vacation your lawn grew to 6 inches tall. What is the best thing to do in this case?
A. Mow the lawn in a crosshatch pattern and then in a circular pattern.
B. Cut the grass as close as possible, less than 1" high, to give it a fresh start.
C. Irrigate the lawn to soften the leaf blades, then mow to the normal height.
* D. Cut it now taking off about 1/3 of the length and then again in 3-5 days.
12. Which of these is a pesticide signal word and is used on pesticides that are less toxic than others?
A. CAVEAT
B. DANGER
C. WARNING
* D. CAUTION
13. One of the advantages of a zero-turn mower over conventional riding mowers is:
A. cost
B. height of cut
* C. maneuverability
D. all of these
14. The backyard area of a residence is sometimes referred to as the ____ area.
* A. private
B. service
C. public
D. living
15. A designer placed *Mahonia aquifolia* and *Buxus microphylla* near each other in the foundation planting. This designer was most likely trying to capitalize on:
A. The blooms of the Buxus against the color of the Mahonia.
B. The complimentary and profuse spring bloom colors of each.

- * C. The contrast in texture of the two plants.
 - D. The complimentary colors of the plants.
16. A beginning nurseryman has the following plants in gallon pots under a 70% shade cloth this summer. Which of the plants would you expect to not do as well as the others under 70% shade?
- A. Pachysandra
 - B. Astilbe
 - * C. Mugo pine
 - D. Hosta
17. The vascular tissue of plants that conducts sugars and metabolic products downward from the leaves is called the:
- A. Xylem
 - * B. Phloem
 - C. Cotyledon
 - D. Lenticles
18. The first root of a germinating seed forms from this part of the seed.
- A. Endosperm
 - B. Cotyledons
 - * C. Radical
 - D. Hypocotyl
19. One of the major problems of many landscape plants is a pest in the class Arachnida. This pest attacks plants by feeding on the sap of plant leaves.
- A. Aphids
 - B. Japanese beetles
 - * C. Spider mites
 - D. Mealy bugs
20. Which of these is the best definition of a systemic pesticide?
- A. A fungicide that moves through the soil to control microorganisms.
 - B. A larvicide that kills immature insects feeding on the plant or living in the soil.
 - C. An insecticide that moves through the plant making it toxic to insects.
 - * D. A pesticide that is absorbed and transported through the plant.
21. Which of these most accurately describes symptoms of iron deficiency in plants?
- A. A waxy substance expelled from the axils of the leaves
 - * B. Yellowing of the leaves in between the dark green veins
 - C. A white, powdery buildup on the surface of the leaves
 - D. Holes in the leaves with crisp, brown edges
22. Which of these is generally the fastest method of establishing a lawn, but also is usually the most expensive?
- A. seeding
 - B. sprigging
 - * C. sodding
 - D. hydroseeding

23. It is generally recognized that plants need ____ essential nutrients to perform best.
- A. 3
 - B. 7
 - C. 9
 - * D. 16
24. Why are native plants often a better choice for landscape plants?
- * A. They are adapted to the local environmental conditions and may require less water.
 - B. They are easily obtained from nature and are deer resistant.
 - C. They are more aesthetically pleasing than non-natives.
 - D. Native plants will out-compete invasive plants.
25. This fertilizer nutrient is readily lost from the soil through leaching, soil erosion, and runoff. Levels of this nutrient can fluctuate widely with weather and soil conditions over short time periods. It is applied to crops according to general recommendations rather than soil test results.
- * A. Nitrogen
 - B. Phosphorus
 - C. Potash
 - D. Magnesium
26. The financial analysis of Bob's Landscaping business last year revealed the following data. Which of these tells Bob most about the profitability of his business?
- A. Inventory = \$13,750
 - B. Gross sales = \$268,000
 - * C. Net = \$81,000
 - D. Payroll = \$65,000
27. Small retail nurseries often have difficulty competing with big box chain stores. Which of these strategies might best help small stores compete?
- A. Setting prices lower than the box stores.
 - * B. Providing better customer service.
 - C. Advertising on local radio stations.
 - D. Criticizing box and chain stores to their customers.
28. Which of these trees provides the best fall color?
- A. Eastern White Pine
 - * B. Ginkgo
 - C. Cherry Laurel
 - D. Norway Spruce
29. Night lighting of the landscape can have dramatic effects, adding beauty and enjoyment to the home landscape. A variety of effects is possible, depending on the lighting type and placement. Which of these is a type of commercially available lighting used in landscape lighting for the home?
- A. Differential lighting
 - B. Sequel lighting
 - * C. Down lighting
 - D. Lime lighting
30. Generally, in residential landscape design, _____ is the focal point of the public area of the landscape.

- * A. The front door
 - B. The front walkway
 - C. The driveway
 - D. The driveway and the walkway in combination
31. Safety Data Sheets (SDS), formerly known as MSDSs or Material Safety Data Sheets, for hazardous chemicals are supplied to users to communicate information on the safe use of and hazards of each product. SDS's are supplied by the _____.
- A. USDA
 - B. FDA
 - C. OSHA
 - * D. Manufacturer of the product
32. A soil that contains roughly equal amounts of sand, silt, and clay is called a(n):
- * A. Loam
 - B. Textured soil
 - C. Permeable soil
 - D. Silty clay sandy loam
33. When a soil sample of a lawn is taken, be sure to take sample cores from all areas of the yard with cores about ___ inches deep.
- A. 3
 - * B. 6
 - C. 12
 - D. 18
34. For a tree to shade the home from the afternoon sun in summer, plant the tree on the ___ side of the house.
- A. North
 - B. East
 - C. Northwest
 - * D. Southwest
35. Large growing trees, taller than sixty feet, should be planted at least ___ feet from the foundation of a home.
- A. 8
 - B. 10
 - C. 12
 - * D. 20
36. Which of these actions is most likely to stimulate the growth of lateral buds on a shrub or tree?
- A. Removal of the stamens
 - B. Removal of the anthers
 - * C. Removal of the terminal buds
 - D. Spraying the plant with an organic pesticide
37. When removing large branches from trees the ___ method should be used. This prevents damage caused by the weight of the branch ripping down and stripping bark off the tree trunk.
- A. Straight-cut

- B. Two-cut
 - * C. Three-cut
 - D. Four-cut
38. The air space on a spark plug between the electrodes is set with a tool called a(n):
- A. Plug knife
 - B. Electrode prod
 - * C. Gap gauge
 - D. Terminal gauge
39. Which of these practices will encourage lawn grasses to become more deeply rooted?
- * A. Deep watering only as needed.
 - B. Light watering each morning.
 - C. Heavy watering each morning.
 - D. Watering each morning and afternoon.
40. The best example listed of a variable cost for a nursery grower is:
- A. Liability insurance
 - B. Land payments
 - * C. Cost of potting soil
 - D. Truck payment
41. A customer wants a flowering annual for their landscape in Indianapolis that can withstand the heat of full sun conditions during the summer. They will host a wedding at their home in mid-summer and they want a blooming annual that will provide excellent color at that time. Which of these choices would be the best plant to suggest to this customer?
- A. clematis
 - B. snapdragons
 - * C. marigolds
 - D. pansies
42. One of the responsibilities of this Federal agency is to protect U.S. agriculture and natural resources against invasive pests and diseases.
- A. American Community and Workplace Administration
 - B. Occupational Safety and Health Administration
 - C. Cooperative Extension Service
 - * D. Animal and Plant Health Inspection Service
43. A nursery business owner realized that her equipment is not worth as much this year as it was last year, or any year since she purchased the equipment. The measure of how much a piece of equipment drops in value each year is called:
- A. maintenance appreciation loss.
 - B. consumable routing.
 - * C. depreciation.
 - D. asset routing.
44. Anyone who plans to dig, including landscapers and homeowners, should call ____ or go to their state call-before-you-dig website to request that the approximate location of buried utilities be marked with paint or flags so that they don't unintentionally dig into an underground utility line.

- A. 911
 - * B. 811
 - C. 711
 - D. 611
45. A pesticide that warns against dermal contact indicates that precautions against contact with ___ should be taken.
- A. hands
 - * B. skin
 - C. face
 - D. arms
46. Which of the following pests gives birth to live young and can multiply at an alarming rate?
- * A. Aphids
 - B. Whiteflies
 - C. Leaf miners
 - D. Spider mites
47. Which of these are current trends that many landscape customers are interested in and often request?
- A. Permeable paving and rainwater harvesting
 - B. Drought tolerant and native plants
 - C. Graywater harvesting and reduced lawn areas
 - * D. All the above
48. If a fertilizer has an 18-5-12 analysis, how much phosphorus is in a 50-pound bag of this fertilizer?
- A. 12 pounds
 - B. 5 pounds
 - C. 18 pounds
 - * D. 2.5 pounds
49. If you plan to start a nursery you will need to contact this governmental agency to obtain a license to ensure that your plants don't contain pests or diseases.
- A. FDA
 - * B. State Department of Agriculture
 - C. APHIS
 - D. OSHA
50. These plants are grown from seeds or cuttings. They are very young plants, usually grown for sale to other nurseries, who grow them to a larger size before selling them to consumers. This is the best definition for _____ in horticultural terms.
- A. Pullers
 - * B. Liners
 - C. Yearlings
 - D. Inserts

End
FBF

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

KEY

2023

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

1. What is the primary purpose of a propagation nursery?
 - A. Landscape conservation and plant health
 - B. Plant conservation and preservation
 - * C. Reproduction of landscape plants
 - D. Soil erosion prevention and plant production

2. Which of the following correctly identifies the equation for photosynthesis in the presence of light energy?
 - A. $C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O \rightarrow CO_2$
 - B. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2 \rightarrow H_2O \rightarrow \text{Energy}$
 - * C. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
 - D. $CO_2 + H_2O \rightarrow C_9H_{12}O_9 + H_2O + CO_2$

3. Which of the following is a recommended retail sales technique?
 - * A. Place the item in the customer's hands as the product is discussed, if practical.
 - B. Create desire by not allowing the customer to hold the item until they appear ready to purchase.
 - C. Create anticipation and desire by talking about the item as you point to it on the shelf.
 - D. Direct the customer to items for add-on sales first, then redirect them to the original item of interest.

4. What is the best definition of landscape renovation?
 - A. The process of establishing a new landscape complete with plants, walks, drives, and other elements.
 - B. The installation of artificial features in a landscape to improve visual appeal.
 - * C. Restoration and improvement of an existing landscape by replacing or renewing plants and other elements.
 - D. Replacing existing plants with new plant cultivars and reorienting them away from prevailing winds.

5. When assisting a customer in a retail store, what is an essential aspect of effective salesmanship?
 - A. Focus on closing the sale quickly and downplaying customer objections to the product.
 - * B. Providing accurate and relevant information about the products or services.
 - C. Avoiding any hint of sales pressure by showing disinterest in the customer's inquiries and concerns.
 - D. Use body language to apply pressure to the customer to make a purchase quickly.

6. Which best describes a pesticide designed to kill weeds before they emerge from the soil?
 - A. Post EM₅₀
 - * B. Preemergence
 - C. LD₅₀ Premerger
 - D. Postemergence

7. The pesticide signal word that indicates the product is moderately toxic is
 - * A. Warning
 - B. Caution
 - C. Danger
 - D. Modicum

8. Which of these is an important business financial record to maintain to help predict income and expenses, especially so that the business can meet financial obligations during specific time periods?
- A. Net worth statement
 - B. Inventory statement
 - C. Equipment depreciation
 - * D. Cash flow statement
9. Which of the turfgrasses listed are best suited for golf course putting greens?
- A. Kentucky 31 tall fescue
 - B. Kentucky bluegrass
 - * C. Bermudagrass
 - D. Annual bluegrass
10. A homeowner had a tree removed and the stump ground down to well below the soil surface. They then installed bermudagrass sod in the yard, including where the tree had been located. The grass grew well and looked great except over the area where the tree once grew. In this area the grass grew poorly and was a yellowish color. Which of these best explains what caused this problem?
- * A. Soil microorganisms feeding on the wood chips left in the soil, are using the available nitrogen in order to digest the chips, leaving the grass a yellowish color.
 - B. Heavy machinery was probably used to grind the stump, compacting the soil in that area and delaying nitrogen and phosphorus uptake by the grass.
 - C. The stump grinding process loosed the soil excessively over the stump, limiting the penetration on grass roots and ultimately limiting nitrogen uptake.
 - D. The stump grinding machinery left a slight fossil fuel residue, contaminating the immediate area around the stump, causing temporary yellowing of the grass.
11. A customer requests a plant that can be grown on or tightly against a wall in his garden. Many plants, including vining plants, can be trained for use in this manner. What garden term of French origin is used to describe a tree or shrub whose branches are trained to grow against a wall or fence?
- A. Amour
 - B. Arbre
 - * C. Espalier
 - D. Jardin
12. Which of the following best describes depreciation of equipment?
- A. A method of calculating the long-term value of equipment.
 - B. A method of prorating the cost of labor to operate equipment over a given time period.
 - C. A method of calculating funds that will be received for equipment services.
 - * D. A reduction in the value of a piece of equipment, usually due to age and wear.
13. After a few days of heavy rain, a homeowner noticed circles of mushrooms in her yard. This phenomenon is called fairy ring. Which of these is NOT an accurate statement about fairy ring mushrooms?
- A. This fungi feeds off stumps, roots, and other organic matter left in the ground.
 - B. The mushrooms seen in the ring are the fruiting bodies of fungi that live underground.
 - C. The mushrooms seen above ground produce fungal spores that spread in the wind.
 - * D. The mushrooms should be sprayed with an antibacterial to prevent spread of the fungus.
14. What is the primary purpose of landscape lighting?
- A. To attract insects to a central location for natural pest control.
 - * B. To create a safe, aesthetic, and inviting environment.
 - C. To increase photosynthesis and water efficiency.
 - D. To create a beautiful landscape while discouraging nighttime wildlife.

15. Azaleas prefers a slightly more acidic soil than many landscape plants. The desirable pH range for azaleas is from:
- A. 2.5 to 4.0
 - * B. 4.5 to 6.0
 - C. 6.5 to 7.5
 - D. 7.5 to 8.0
16. Damping-off of seedlings is caused by several soil-borne fungi and molds including Pythium, Phytophthora, Rhizoctonia, and Fusarium. Conditions under which organisms causing damping-off thrive include:
- * A. Cool and wet conditions.
 - B. High light exposure and warm temperatures.
 - C. Low soil pH and high humidity.
 - D. High pH and low humidity.
17. Nitrogen is one of the most important plant nutrients applied as fertilizer. Which of the following statements regarding nitrogen fertilizer is accurate?
- A. Always apply nitrogen according to the soil pH.
 - * B. Nitrogen is readily lost from the soil, especially with excessive rain or irrigation.
 - C. The rate of nutrient application should be based on a ratio of 10-10-10.
 - D. The recommended application rate of phosphorus in soil test results is used to calculate the nitrogen ratio.
18. Which of these landscape materials is most limited in the time of year that they can be planted? These items are generally restricted to late fall through early spring plantings for the highest success rate.
- * A. Bare-root shrubs and trees.
 - B. Containerized shrubs and trees less than 5 gallons.
 - C. Flowering vines and trees.
 - D. Herbaceous perennial plants.
19. If a fertilizer bag has 5-10-15 printed on the bag, which of these can be determined from those numbers alone?
- A. The bag of fertilizer weighs 30 pounds.
 - B. The bag of fertilizer contains 15 percent nitrogen.
 - * C. The bag of fertilizer contains 10 percent phosphorus.
 - D. All the above are true.
20. Which of the following describes a potential issue associated with soil that has a high sand content?
- A. The small particles of sand pack together tightly and limits the space available for roots to grow.
 - * B. The large particles of sand provides good air space but allows water to drain too quickly.
 - C. The various sizes of sand particles create an uneven water balance throughout the soil profile.
 - D. The large particles of sand may cause surface flooding by inhibiting drainage.
21. What should be the first step when handling pesticides in a nursery or landscape operation to ensure safety?
- A. Obtain and wear 100% cotton gloves and clothing.
 - * B. Read the product label and follow the instruction.
 - C. Mix the pesticide with water to activate it quickly and safely.
 - D. Check the air temperature in the pesticide storage area.
22. Which of the following correctly identifies the three general areas of a home landscape?
- A. Drive, walks, and play areas
 - B. Commercial, residential, and private areas
 - * C. Public, private, and service areas
 - D. Service, communal, and public areas

23. The client requested color beds in the landscape to compliment the color of the building and company logo. The designer selected annual plants with blooms of the same hue, tone, and shades. This type of color scheme is best described as:
- * A. Monochromatic
 - B. Analogous
 - C. Complementary
 - D. Triadic
24. When propagating landscape plants from softwood cuttings, which of the following equipment would be most helpful to support the unrooted cutting until adventitious roots emerge to support the new plant?
- A. A soil aerator
 - B. A fertilizer injector
 - C. A planting dibble
 - * D. A mist propagation system
25. Some plants have the ability to grow on objects such as walls, fences, and around stakes. These climbing plants and vines throw out tendrils, which are a response to a touch stimulus. This is best termed:
- * A. Thigmotropism
 - B. Heliotropism
 - C. Hydrotropism
 - D. Phototropism

End
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