



**2016 National FFA Floriculture
Career Development Event
General Knowledge Exam**



Directions: Select the best answer for each question and mark your selection on the separate scan-tron sheet provided. *Mark answers in the Exam section on the scan-tron located in the bottom right hand corner.*

1. DIF, used for height management of crops, is the difference between the daytime temperature and
 - A) temperature requirement
 - B) morning temperature
 - C) nighttime temperature
 - D) none of the above.
2. In commercial greenhouses, which of the following methods are commonly used as a way to regulate plant growth without using chemicals?
 - A) crop timing
 - B) water stress
 - C) container size
 - D) all of the above
3. *Agrobacterium tumefaciens* is a pathogen that is commonly known as
 - A) crown gall
 - B) flower distortion
 - C) chlorotic mottle
 - D) none of the above
4. The recommended pH level for greenhouse crops in a soilless medium is
 - A) 3.0-3.5
 - B) 5.6-6.2
 - C) 4.0-4.3
 - D) all of the above
5. The virtual visual path that directs eye movement through a composition is_____.
 - A) pattern
 - B) line
 - C) form
 - D) none of the above
6. Orange, green and violet are_____ colors.
 - A) primary
 - B) secondary
 - C) intermediate
 - D) tertiary

7. The fundamental guidelines to aesthetic design that governs the organization of the elements and materials in accordance with the laws of nature are known the _____.
- A) Elements of Design
 - B) Transitions of Design
 - C) Principles of Design
 - D) none of the above
8. Which of the following is NOT a plant hormone that can be used as a plant growth regulator?
- A) ethylene
 - B) anthocyanin
 - C) abscisic acid
 - D) gibberellin
9. A 28 gauge florist wire is _____ than 18 gauge florist wire.
- A) thicker
 - B) thinner
 - C) longer
 - D) shorter
10. The LD₅₀ of a pesticide indicates:
- A) the amount of the pesticide required to kill half of a test population of the test subject
 - B) the time before re-entry into a chemically treated area
 - C) the amount of chemical needed for effective pest control
 - D) none of the above
11. Pesticide toxicity is measured in LD₅₀ or LC₅₀ numbers. Which of the following LD₅₀ numbers for pesticides is the most toxic?
- A) 295 mg/kg
 - B) 1217 mg/kg
 - C) 34 mg/kg
 - D) 4,237 mg/kg
12. The planned area within a floral design, which is devoid of flowers, foliage or other objects, but is still integral to the design is known as _____.
- A) the focal area
 - B) positive space
 - C) negative space
 - D) all of the above

13. The placement of materials at different levels within and around a floral arrangement helps to establish _____.
A) pattern
B) form
C) depth
D) balance
14. With mat irrigation, water moves by _____ from the mat into the root substrate in the pot to maintain constant moisture.
A) zero-leaching
B) capillary action
C) xeri-action
D) overhead
15. The cost of the plant materials (i.e. cost of seeds, cuttings, bulbs, or other plant propagules) would be examples of _____ costs on a financial planning sheet.
A) wholesale
B) overhead
C) fixed
D) direct
16. Achromatic, monochromatic, analogous and complementary are a few of the classically recognized _____.
A) hues
B) color values
C) color harmonies
D) none of the above
17. When propagating asexually, roses can be reproduced from _____.
A) vegetative cuttings
B) budded plants
C) grafted plants
D) all of the above.
18. Soil pH is based on the concentration of _____ ions in the soil.
A) calcium
B) hydrogen
C) oxygen
D) sulfur
19. Which of these describes edema in geraniums?
A) water soaked blisters generally on the underside of the leaf
B) swelling of the stem of the plant
C) no visual effects to the foliage of the plant
D) root disorder causing the demise of the plant

20. Which of the following is NOT a part of the pistil of the plant?
- A) Style
 - B) Ovary
 - C) stigma
 - D) filament
21. The _____ phase begins when a plant's seed germinates and grows, producing leaves, stems, and roots.
- A) annual
 - B) dormancy
 - C) reproductive
 - D) vegetative
22. The tiny pores in the epidermis of a leaf through which gas enters and escapes are _____.
- A) Cuticle
 - B) Petiole
 - C) stipule
 - D) stomata
23. The process of a plant losing water through the leaves in the form of water vapor is referred to as _____.
- A) dehydration
 - B) photosynthesis
 - C) respiration
 - D) transpiration
24. The waxy coating, called the _____, serves to prevent excessive water loss from the leaf tissues.
- A) axil
 - B) blade
 - C) cuticle
 - D) vein
25. Lime furnishes _____, one of the most important of the macro food elements.
- A) potassium
 - B) phosphorus
 - C) sulfur
 - D) calcium
26. Auxin is responsible for apical dominance in plants. Auxin is produced in three places in the plant located in the
- A) main stem, older leaves, and flowers
 - B) flower buds, leaf buds, and fruit
 - C) leaf petiole, shoot tips, and main older roots
 - D) Shoot tips, young leaf blades, and root tips
27. A complete fertilizer is recommended for a greenhouse crop. Which fertilizer analysis below is NOT a complete fertilizer?
- A) 16-4-8
 - B) 10-0-10
 - C) 5-10-10
 - D) 17-17-17

28. Mass flowers include all of the following except:
- A) chrysanthemums
 - B) baby's Breath
 - C) carnations
 - D) zinnias
29. Two hues directly opposite each other on the color wheel are _____ colors.
- A) diadic
 - B) monochromatic
 - C) polychromatic
 - D) complementary
30. Broken, implied, and continuous are all part of which element of floral design?
- A) space
 - B) line
 - C) color
 - D) texture
31. Light inside a greenhouse is measured in _____.
- A) solar energy
 - B) foot light
 - C) foot candles
 - D) solar candles
32. Poinsettias require a _____ to produce colored bracts.
- A) short day photoperiod
 - B) long day photoperiod
 - C) cool day temperature regime
 - D) cool night temperature regime
33. Thrips can be effectively managed in the greenhouse by using:
- A) a biological control such as the predator 'swirski mite'
 - B) a chemical control such as the insecticide spinosad
 - C) screening over vents and other openings
 - D) all of the above
34. An insect _____ generally does not kill insects, but instead drives them away before they attack the plant.
- A) attractant
 - B) pheromone
 - C) repellent
 - D) sterilant
35. To help identify plants, flower forms are grouped as to their position or arrangement on a stem. The flower position or arrangement is known as
- A) flower inflorescence
 - B) perfect flower
 - C) imperfect flower
 - D) flower calyx

36. After pollination and fertilization, the flower petals begin to drop and the ovary and other surrounding parts enlarge and develop into a _____.
A) fruit
B) leaf
C) new flower
D) raceme
37. Which of the following diseases does NOT affect the root system of plants?
A) Botrytis
B) Pythium
C) Rhizoctonia
D) Phytophthora
38. The Environmental Protection Agency establishes toxicity categories for pesticides based on how soon one can reenter the area after it has been treated with the pesticide. Which toxicity level can be reentered immediately after pesticide application?
A) Toxicity 1
B) Toxicity 2
C) Toxicity 3
D) Toxicity 4
39. In order to preserve foliage in a more natural, pliable state, place stems in:
A) glycerin
B) bleach
C) herbicidal soap
D) borax
40. Greenhouse glazing is:
A) material sprayed on the roof of a greenhouse to change light intensity
B) the transparent cover of the greenhouse frame
C) the amount of solar energy that reaches the plants in a greenhouse
D) a measure of heat loss from a greenhouse
41. When water is not applied frequently enough, plants wilt and
A) photosynthesis is slowed.
B) plant growth is slowed.
C) cell production is reduced.
D) all of the above
42. Plants are divided into C_3 and C_4 groups. C_4 plants are differentiated from C_3 plants by which of the following?
A) C_4 plants flower in shades of red whereas C_3 plants do not
B) C_4 plants have a higher relative photosynthesis rate
C) C_4 plants are not as efficient at using carbon dioxide
D) C_4 plants cannot function as well under high temperature and light conditions

43. A plant that is genetically identical to the parent plant is known as a _____.
A) clone
B) seedling
C) replica
D) hybrid
44. Cross-pollination occurs when pollen grains from the flowers on one plant transfer to the _____ of flowers on another plant.
A) anther
B) ovary
C) stigma
D) style
45. _____ is a process of events whereby the seed embryo goes from a dormant state to an actively growing state.
A) broadcasting
B) fertilization
C) germination
D) pollination
46. Some seeds have a hard seed coat that must be soaked or scratched before the seeds are able to germinate. This process is called _____.
A) drenching
B) forcing
C) scarification
D) stratification
47. The _____ is the food storage tissue in the seed that nourishes the plant during germination.
A) embryonic root
B) endosperm
C) seed coat
D) seed leaf
48. _____ is a gray-white soil mix material of volcanic origin that is most commonly used to improve aeration of growing media.
A) Coir
B) Peat moss
C) Perlite
D) Vermiculite
49. The ability of a plant to withstand colder temperatures is known as _____.
A) cold-sensitive
B) heat-tolerant
C) hardiness
D) morphology
50. _____ are plants characterized by one cotyledon in the seedling stage, flower parts in threes or multiples thereof, and parallel leaf venation.
A) Dicots
B) Evergreens
C) Monocots
D) Perennials

**2016 National FFA Floriculture CDE
General Knowledge Exam
ANSWER KEY**

| Question # | Answer | Reference | Page # | Corresponding Standards |
|-------------------|---------------|---|---------------|--|
| 1 | C | Ball Red Book | 67 | ABS.07.01, PS.01.03.01.c, PS03.02.05.a, and PS.01.03.04.c |
| 2 | D | Ball Red Book | 85 | PS.01.03.03.c and PS.03.02.05.a |
| 3 | A | Introduction to Floriculture | 34 | PS.03.03.01.b |
| 4 | B | Ball Red Book | 34 | PS.02.03.02.a |
| 5 | B | The AIFD Guide to Floral Design | 99 | PS.04.01.01.c and PS.04.01.02.c |
| 6 | B | The AIFD Guide to Floral Design | 106 | PS.04.01.02.c |
| 7 | C | The AIFD Guide to Floral Design | 112 | PS.04.01.01.c and PS.04.01.02.c |
| 8 | B | Nelson. Greenhouse Operation & Management, 7 th ed. | 381-383 | PS.02.03.0.a |
| 9 | B | Scace and DelPrince. Principles of Floral Design | 60 | PS.04.02.02.a |
| 10 | A | Nelson. Greenhouse Operation & Management, 7 th ed. | 432-433 | PS.03.03.04.a |
| 11 | C | Introductory Horticulture, 7 th edition, Delmar | 177 | BS.02.04.01.b, CS.03.01.01.c, and CS.03.01.02.c |
| 12 | C | The AIFD Guide to Floral Design | 129 | PS.04.01.01.c and PS.04.01.02.c |
| 13 | C | The AIFD Guide to Floral Design | 125 | PS.04.01.01.c and PS.04.01.02.c |
| 14 | B | Greenhouse Operations and Maintenance, 6 th edition | 283 | PS.01.03.03.b |
| 15 | D | Nelson. Greenhouse Operation & Management, 7 th ed | 572-576 | CRP.03.02.01.a and CRP.03.02.02.a |
| 16 | C | The AIFD Guide to Floral Design | 107 | PS.04.01.02.c |
| 17 | D | Introduction to Floriculture | 75-76 | PS.03.01.03.c |
| 18 | B | Introduction to Horticulture, Revised 4 th edition | 147 | ESS.01.01.01.c, PS.03.02.05.c, and PS.03.02.06.b |
| 19 | A | Introduction to Floriculture | 472 | CRP.07.01.01.c, CRP.07.01.02.b, CRP.08.01.01.c, NRS.01.02.03.b, NRS.04.02.01.b, and PS.03.02.01.b |

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|----|---|--|------------|---|
| 20 | D | Introduction to Horticulture, 3 rd Edition | 83 | PS.02.03.05.c and PS.03.01.01.b |
| 21 | D | Introduction to Horticulture; Revised 4 th Ed; Interstate | 75 | PS.01.01.01.c |
| 22 | D | Introduction to Horticulture; Revised 4 th Ed; Interstate | 78 | PS.01.02.04.c |
| 23 | D | Introduction to Horticulture; Revised 4 th Ed; Interstate | 81 | PS.01.03.02.c |
| 24 | C | Introduction to Horticulture; Revised 4 th Ed; Interstate | 81 | PS.01.02.04.c |
| 25 | D | Introductory Horticulture, 6 th edition | 42 | PS.01.01.01.c, PS.01.01.02.c, and PS.03.02.05.c |
| 26 | D | Ball Red Book, Crop Production, Volume 2 | 91 | PS.02.02.04.c and PS.03.02.05.c |
| 27 | B | Introduction to Horticulture, 3 rd Edition | 139 | PS.01.03.01.c, PS.01.03.03.c, and PS.01.03.06.c |
| 28 | B | Scace and DelPrince. Principles of Floral Design | 144-145 | PS.04.02.01.b |
| 29 | D | The AIFD Guide to Floral Design | 108 | PS.04.01.02.c |
| 30 | B | The AIFD Guide to Floral Design | 99 | PS.04.01.02.c |
| 31 | C | Introduction to Horticulture, Revised 4 th edition | 364 | PS.02.03.01.a |
| 32 | A | Nelson. Greenhouse Operation & Management, 7 th ed. | 354-355 | PS.01.01.01.b |
| 33 | D | Nelson. Greenhouse Operation & Management, 7 th ed | 401-416 | PS.03.03.01.c |
| 34 | C | Introductory Horticulture; 8 th Ed; Delmar | 198 | PS.03.03.03.c, PS.03.03.01.c, and PS.03.03.02.c |
| 35 | A | Introduction to Horticulture, Revised 4 th edition | 95 | PS.01.02.05.c and PS.01.01.01.c |
| 36 | A | Introduction to Horticulture; Revised 4 th Ed; Interstate | 97 | PS.01.01.05.c and PS.01.02.06.c |
| 37 | A | Ball Red Book, Crop Production, Volume 2 | Chapter 10 | CS.04.01.02.b, CRP.07.01.01.c, CRP.07.01.01.c, CRP.07.02.02.b, CRP.08.01.01.c, NRS.01.02.03.b, and NRS.04.02.01.b |
| 38 | D | Introductory Horticulture, 7 th edition, Delmar | 180 | BS.02.04.01.b, CS.03.01.01.c, CS.03.01.02.c, CS.03.02.01.c, CS.03.02.02.c, CS.03.03.01.b, |

| | | | | |
|----|---|---|---------|--|
| | | | | CS.02.02.02.c, and PS.03.03.04.b |
| 39 | A | Scace and DelPrince. Principles of Floral Design | 441-444 | PS.03.05.04.a |
| 40 | B | Ball Red Book, Greenhouse & Equipment, Volume 1 | 35 | CS.01.02.01.b, CS.01.02.02.b, CS.02.02.02.c, CS.02.02.03.b, CRP.11.01.01.b, CRP.11.01.02.b, ESS.01.02.02.a, PS.03.02.06.b |
| 41 | D | Greenhouse Operations and Maintenance, 6 th edition | 257 | ABS.04.03.02.a, CS.01.01.02.b, CS.02.01.02.c |
| 42 | B | Introduction to Horticulture, 3 rd Edition | 69 | PS.01.01.03.c, PS.02.03.01.c, and PS.02.03.02.c |
| 43 | A | Introduction to Horticulture, Revised 4 th edition | 111 | PS.01.01.01.c |
| 44 | C | Introduction to Horticulture; Revised 4 th Ed; Interstate | 94 | PS.03.01.01.a |
| 45 | C | Introduction to Horticulture; Revised 4 th Ed; Interstate | 98 | PS.01.01.01.c and PS.01.02.06.c |
| 46 | C | Introductory Horticulture; 8 th Ed; Delmar | 76 | PS.01.02.06.c |
| 47 | B | Introductory Horticulture; 8 th Ed; Delmar | 76 | PS.01.02.06.c |
| 48 | C | Introductory Horticulture; 8 th Ed; Delmar | 78 | PS.02.02.01.b and PS.02.02.02.b |
| 49 | C | Introduction to Horticulture; Revised 4 th Ed; Interstate | 73 | PS.01.02.03.c |
| 50 | C | Introduction to Horticulture; Revised 4 th Ed; Interstate | 73 | PS.01.01.01.c |



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Directions: Select the best answer for each question and mark your selection on the separate scantron sheet provided. *Mark answers in the General Knowledge Exam section on the scantron located in the left side of the scantron.*

1. The following is not a characteristic of an insect:
 - A. Three segmented body
 - B. Six legs
 - C. Two pairs of wings
 - D. Two tentacles

2. The following is not used to measure greenhouse crop nutrient levels:
 - A. Soil tests
 - B. Soluble salts meter
 - C. Foliar analysis
 - D. Tensiometer

3. Light intensity can be measured in units of:
 - A. Nanometers
 - B. Micrometers
 - C. Foot-candles
 - D. Newtons

4. A _____ results from crossing parents of different genotype for a trait.
 - A. clone
 - B. scion
 - C. species
 - D. hybrid

5. The _____ transports water and nutrients from the roots to other parts of the plant.
 - A. phloem
 - B. xylem
 - C. pith
 - D. cambium

6. *Crassula argentea* is the botanical name for Jade Plant. *Crassula* is the _____ of the plant.
 - A. family
 - B. cultivar
 - C. species
 - D. genus

7. Indolebutyric acid (IBA) is commonly used to:

- A. control insects
- B. control diseases
- C. raise soil pH
- D. promote rooting of cuttings

8. Signal words on labels alert the user to the toxicity of a pesticide. Which of the following words is not used as a signal word?

- A. DANGER
- B. HAZARDOUS
- C. CAUTION
- D. WARNING

9. Which of the following flower parts is contained in the pistil?

- A. sepal
- B. receptacle
- C. anther
- D. style

10. _____ is the process of softening or breaking a seed coat in order to overcome seed dormancy.

- A. Scarification
- B. Stratification
- C. Ratification
- D. Augmentation

11. Prior to transplanting, seedlings should be _____.

- A. kept in the dark.
- B. grown at a temperature of 90°F.
- C. hardened-off
- D. allowed to dampen-off.

12. In order to lower the pH of a soil, materials containing _____ are used.

- A. dolomite
- B. lime
- C. hydrated lime
- D. sulfur

13. Which of the following nutrients would be retained more by a root medium with high cation exchange capacity (CEC)?

- A. Potassium
- B. Phosphate
- C. Nitrate
- D. Sulfate

14. Soluble salts in medium is measured by electrical conductivity (EC). An appropriate EC range for flowering potted crops using the pour through extraction method is:

- A. 0.25mS/cm to 0.75 mS/cm
- B. 0.5 mS/cm to 2.0 mS/cm
- C. 1.0 mS.cm to 4.6 mS/cm
- D. 3.0 mS.cm to 6.2 mS/cm

15. Soilless medium can be amended with which of the following materials prior to potting to provide magnesium?

- A. Epsom Salt
- B. Gypsum
- C. Micronutrients mix
- D. Triple superphosphate

16. The Worker Protection Standards (WPS) developed for agriculture pesticides was implemented by what government agency?

- A. United States Department of Agriculture
- B. Agriculture Cooperative Extension Service
- C. Department of Homeland Security
- D. Environmental Protection Agency

17. Cytokinins are responsible for cell division and differentiation in the plant. Cytokinins are produced in what plant part?

- A. Lateral shoots
- B. Roots
- C. Terminal shoots
- D. Cambium

18. Which of the following auxins is naturally produced in the plant?

- A. Indole-3-acetic acid (IAA)
- B. Naphthalene acetic acid (NAA)
- C. Indolepropionic acid (IPA)
- D. Indole-3-butyric acid (IBA)

19. Carbon is an essential plant element. Plants obtain carbon from carbon dioxide gas (CO₂). Air on the average contains what percent CO₂?

- A. 0.30 percent
- B. 30 percent
- C. 0.03 percent
- D. 3 percent

20. A plant's growth response to temperature is called:

- A. Vernalization
- B. Thermotropism
- C. Photoperiodism
- D. Thermoperiodic

21. Which of the following is not an advantage of hydroponics?

- A. Plant nutrition is completely controlled through prepared nutrient solutions.
- B. Yield per unit area is reduced since plants may be planted closer together.
- C. Roots do not spread as much because H₂O and nutrients are pumped directly to the plant.
- D. The need for weed, disease, and insect control is greatly reduced due to the absence of soil.

22. Allelopathy is a plant phenomenon that does the following to plants:

- A. Prevents the formation of bacteria organisms
- B. Stops fungus organisms from growing on plants
- C. Creates a mechanism within the plant to induce flowering
- D. Production of a chemical compound by one plant that slows down or stops the growth of another plant

23. Pesticides can be purchased for use in the greenhouse as a wettable powder (WP) or as an emulsifiable concentrate (EC). Which of the following is true about these two pesticide formulations.

- A. WP are diluted (dissolved) in water and can settle during application while EC are suspended in water and do not settle during application.
- B. There is no difference in the two formulations
- C. EC must be added to water in correct rates where WP are applied as it exist in the container
- D. WP and EC both are purchased as dry formulations

24. Tulle in florist work is:

- A. The ribbon added to any floral piece being created
- B. Florist netting that can add color, texture, and support for some flowers
- C. Silk leaves used instead of fresh foliage in corsages
- D. Other accessories used in corsages such as pearl sprays, rhinestones, butterflies, or chenille letters

25. The country that is the leading exporter of cut flowers to the United States floral industry is:

- A. Holland
- B. Ecuador
- C. Mexico
- D. Columbia

26. The climatic conditions that are needed for carnations to be grown successfully as a cut flower include?

- A. Low light intensity, mild climate requiring minimal amount of protection, uniform temperature and day length
- B. High light intensity, mild climate requiring minimal amount of protection, and cold nights and hot days
- C. High light intensity, mild climate requiring minimal amount of protection, uniform temperature and day length
- D. Low light intensity, mild climate requiring minimal amount of protection, and short days

27. In growing chrysanthemums as cut flowers the plant requires which of the following conditions to maintain a vegetative state of growth?

- A. Day length at less than 9.5 hours growing at 60 degrees
- B. Day length between 11 and 12 hours growing at 80 degrees
- C. Day length at 10.5 hours growing at 60 degrees
- D. Day length greater than 14.5 hours growing at 60 degrees

28. The advantages of an ebb and flood irrigation system in the greenhouse are:

- A. Labor savings
- B. Reduced water and nutrient use
- C. Lower pesticide use
- D. All of the above

29. Which of the following is not a plant hormone that can be used as a plant growth regulator?

- A. ethylene
- B. anthocyanin
- C. abscisic acid
- D. gibberellin

30. The best root medium pH for a majority of spring bedding plants, but not including petunias or geraniums, is:

- A. 4.5 to 5.5
- B. 5.5 to 6.5
- C. 6.5 to 7.5
- D. 7.5 to 8.5

31. In grafting, such as for grafted tomato transplants,

- A. the scion is the top part of the graft and the rootstock is the lower part
- B. the rootstock is the top part of the graft and the scion is the lower part
- C. the scion often imparts disease resistance to the grafted plant
- D. the rootstock often provides desirable fruiting characteristics

32. The pistil is
- A. the female part of the flower
 - B. the male part of the flower
 - C. contains both the male and female parts of a flower
 - D. becomes seeds
33. The pH of the root medium indicates to a greenhouse grower its
- A. volumetric water content
 - B. salt ions dissolved in water
 - C. hydrogen ion concentration
 - D. organic matter content
34. On a financial planning sheet, the costs of the plant materials (i.e. purchase cost of seeds, cuttings, bulbs, or other plant propagule) would be examples of:
- A. wholesale costs
 - B. overhead costs
 - C. fixed costs
 - D. direct costs
35. A 6-inch 'azalea pot' has an inside rim diameter of _(i)_ inches and a depth of __(ii)__ inches.
- A. (i) 6-inches, (ii) 8 inches
 - B. (i) 6-inches, (ii) 6-inches
 - C. (i) 6-inches, (ii) 4.5-inches
 - D. (i) 6-inches, (ii) 3-inches
36. Respiration:
- A. produces sugars in the plant
 - B. occurs only during the night
 - C. releases oxygen to the atmosphere
 - D. none of the above
37. What type of environment do poinsettias require to produce red bracts?
- A. short day photoperiod
 - B. long day photoperiod
 - C. cool day temperature regime
 - D. cool night temperature regime
38. Botanical names are written in:
- A. English
 - B. Latin
 - C. Greek
 - D. German

39. The greenhouse insect pest problem of aphids can be effectively managed by using:
- A. biological control such as lady beetles
 - B. chemical control such as the use of an insecticidal soap
 - C. the cultural control of washing them off the plant with a strong stream of water
 - D. all of the above
40. In order to preserve foliage in a more natural, pliable state, place stems in:
- A. glycerin
 - B. bleach
 - C. antifreeze
 - D. borax
41. Which glazing material for greenhouses allows the greatest light transmittance?
- A. fiberglass
 - B. polyethylene
 - C. glass
 - D. polycarbonate
42. To pasteurize a container root medium, heat it to:
- A. 120 degrees for 30 minutes
 - B. 120 degrees for 60 minutes
 - C. 180 degrees for 30 minutes
 - D. 180 degrees for 60 minutes
43. A guideline for estimating the size for a floral design for a defined space is known as
- A. Rule of Thirds
 - B. Third Rule
 - C. The Golden Ratio
 - D. The Golden Rule
44. The term variegated means?
- A. Leaves can only be both yellow and green.
 - B. Leaves have patches, stripes, or marks of different colors.
 - C. Leaves have only stripes of different colors.
 - D. Leaves are solid green with no other colors.
45. Systemic dyeing occurs by plants absorbing color through the
- A. Petal
 - B. Leaf
 - C. Sepal
 - D. Stem



Figure 1

46. A Freesia (**Figure 1**) is an example of a _____.
- A. Bulb
 - B. Tuber
 - C. Corm
 - D. Rhizome
47. _____ is the single most important element to keep flowers fresh after delivery from a supplier.
- A. Air/ Ventilation
 - B. Water
 - C. Light
 - D. Cool Temperatures
48. The three primary ingredients in floral preservatives are sugar, _____, and an acidifier.
- A. Biocide
 - B. Salt
 - C. Chlorophyll
 - D. Iodine
49. The sense of stability in a design both physically and visually is known as
- A. Rhythm
 - B. Balance
 - C. Scale
 - D. Unity
50. A floral design with a strong sense of _____ shows an organization of elements so they appear to belong together.
- A. Rhythm
 - B. Balance
 - C. Scale
 - D. Unity

**2017 National FFA Floriculture CDE
General Knowledge Exam
ANSWER KEY**

| Question # | Answer | Reference | Page # | Corresponding Standards |
|-------------------|---------------|--|---------------|--------------------------------|
| 1 | D | Introduction to Horticulture, Interstate | 165 | NRS.01.02.03.b |
| 2 | D | Introduction to Horticulture, Interstate | 226 | PS.01.03.01.c |
| 3 | C | Introduction to Horticulture, Interstate | 719 | PS.01.01.01.c |
| 4 | D | Introduction to Horticulture, Interstate | 720 | PS.02.01.02.c |
| 5 | B | Introductory Horticulture, Delmar | 24 | PS.02.02.03.c |
| 6 | D | Introductory Horticulture, Delmar | 13 | PS.02.01.02.c |
| 7 | D | Introductory Horticulture, Delmar | 52 | PS.01.03.01.c |
| 8 | B | Introductory Horticulture, Delmar | 165 | BS.02.04.02.a |
| 9 | D | Introduction to Horticulture, Interstate | 83 | PS.02.02.05.c |
| 10 | A | Introduction to Horticulture, Interstate | 98 | PS.02.02.06.b |
| 11 | C | Introduction to Horticulture, Interstate | 100 | PS.02.02.06.b |
| 12 | D | Introduction to Horticulture, Interstate | 141 | PS.01.03.02.c |
| 13 | A | Introduction to Horticulture, Interstate | 141 | PS.01.03.01.c |
| 14 | C | Ball Red Book, Ball Publishing, 17 th edition, volume 2 | 35 | PS.01.03.01.c |
| 15 | A | Ball Red Book, Ball Publishing, 17 th edition, volume 2 | 39 | PS.01.03.01.c |
| 16 | D | Ball Red Book, Ball Publishing, Greenhouse and Equipment | 209 | BS.02.04.01.b |
| 17 | B | Floriculture, Interstate Publishers | 102 | PS.02.02.01.b |
| 18 | A | Greenhouse Operation and Mgt, Prentice Hall, 4 th edition | 395 | PS.01.03.01.c |
| 19 | C | Greenhouse Operation and Mgt, Prentice Hall, 4 th edition | 347 | NRS.01.02.05.a |
| 20 | B | Introduction to Horticulture, Interstate, 2 nd edition | 232 | PS.01.01.02.c |
| 21 | B | Introduction to Horticulture, Interstate, 2 nd edition | 109 | PS.03.02.07.b PS.01.01.03.c |
| 22 | D | Introduction to Horticulture, Delmar, 7 th edition | 60 | PS.01.03.01.c |
| 23 | A | Introduction to Horticulture, Delmar, 7 th edition | 186 | PS.03.03.04.b |
| 24 | B | Floriculture-Greenhouse and Floral Design, Interstate | 423 | PS.04.02.02.c |
| 25 | D | Floriculture-Greenhouse and Floral Design, Interstate | 235 | CS.01.01.02.b |

| | | | | |
|----|---|--|---------|----------------------------------|
| 26 | C | Introduction to Floriculture, Academic Press | 46 | PS.03.05.04.b |
| 27 | D | Introduction to Floriculture, Academic Press | 15 | PS.03.05.03.b |
| 28 | D | Ball Red Book, Ball Publishing, Greenhouse and Equipment | 75 | PS.01.01.03.c |
| 29 | B | Greenhouse Operation & Management, 7 th ed | 381-383 | PS.01.03.06.c PS.02.03.0.a |
| 30 | B | Greenhouse Operation & Management, 7 th ed. | 207 | PS.01.03.02.c |
| 31 | A | Greenhouse Operation & Management, 7 th ed. | 207 | PS.03.01.03.c |
| 32 | A | Greenhouse Operation & Management, 7 th ed | 432-433 | PS.02.02.05.c PS.03.03.04.a |
| 33 | C | Greenhouse Operation & Management, 7 th ed | 214-215 | PS.01.03.03.b PS.01.03.02.c |
| 34 | D | Greenhouse Operation & Management, 7 th ed | 572-576 | CRP.03.02.01.a CRP.03.02.02.a |
| 35 | C | Greenhouse Operation & Management, 7 th ed | 587 | CRP.11.01.02.b |
| 36 | D | Greenhouse Operation & Management, 7 th ed | 319 | PS.02.03.01.a PS.02.03.02.c |
| 37 | A | Greenhouse Operation & Management, 7 th ed | 354-355 | PS.01.01.01.b PS.01.01.01.c |
| 38 | B | Introduction to Horticulture, Interstate | 74 | PS.02.01.02.c |
| 39 | D | Greenhouse Operation & Management, 7 th ed | | PS.03.03.01.c PS.03.03.02.b |
| 40 | A | Principles of Floral Design, Scace and DelPrince | 441-444 | PS.03.05.04.b |
| 41 | C | Introduction to Horticulture, Interstate | 41 | PS.01.01.01.c |
| 42 | C | Greenhouse Operation & Management, 7 th ed | 238 | PS.01.02.01.c |
| 43 | A | Principles of Floral Design, G-W Publisher | 121 | PS.04.02.01.c |
| 44 | B | Principles of Floral Design, G-W Publisher | 210 | NRS.01.02.02.b |
| 45 | D | Principles of Floral Design, G-W Publisher | 141 | PS.02.02.05.c |
| 46 | C | Principles of Floral Design, G-W Publisher | 87 | PS.02.02.05.c |
| 47 | B | Principles of Floral Design, G-W Publisher | 100 | PS.03.05.04.b |
| 48 | A | Principles of Floral Design, G-W Publisher | 102 | PS.03.05.04.b |
| 49 | B | Principles of Floral Design, G-W Publisher | 115 | PS.04.02.01.c |
| 50 | D | Principles of Floral Design, G-W Publisher | 127 | PS.04.02.01.c |



**2018 National FFA Floriculture
Career Development Event
General Knowledge Exam**



Directions: Select the best answer for each question and mark your selection on the separate scantron sheet provided. *Mark answers in the General Knowledge Exam section on the scantron located in the left side of the scantron.*

1. A circular design does not have _____.
 - a. Balance
 - b. Filler flowers
 - c. A focal point
 - d. Massing flowers

2. Most fungal diseases grow best in _____.
 - a. Dry, arid air
 - b. Low moisture conditions
 - c. High moisture conditions
 - d. Seasons with drought

3. Mums are considered a short-day crop; that is, the plant sets flower buds and blooms only when _____.
 - a. Nights and days are long
 - b. Nights are long and days are short
 - c. Nights are short and days are long
 - d. Nights and days are short

4. During respiration, plants _____.
 - a. Use the sun's energy
 - b. Produce sugars
 - c. Use oxygen
 - d. Form complex compounds

5. If green plants show a _____ color, this suggests a nitrogen deficiency.
 - a. White
 - b. Yellow
 - c. Dark green
 - d. Purple

6. _____ exists when the terminal bud produces hormones that inhibit or prevent the growth of axillary buds on the same shoot.
- Cell dominance
 - Root dominance
 - Atypical dominance
 - Apical dominance
7. Floral foam is sufficiently soaked when _____.
- It changes to a darker shade of green
 - The foam floats back to the top of the water
 - Particles of the foam begin to float in the water
 - Air bubbles are no longer coming out of the foam
8. _____ seeding is when seeds are sown in a separate place from where the plants will eventually grow to maturity.
- Direct
 - Sideways
 - Indirect
 - Top
9. _____ is used to accentuate the flowers and colors used in a design.
- Harmony
 - Unity
 - Accent
 - Repetition
10. _____ are chemicals used to control snails and slugs.
- Fungicides
 - Rodenticides
 - Molluscicides
 - Nematocides
11. Small green insects with piercing mouth parts are _____.
- Aphids
 - Mealybugs
 - Scale
 - Mites

12. The recommended daytime temperature range for indoor plants is _____.
a. 60-70° F
b. 55-80° F
c. 60-85° F
d. 50-85° F
13. _____ is one of the basic floral design shapes.
a. Fan
b. Diagonal
c. Oval
d. Circular
14. In the list of flowers/materials below, which list is not all line flowers:
a. Liatris, gladiolus, snapdragons, cattail
b. Bells of Ireland, carnations, branches, snapdragons
c. Liatris, delphinium, gladiolus, bells of Ireland
d. Foxglove, branches, lupine, cattail
15. Joe placed a box of apples in his flower cooler. The next day he saw some cut flowers looking bad and deteriorating. Could the apples have caused this problem?
a. Yes, fruit produces ethylene gas which can cause flowers to senesce.
b. Yes, diseases on fruit are easily transferred to cut flowers causing their deterioration.
c. No, storing fruit in a cooler with cut flowers is never a problem. The flowers deteriorated from some other pathogen,
d. No, the apples could not have caused damage to the cut flowers in such a short time.
16. Floral foam should be hydrated before use in a flower arrangement. Which of these methods is the best for accomplishing the soaking of the foam?
a. The foam is forced by weight to be totally immersed in the water
b. The foam is pushed down into the water by hand
c. The foam is allowed to float on the surface until it is soaked
d. The foam is placed in the bottom of a water reservoir one-half of the height of the block of foam

17. A wholesale greenhouse operation has grown 4,250 six inch pots of poinsettias. At the end of the Christmas season, 3,789 pots were sold. The wholesale selling price was \$3.85 per pot. The retail businesses sold the pots of poinsettias for \$6.89. The cost per pot grown was \$2.16 per pot. What was the net return on the poinsettia crop to the greenhouse operation?
- \$14,587.65
 - \$6,403.41
 - \$5,407.65
 - \$11,518.56
18. You work for a retail flower shop in Bloomington, Indiana. You are figuring a bill for a customer. In Bloomington the state sales tax is 5%, the city sales tax is 0.5%, and the county sales tax is 1%. The cost of the arrangement for the customer is \$72.45. What is the total of the customer's bill?
- \$72.45
 - \$72.81
 - \$77.16
 - \$76.07
19. The wire services that a retail flower shop can use are:
- Society of American Florists, FTD, and Teleflora
 - FTD, Teleflora, Florafax, American Floral Services, and Carik
 - Florafax, FTD, American Floral Services
 - American Floral Services, American Academy of Floriculture, Florafax, and Carik
20. In growing potted chrysanthemums, the desirable temperature range for flower bud initiation is:
- 62 to 65 degrees F at night
 - Above 68 degrees F at night
 - 60 to 62 degrees F at night
 - 65 to 68 degrees F at night
21. As a grower you want to use "soft" pesticides for plant pest control. Which group below includes "soft" pesticides?
- Fungicides, bactericides, insect growth regulators
 - Insect growth regulators, botanical insecticides, horticultural oils
 - Horticulture oils, insecticidal soaps, insecticides
 - Miticides, insecticidal soaps, horticulture oils
22. The place in the plant where the process of photosynthesis occurs is:
- In all plant cells
 - In all cells within the leaf
 - In green chloroplasts within cells
 - In cells in the leaf petiole

23. A solenoid valve is used in greenhouses:
- As an electrical device used to control the flow of water in greenhouses
 - As a valve controlled totally by water pressure to cut water on and off
 - As a valve controlled by temperature to cut heat on and off
 - As an electrical shut on and off system for ventilation fans
24. A manometer is used in a greenhouse to measure:
- Water pressure in an irrigation system line
 - Difference between low and high temperature
 - Air pressure between layers of plastic
 - Gas pressure in a gas heater
25. In horticulture, the term “explant” is:
- A cross between cultivars within a species
 - A plant that came from a genetic mutation
 - A plant part other than stem or leaves such as a bulb or corm
 - Small pieces of plant material used in tissue culture
26. In greenhouse plant growing a zero DIF will result in:
- Shorter plants compared to plants grown with a positive DIF
 - Taller plants compared to plants grown with a positive DIF
 - A decrease in how much light a plant receives each day
 - A wide range between daytime and nighttime temperatures in a greenhouse
27. The three secondary colors in flower arrangements are:
- Red, yellow, and blue
 - Orange, green, and violet
 - Purple, yellow, and blue
 - Green, purple, and red
28. The nutrient iron is essential in plants because:
- Iron is required for strong stems
 - Iron is required for leaf formation
 - Iron is required for root development
 - Iron is required to produce chlorophyll
29. _____ buds are found at the base of a leaf petiole and next to the stem.
- apical
 - axillary
 - dominant
 - epidermal

30. A plant with a tunicate bulb is a(n) _____.
a. peony
b. tulip
c. iris
d. Easter lily
31. Binomial classification of a plant requires a _____ and _____ for the name.
a. genus and specific epithet
b. family and order
c. common and scientific component
d. species and family
32. A tissue in a seed that provides stored food for the embryo is _____.
a. endosperm
b. zygote
c. seed coat
d. hypocotyl
33. The process of propagating plants on an agar gel or nutrient medium is known as _____.
a. grafting
b. budding
c. micropropagation
d. none of the above
34. A florists' wire with a gauge of 18 will be _____ than florists' wire with a gauge of 28.
a. shorter
b. longer
c. thinner
d. thicker
35. On a financial planning sheet, the costs of the plant materials (i.e. purchase cost of seeds, cuttings, bulbs, etc.) would be examples of _____.
a. wholesale costs
b. overhead costs
c. direct costs
d. fixed costs

36. Floral preservatives for cut flowers should contain all of the following except _____:
- a. nitrogen fertilizer
 - b. a sugar source
 - c. an acidifier
 - d. a microbiocide
37. What type of environment do chrysanthemums require to produce flowers?
- a. short day photoperiod
 - b. long day photoperiod
 - c. cool day temperature regime
 - d. cool night temperature regime
38. Injecting dilute sulfuric acid into the irrigation system during greenhouse production will:
- a. increase the root medium pH
 - b. decrease the root medium pH
 - c. decrease and then increase the root medium pH
 - d. not change root medium pH
39. What are the organelles that capture and process the light that a plant intercepts?
- a. mitochondria
 - b. nuclei
 - c. chlorophylls
 - d. chloroplasts
40. The process of _____ is when a plant loses water through stomates.
- a. transpiration
 - b. translocation
 - c. transduction
 - d. acclimatization
41. Which glazing material for greenhouses allows the lowest light transmittance?
- a. fiberglass
 - b. polyethylene
 - c. double-layer polyethylene
 - d. polycarbonate

42. The calculated difference between the day temperature and night temperature in a greenhouse production situation is known as _____.
a. HID
b. STS
c. DIF
d. IPM
43. Before using a chemical you should refer to the SDS or
a. Safety Detail Sheet
b. Safety Data Sheet
c. Storage Detail Sheet
d. Storage Data Sheet
44. The binomial system for naming plants is
a. used on the North American continent only.
b. used only in the United States.
c. used Internationally.
d. no longer used today.
45. Plants that have two _____ are known as dicots.
a. nucleus
b. cells
c. flowers
d. cotyledons
46. Chloroplasts contain chlorophyll that _____ green light giving plants their green color.
a. reflect
b. absorb
c. produce
d. create
47. _____ insecticides are pesticides that are translocated throughout the plant and kill any insects that feed on the plant.
a. Insecticidal Soaps
b. Horticulture Oils
c. Botanical
d. Systemic

48. When dealing with plant diseases, there must be _____ things present for any plant disease to form.
- a. one
 - b. two
 - c. three
 - d. four
49. _____ plants are plant material kept specifically for the purpose of propagation.
- a. Stock
 - b. Parent
 - c. Cutting
 - d. Hardwood
50. Grasshoppers begin their life cycle as an egg, transition into a larva, and change into an adult. This would be classified as _____ metamorphosis.
- a. complete
 - b. incomplete
 - c. holometabolous
 - d. ametabolous



**2018 National FFA Floriculture
Career Development Event
General Knowledge Exam
Answer Key**



| Number | Answer | Standard(s) |
|--------|----------------|---|
| 1 | c | PS.04.02.01.c. |
| 2 | c | PS.01.01.03.c. |
| 3 | b | PS.03.02.05.c. |
| 4 | c | PS.02.03.02.c. |
| 5 | d b | PS.01.03.01.c. |
| 6 | d | PS.03.05.01.b. |
| 7 | d | PS.04.02.02.c. |
| 8 | c | PS.03.02.05.c. |
| 9 | d | PS.04.02.01.c. |
| 10 | c | PS.03.03.01.c. |
| 11 | a | PS.03.03.02.b. |
| 12 | d | PS.03.02.05.c. |
| 13 | d | PS.04.02.01.c. |
| 14 | b | PS.02.02.05.c. |
| 15 | a | PS.03.05.04.b. |
| 16 | c | PS.04.02.02.c. |
| 17 | c | CS.02.02.03.b. |
| 18 | c | CRP.02.01.01.c. |
| 19 | b | ABS.05.03.02.a. |
| 20 | a | PS.03.02.05.c. ; PS.01.01.01.c. |
| 21 | b | PS.03.03.01.c. |
| 22 | c | PS.02.02.05.c. |
| 23 | a | NRS.01.02.05.a. |
| 24 | c | NRS.01.02.05.a. |
| 25 | d | PS.03.01.03.c. |
| 26 | a | PS.01.01.02.c. |
| 27 | b | PS.04.02.01.c. |
| 28 | d | PS.02.02.04.c. |
| 29 | b | PS.03.01.03.c. |
| 30 | b | NRS.01.02. |
| 31 | a | PS.02.01.02.c. |
| 32 | a | PS.03.01.03.b. |
| 33 | c | PS.03.01.03.c. |
| 34 | d | CRP.10.04.01.c. |
| 35 | c | CRP.03.02 |

| | | |
|----|---|---|
| 36 | a | CRP.10.04.01.c. |
| 37 | a | PS.01.01.02.c. |
| 38 | b | PS.01.03.05.b. |
| 39 | d | PS.02.02.03.c. |
| 40 | a | PS.02.02.03.c. |
| 41 | c | CRP.10.04.01.c. |
| 42 | c | ESS.01.01. |
| 43 | b | PS.03.03.04.b. ; BS.02.04.02.a. |
| 44 | c | NRS.01.02.02.b. |
| 45 | d | NRS..01.02.02.b. |
| 46 | a | PS.01.01.01.c. |
| 47 | d | PS.03.03.01.c. |
| 48 | c | PS.03.03.01.c. |
| 49 | a | PS.03.01.03.c. |
| 50 | b | PS.03.03.02.b. |



2019 Floriculture Career Development Event

Created: Oct-19

Select the best answer for each question and mark your selection on the separate scantron sheet provided. Mark answers in the **Exam** section on the scantron located in the bottom right hand corner.

MULTIPLE CHOICE

1. Wreaths, garlands, loose flowers and petals were the floral design styles used during which historical floral period?
 - A. Greek and Roman
 - B. Victorian
 - C. Art Deco
 - D. Art Nouveau
2. Which historical floral period includes floral design styles that were massed, rounded and fan shaped?
 - A. Egyptian
 - B. Art Deco
 - C. American Colonial
 - D. Oriental
3. Which principal of design is defined as '*a oneness or being complete in itself*'?
 - A. Harmony
 - B. Unity
 - C. Proportion
 - D. Line
4. What color adaptation is created by adding gray to a pure hue?
 - A. Chroma
 - B. Tint
 - C. Tone
 - D. Shade
5. Which color scheme or color harmony includes hues that are adjacent to each other on the color wheel?
 - A. Complementary
 - B. Analogous
 - C. Monochromatic
 - D. Triadic

6. When an arrangement is too small for its surroundings, it is said to be out of _____.
 - A. Harmony
 - B. Tone
 - C. Rhythm
 - D. Proportion

7. Which color harmony uses two hues that are directly opposite to each other on the color wheel?
 - A. Complementary
 - B. Analogous
 - C. Monochromatic
 - D. Triadic

8. An appropriate lightweight wire to use for corsage construction is:
 - A. #18 gauge
 - B. #9 gauge
 - C. #22 gauge
 - D. #28 gauge

9. Chrysanthemums, Asters, Daisies, and other flat-faced flowers are wired for corsages using which method?
 - A. Pierce
 - B. Hook-Wiring
 - C. Stitch
 - D. Clutch or Wrap-Around

10. Which item is a floral piece worn by a man and typically worn on the right-side jacket lapel, near the buttonhole?
 - A. Corsage
 - B. Wristlet
 - C. Boutonniere
 - D. Clutch

11. Which of the following elements of design allows each flower/form to have its own individual importance?
- A. Depth
 - B. Space
 - C. Form
 - D. Line
12. Which bouquet style would be best for a full wedding gown with a long train?
- A. Tussy Mussy
 - B. Cascading
 - C. Presentation
 - D. Round Cluster
13. A Hogarth Curve floral design is created by
- A. An "O" shape
 - B. A "C" shape
 - C. A "S" shape
 - D. A "H" shape
14. Clogged stems in cut flowers are caused by an air embolism. An air embolism is
- A. Where disease organisms move into the flower from the air clogging the stem.
 - B. Where a bubble of air enters the xylem preventing water from reaching the flower.
 - C. Where the difference between room and flower cooler temperature clog the stem.
 - D. Where the flower stem clogs when the flower cooler temperature drops below 36 degrees F.
15. Which wiring method should be used for carnations when they are to be used in corsages and boutonnieres?
- A. Piercing
 - B. Clutch
 - C. Hook
 - D. Stitch
16. The part of the plant stem that produces all new cells is the
- A. Heartwood
 - B. Xylem
 - C. Phloem
 - D. Cambium

17. In the following list of pesticides the _____ must be mixed with water to apply.
- A. Emulsifiable concentrate
 - B. Granules
 - C. Dusts
 - D. Baits
18. An acid loving crop grows best at a pH of _____.
- A. 6.8-7.4
 - B. 6.2-6.8
 - C. 4.5-5.8
 - D. 5.8-6.2
19. Auxins and gibberellic acid are hormones in plants that promote growth through _____.
- A. Cell division
 - B. Cell enlargement
 - C. Cell specialization
 - D. Cell protection
20. Double layer poly should have how much space between layers for proper inflation and full insulation?
- A. 1 inch
 - B. 12-14 inches
 - C. At least 2 feet
 - D. 6-8 inches
21. In a horticulture business, the product you choose to produce and retail should be at what price above the total production and marketing costs (all fixed and variable costs) to make it feasible to produce and sell?
- A. 100%
 - B. 150%
 - C. 250%
 - D. 500%

22. The amount of light a plant receives greatly influences root growth, shoot growth, and flowering. The highest quality greenhouse plants need _____ foot candles of light per day?
- A. 500-1,000
 - B. 2,000-3,000
 - C. 4,000-6,000
 - D. 7,000-8,000
23. Botrytis often presents itself on flowers as gray mold. This disease is caused by a(an) _____.
- A. Fungus
 - B. Virus
 - C. Bacteria
 - D. Environmental Condition
24. The _____ container is $\frac{1}{2}$ as high as it is wide.
- A. Standard pot
 - B. Bulb pan
 - C. Azalea pot
 - D. Mum pot
25. Greenhouse production often requires insecticides to be sprayed to prevent insect damage on flowers. Insecticides that are applied in gaseous form are _____.
- A. Systemic
 - B. Fumigants
 - C. Contact
 - D. Repellents
26. Rubber Plants are commonly reproduced through an asexual propagation method known as _____, which is shown to the right.
- A. Air layering
 - B. Compound layering
 - C. Whip or tongue grafting
 - D. Cleft grafting



27. Most plants grow best in the 40-80 percent relative _____ range. This is the amount of moisture that is contained in the air surrounding the plant.
- A. Foot candles
 - B. Particles
 - C. Humidity
 - D. Dew point
28. One popular way of identifying plants is to observe their leaf _____; which will tell the person if the leaves are opposite, alternate, whorled, etc.
- A. Arrangement
 - B. Margins
 - C. Shape
 - D. Forms
29. A growing media amendment that is grown primarily in marshes, bogs or swamps and has a high-water holding capacity is known as _____.
- A. Perlite
 - B. Vermiculite
 - C. Sand
 - D. Peat Moss
30. In order to have a year-round supply of cut flowers, such as Tulips and Crocus, that grow from bulbs; greenhouse growers are known to _____ bulbs. This means they plant bulbs out of season and grow them in a cold or refrigerated area for 10-12 weeks.
- A. Force
 - B. Fertilize
 - C. Prune
 - D. Divide
31. The waxy coating on the outside of a leaf, called the _____, serves to prevent excessive water loss from the leaf tissues.
- A. Petiole
 - B. Stoma
 - C. Cuticle
 - D. Vein

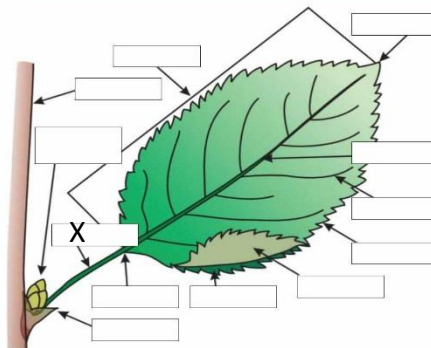
32. When a plant is showing signs of _____ deficiency, you might notice the leaves turning a dark to reddish leaf color.

- A. Nitrogen
- B. Phosphorus
- C. Potassium
- D. Sunlight

33. The item “labeled X” in the figure below, is the _____, which attaches the leaf to the stem.

- A. Petiole
- B. Stipule
- C. Midrib
- D. Apex

PARTS OF A SIMPLE DICOT LEAF



34. The _____ civilization is credited with being one of the first cultures to use floral arrangements in their homes.

- A. American
- B. Greek
- C. European
- D. Egyptian

35. The height of an arrangement should be at least _____ times the container's greatest dimension.

- A. $\frac{1}{2}$
- B. $1\frac{1}{2}$
- C. 3
- D. 5

36. Flowers, such as Baby's Breath or Aster, are commonly referred to as _____ flowers in floral arrangements.
- A. Texture
 - B. Focal
 - C. Filler
 - D. Form
37. Which of the following greenhouse substrate components is derived from volcanic rock?
- A. Vermiculite
 - B. Perlite
 - C. Peat
 - D. Bark Medium
38. Which of the following flowers could be used as a focal point in a floral design?
- A. Wax flower
 - B. Bird-of-Paradise
 - C. Miniature Carnation
 - D. Leatherleaf Fern
39. The primary benefit(s) of shading a greenhouse is (are):
- A. To keep the greenhouse temperatures lower
 - B. To reduce light intensity
 - C. To reduce pest populations
 - D. A and B
40. The process of _____ is when a plant loses water through stomata.
- A. Transduction
 - B. Translocation
 - C. Transpiration
 - D. None of the above
41. A greenhouse pest that is small with tan, feather-like wings would likely be a _____.
- A. Fungus gnat
 - B. Greenhouse whitefly
 - C. Western flower thrip
 - D. Shore fly

42. _____ is when a plant secretes a substance to inhibit growth of another plant.
- A. Allelopathy
 - B. Anthesis
 - C. Transcription
 - D. Translation
43. The first thing to do before applying a pesticide is _____.
- A. Fill the spray tank
 - B. Read the label
 - C. Put on personal protective equipment
 - D. Rinse out the sprayer tank
44. _____ is the development of a plant from a seed or spore.
- A. Scarification
 - B. Stratification
 - C. Vernalization
 - D. Germination
45. Aluminum can affect the color of what florist's flower?
- A. Hydrangea
 - B. Dahlia
 - C. Zinnia
 - D. Asiatic Lily
46. If one were to make a tint of yellow, what color would be added?
- A. Black
 - B. Gray
 - C. White
 - D. Any of the above
47. Which of the following could be used to preserve or dry flowers and foliage?
- A. Silica gel
 - B. Sand
 - C. Glycerin
 - D. All of the above

48. Which of the following would be a direct cost in a floral shop:

- A. Cut flowers in the cooler
- B. Insurance for the shop's building
- C. Energy bills
- D. Membership fee for FTD

49. The following is not a characteristic of an insect:

- A. Two tentacles
- B. Six legs
- C. Two pairs of wings
- D. Three body segments

50. Most indoor foliage plants need which kind of lighting?

- A. Direct sunlight
- B. Bright indirect light
- C. Medium light
- D. Bright light



2019 Floriculture Career Development Event

Created: Feb-20

FLORICULTURE: EXAM SECTION KEY

| Question | Answer | Point Value | Standard | Standard | Standard |
|----------|--------|-------------|-----------------|----------|----------|
| 1. | A | 4 | CS.02.02.02.C. | | |
| 2. | C | 4 | CS.02.02.02.C | | |
| 3. | B | 4 | PS.04.02.01.C. | | |
| 4. | C | 4 | PS.04.02.01.C. | | |
| 5. | B | 4 | PS.04.02.01.C. | | |
| 6. | D | 4 | PS.04.02.01.C. | | |
| 7. | A | 4 | PS.04.02.02.C. | | |
| 8. | D | 4 | C3.03.04.02.C. | | |
| 9. | B | 4 | PS.04.02.02.C. | | |
| 10. | C | 4 | PS.04.01.01.C. | | |
| 11. | B | 4 | PS.04.02.01.C. | | |
| 12. | B | 4 | PS.04.01.01.C. | | |
| 13. | C | 4 | PS.04.02.01.C | | |
| 14. | B | 4 | PS.02.03.02.C. | | |
| 15. | A | 4 | PS.04.02.02.C. | | |
| 16. | D | 4 | PS.02.02.03.C. | | |
| 17. | A | 4 | PS.03.03.01.C. | | |
| 18. | C | 4 | PS.01.03.02.C. | | |
| 19. | B | 4 | PS.02.02.01.B. | | |
| 20. | D | 4 | CS.04.01.02.B. | | |
| 21. | C | 4 | ABS.01.01.01.B. | | |
| 22. | C | 4 | PS.01.01.01.C. | | |

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| | | | | | |
|-----|---|---|-----------------|--|--|
| 23. | A | 4 | NRS.04.02.01.B. | | |
| 24. | B | 4 | C3.03.04.02.C. | | |
| 25. | B | 4 | PS.03.03.01.C. | | |
| 26. | A | 4 | PS.03.01.03.C. | | |
| 27. | C | 4 | PS.01.01.02.C. | | |
| 28. | A | 4 | NRS.01.02.02.B. | | |
| 29. | D | 4 | PS.01.02.01.C. | | |
| 30. | A | 4 | PS.02.02.05.C. | | |
| 31. | C | 4 | PS.02.02.04.C. | | |
| 32. | B | 4 | PS.01.03.01.C. | | |
| 33. | A | 4 | PS.02.02.04.C. | | |
| 34. | D | 4 | CS.02.02.02.C. | | |
| 35. | B | 4 | PS.04.02.01.C | | |
| 36. | C | 4 | PS.04.01.01.C. | | |
| 37. | B | 4 | PS.03.02.02.B. | | |
| 38. | B | 4 | PS.04.01.01.C. | | |
| 39. | D | 4 | PS.01.01.01.C. | | |
| 40. | C | 4 | PS.02.03.02.C. | | |
| 41. | C | 4 | NRS.01.02.03.B. | | |
| 42. | A | 4 | PS.01.03.01.C. | | |
| 43. | B | 4 | PS.03.03.04.B. | | |
| 44. | D | 4 | PS.02.02.05.C. | | |
| 45. | A | 4 | PS.01.03.01.C. | | |
| 46. | C | 4 | PS.04.02.02.C. | | |
| 47. | D | 4 | PS.03.05.03.B. | | |
| 48. | A | 4 | ABS.01.01.01.B. | | |
| 49. | A | 4 | NRS.01.02.03.B. | | |
| 50. | B | 4 | PS.02.03.01.C. | | |



NATIONAL FFA FLORICULTURE CDE

GENERAL KNOWLEDGE EXAM

Select the best answer for each question and mark your selection on the separate E-Rubric answer sheet provided. **Mark answers in the** *General Knowledge Exam* **section on the E-Rubric Answer Sheet.**

1. The water-conducting tissue of plants is called _____.
 - a. xylem
 - b. phloem
 - c. peduncle
 - d. pedicel

2. A chemical compound used as an additive to prevent the growth of bacteria in vase water is considered to be a(an) _____.
 - a. acidifier
 - b. biocide
 - c. botrytis
 - d. citric acid

3. Rolling back petals of a flower to create a more open blossom is called _____.
 - a. petalling
 - b. reflexing
 - c. sewing
 - d. tailoring

4. What is a common target date for bracts to develop color and the flowers open?
 - a. September 15
 - b. October 10
 - c. November 15
 - d. December 25

5. A state of equilibrium where both sides of the design are equal.
 - a. asymmetrical design
 - b. symmetrical design
 - c. composition
 - d. form
6. The portion of a design engaged by objects. An area occupied by flowers, foliage, or other objects within a floral design.
 - a. positive space
 - b. negative space
 - c. accent
 - d. focal point
7. The organization of components into a harmonious whole resulting in a cohesive relationship of all parts defines _____.
 - a. unity
 - b. balance
 - c. theme
 - d. harmony
8. Florist wire is sold by gauge. A thin, light wire would be what number gauge?
 - a. 1
 - b. 12
 - c. 22
 - d. 28
9. The secondary colors consist of:
 - a. green, orange, violet
 - b. Violet, blue, red
 - c. yellow, red, blue
 - d. green, yellow, blue
10. Fresh flowers should be stored in a floral cooler at 34-38 degrees F with 80-90% relative humidity.
 - a. True
 - b. False

11. A purlin in greenhouse construction is used for what purpose?
 - a. Frame components spanning the space between the eave and the ridge.
 - b. A panel attached to the greenhouse that permits opening for ventilation.
 - c. A component of the greenhouse frame running the length of the greenhouse just below the roof covering that connects trusses together.
 - d. A component of the greenhouse frame spanning the width of the greenhouse that is welded or bolted together.

12. The essential ingredients for photosynthesis to take place in the plant is:
 - a. Water, oxygen, carbon, light
 - b. Water, carbon dioxide, chlorophyll, light
 - c. Carbon dioxide, glucose, chlorophyll, light
 - d. Oxygen, light, hydrogen, glucose

13. Of the following nutrient list which one includes only micronutrients?
 - a. Zinc, copper, sulfur, phosphorus, boron, calcium, and chlorine
 - b. Manganese, zinc, potassium, calcium, copper, iron, and chlorine
 - c. Iron, nitrogen, sulfur, magnesium, molybdenum, boron, and manganese
 - d. Boron, zinc, copper, molybdenum, iron, manganese, and chlorine

14. Applying too much nitrogen to plants can cause adverse effects on plant growth. Of the following four items which is not a plant's response to excessive nitrogen:
 - a. Weaken the stem because of long and soft growth
 - b. Lower the plants resistance to disease
 - c. Yellow or light green leaves on the plant
 - d. Lower the quality of the fruit of the plant causing them to be soft to ship

15. The three basic parts of a seed are:
 - a. Seed coat, endosperm, and embryo
 - b. Cotyledons, roots, and seed coat
 - c. Endosperm, roots, and embryo
 - d. Primer, seed coat, and embryo

16. In a flower shop which of the following are not considered overhead expenses?
- a. Rent or mortgage payment
 - b. Hard goods
 - c. Insurance
 - d. Utilities (water, gas, electricity)
17. Auxin is produced in the shoot tips by a plant. The purpose of auxin in the plant is to:
- a. Inhibit lateral branch development
 - b. Start the process of flower development
 - c. Promote lateral branch development
 - d. Encourage seed development
18. REI to a greenhouse worker means:
- a. Reliant environmental interval
 - b. Retractable emergency integration
 - c. Reliable environmental information
 - d. Restricted entry interval
19. Which pesticide LD50 number listed below is the most toxic?
- a. LD50 of 5,045
 - b. LD50 of 45
 - c. LD50 of 545
 - d. LD50 of 145
20. An armature in floral arrangements is used:
- a. To create a framework to hold stems in place
 - b. To support a floral design container
 - c. To create a system for transporting floral work
 - d. To make a flower stem longer

21. If a species has separate plants with each plant having only male flowers or female flowers, the plant is considered _____.
- a. complete
 - b. dioecious
 - c. monoecious
 - d. perfect
22. _____ is a process in which glucose combines with oxygen to produce energy in a form that can be used by plants.
- a. Cohesion
 - b. Photosynthesis
 - c. Respiration
 - d. Transpiration
23. A pesticide label cautions against dermal contact; this means the poison could enter the body by _____.
- a. contact with skin
 - b. ingesting
 - c. inhaling
 - d. transfusion
24. _____ deficiency appears as a marginal yellowing or scorch on the edges of leaves on the lower portion of the plant.
- a. Calcium
 - b. Iron
 - c. Nitrogen
 - d. Potassium
25. Photosynthesis primarily occurs within the _____ inside plant cells.
- a. chloroplast
 - b. golgi apparatus
 - c. nucleus
 - d. vacuole

26. A plant with a species name *macrophylla* could be expected to have _____.
- a. small leaves
 - b. large leaves
 - c. small flowers
 - d. large flowers
27. The _____ are crescent shaped and are responsible for opening the stoma.
- a. lenticels.
 - b. vascular bundles
 - c. receptacles
 - d. guard cells
28. Chrysanthemums typically flower in late summer or fall. Their photoperiod category is considered which of the following:
- a. Day-Neutral Plants
 - b. Long-Day Plants
 - c. Short-Day Plants
 - d. Daily Light Integral Plants
29. _____ are responsible for cell division and differentiation. They are produced in the roots and transported throughout the plant through the xylem.
- a. Ethylenes
 - b. Gibberellins
 - c. Auxins
 - d. Cytokinins
30. Many daylily, dahlia, and gladiola varieties are polyploid, which means that they have more than one set of _____.
- a. zygotes
 - b. chromosomes
 - c. nuclei
 - d. scions

31. The pigment _____ produces orange-yellow flowers.
- a. carotene
 - b. chlorophyll
 - c. anthocyanin
 - d. xanthophyll
32. Which of the following plant characteristics belongs to monocots?
- a. netted leaf veins
 - b. scattered vascular bundles
 - c. flower parts in multiples of four or five
 - d. taproot system
33. What are four things growing medium provides for plants?
- a. darkness, food, nutrients, oxygen
 - b. carbon dioxide, disease resistance, sugars, water
 - c. nutrients, oxygen, support, water
 - d. vitamins, organic matter, support, water
34. Most essential elements for plant growth are available to most plants when the soil pH is between ____.
- a. 3.0 to 5.5
 - b. 5.5 and 7.0
 - c. 7.0 to 10.5
 - d. 10.5 to 12.0
35. What is a miniature arachnid that sucks sap from plants?
- a. aphid
 - b. beetle
 - c. mite
 - d. Nematode

36. Poinsettias are very susceptible to root rot diseases caused by *Pythium*, *Rhizoctonia*, and *Thielaviopsis* fungi. How can these disease problems be reduced?
- a. Apply fungicides when appropriate and adhere to proper watering.
 - b. Introduce beneficial microorganisms to the greenhouse environment.
 - c. Provide cooler day temperatures and warmer night temperatures.
 - d. Use varieties genetically engineered to be resistant to root rot.
37. How are chrysanthemums classified?
- a. by response group, height, and flower form
 - b. by response group, speed of rooting, and flower texture
 - c. by root growth, height, and flower color
 - d. by root length, leaf size, and flower form
38. Why are Easter lilies a relatively difficult crop to grow?
- a. Easter falls on a different date each year.
 - b. They are extremely sensitive to dry medium.
 - c. They are short-day plants grown in the spring.
 - d. They have so many pest and disease problems.
39. What is the best explanation why bedding plant seeds are sown in rows?
- a. to ensure that developing seedlings have good light exposure
 - b. to keep different plant varieties from becoming intermingled
 - c. to maintain an organized, attractive seed germination room
 - d. to reduce the possible spread of disease across an entire flat
40. What are small plants grown in small amounts of medium in divided trays?
- a. cormels
 - b. explants
 - c. liners
 - d. plugs

41. In pricing retail items, it is important to include additional hard good costs, which would include:
- a. The floral foam and vase used to construct the arrangement
 - b. The flowers used to make the design
 - c. The filler used to complete the design
 - d. The gas used in the delivery vehicle
42. Fresh goods used to create a retail floral design are typically marked up from wholesale pricing at the following rate:
- a. 10%
 - b. 200%
 - c. 50%
 - d. 500%
43. As the wholesale price of fresh flowers increased due to supply issues, the resulting price affect was seen by consumers:
- a. The price of delivery was decreased
 - b. The price of add-on purchased increased
 - c. The availability of flowers increased
 - d. The retail price of flowers increased
44. Which of the following floral products is a seasonal design specifically representing the fall harvest season?
- a. An evergreen wreath with colorful ornaments
 - b. A blooming spring bulb in a vase
 - c. A summer bouquet of sunflowers
 - d. A cornucopia (horn of plenty) filled with flowers, fruit, and vegetables
45. How could a florist or garden shop offer products that promote a sustainable and environmentally conscientious perspective?
- a. Offer organically grown plants
 - b. Sell organic fertilizers
 - c. Market seasonal and local products
 - d. All of the above.

46. In response to supply issues for fresh flowers from South America, the following result was by floral retailers in the wholesale cost of fresh goods:
- a. The price of hard goods decreased
 - b. The price of flowers increased
 - c. The price of flowers decreased
 - d. The shipping costs decreased
47. Which of the following products would be the best choice of tools / materials to adhere fresh flowers in constructing a wristlet corsage:
- a. Hot Glue
 - b. Cold Glue
 - c. Wire
 - d. Braiding
48. Which life stage is most damaging to ornamental crops from the lepidoptera order of insects?
- a. Adult
 - b. Larvae
 - c. Nymph
 - d. Egg
49. If a plant is showing a yellowing in the leaves, it is most likely deficient in the nutrient:
- a. Phosphorus
 - b. Potassium
 - c. Zinc
 - d. Nitrogen
50. When removing thorns from roses, it is important to avoid tearing the outer layer, or bark, which would damage the plants:
- a. Xylem and phloem
 - b. Roots
 - c. Petals
 - d. Pith



FLORICULTURE CDE

Created: Aug-22

General Knowledge Exam Key

| Question | Answer | Point Value | Standard | Standard | Standard |
|----------|--------|-------------|----------------|---------------|----------------|
| 1. | a | 4 | PS.02.02.03.c | | |
| 2. | b | 4 | PS.03.05.04.b | | |
| 3. | b | 4 | PS.04.02.02.c | | |
| 4. | c | 4 | PS.03.02.05.c | | |
| 5. | b | 4 | PS.04.02.01.c | | |
| 6. | a | 4 | PS.04.02.01.c | | |
| 7. | a | 4 | PS.04.02.01.c | | |
| 8. | d | 4 | PS.04.02.02.c | CS.03.04.02.c | |
| 9. | a | 4 | PS.04.02.01.c | | |
| 10. | a | 4 | PS.03.05.04.b | | |
| 11. | c | 4 | PS.03.02.06.b | | |
| 12. | b | 4 | PS.02.02.04.c | PS.02.03.01.c | |
| 13. | d | 4 | PS.01.03.06.c | PS.01.03.01.c | |
| 14. | c | 4 | PS.03.03.01.c | PS.01.03.06.c | PS.01.03.03.c |
| 15. | a | 4 | PS.02.02.06.b | | |
| 16. | b | 4 | ABS.01.01.01.b | CS.02.02.03.b | CRP.03.02.01.a |
| 17. | a | 4 | PS.02.02.04.c | | |
| 18. | d | 4 | BS.02.04.02.a | CS.03.01.01.c | CS.03.03.04.c |
| 19. | b | 4 | BS.02.04.01.b | BS.02.04.02.a | CS.03.01.01.c |
| 20. | a | 4 | PS.04.02.01.c | PS.04.02.02.c | |

| Question | Answer | Point Value | Standard | Standard | Standard |
|----------|--------|-------------|----------------|---------------|---------------|
| 21. | b | 4 | PS.03.01.01.b | | |
| 22. | c | 4 | PS.02.03.02.c | | |
| 23. | a | 4 | BS.02.04.02.a | PS.03.03.04.b | CS.03.03.03.b |
| 24. | d | 4 | PS.01.03.01.c | | |
| 25. | a | 4 | PS.02.03.01.c | | |
| 26. | b | 4 | NRS.01.02.02.b | | |
| 27. | d | 4 | PS.02.02.04.c | | |
| 28. | c | 4 | PS.01.01.01.c | | |
| 29. | d | 4 | PS..02.02.03.c | | |
| 30. | b | 4 | NRS.01.02.02.b | | |
| 31. | a | 4 | PS.02.02.05.c | | |
| 32. | b | 4 | PS.02.02.05.c | | |
| 33. | c | 4 | PS.01.02.01.c | | |
| 34. | b | 4 | PS.01.03.02.c | | |
| 35. | c | 4 | NRS.01.02.03.b | | |
| 36. | a | 4 | NRS.04.02.01.b | | |
| 37. | a | 4 | PS.02.02.05.c | | |
| 38. | a | 4 | PS.03.02.05.c | | |
| 39. | d | 4 | NRS.04.02.01.b | | |
| 40. | d | 4 | PS.03.02.05.c | | |
| 41. | a | 4 | ABS.01.01.01.b | | |
| 42. | b | 4 | ABS.01.01.01.b | | |
| 43. | d | 4 | ABS.01.01.01.b | | |
| 44. | d | 4 | CS.02.02.02.c | | |

| Question | Answer | Point Value | Standard | Standard | Standard |
|----------|--------|-------------|---------------|----------|----------|
| 45. | d | 4 | CS.03.01.01.c | | |
| 46. | b | 4 | CS.02.02.03.b | | |
| 47. | b | 4 | CS.03.04.02.c | | |
| 48. | b | 4 | PS.03.03.01.c | | |
| 49. | d | 4 | PS.01.03.06.c | | |
| 50. | a | 4 | PS.02.02.03.c | | |