2018 National FFA Agronomy CDE Written Test
For Event Use Only

Select the best answer for each question

1. Which of the following essential nutrients is considered a secondary nutrient?

a. phosphorus
b. calcium
c. potassium
d. manganese
e. zinc

2. From the following list, which oral LD50 value represents the most toxic poison?

a. 300 mg/kg
b. 480 mg/kg
c. 5000 mg/kg
d. 101 mg/kg

3. If you wanted to increase the CEC (cation exchange capacity) of your soil, which of the following additives would you add to your soil?

a. apply ammonium sulfate to the soil at least once a year
b. rotate your crops annually
c. **add organic matter (compost, manure, green manure crops, etc.) to your soil**
d. moldboard plow your soil to incorporate crop residues

4. If a plant continues to produce more leaves and stems after it has begun to flower, that growth habit is called which of the following:

a. dioecious
b. epinasty
c. determinate
d. monoecious
e. indeterminate

5. If you were using a chlorophyll meter to determine the nutrient status of a corn crop, which nutrient below is most likely to be correlated with the level of chlorophyll?

a. N
b. P
c. K
d. Fe
e. S

6. If a 10-25-10 fertilizer costs $450/U.S. ton (2,000 lbs in a U.S. ton), how much did you pay per pound of all the nutrients present (round to the nearest penny)?

a. $0.27/lb
b. $0.50/lb
c. $0.89/lb
d. $1.01/lb

7. A farmer has all-inclusive production costs for his crop of $884 per acre. The farmer sold the crop ahead of harvest season using a future's contract for $5.20 per bushel so how many bushels per acre does the farmer need to achieve to cover just the production costs?

a. 170 bushels per acre
b. 180 bushels per acre
c. 200 bushels per acre
d. 225 bushels per acre

8. Which of the following is a plant available form of nitrogen?

a. N_2
b. NH_3
c. NO_3
d. NO_2
e. NO

9. A raceme is considered a type of what?

a. tiller
b. inflorescence
c. root structure
d. leaf structure

10. Which of the following plants are considered examples of pulses?

a. barley, rye, rice
b. white clover, alfalfa, crimson clover
c. canola, flax, corn
d. peas, lentils, dried beans

11. What is the primary role of phosphorus in plant growth?

a. enzymatic activation
b. carbohydrate metabolism
c. energy transfer and storage
d. stomata (water) regulation

12. The hilium of a bean seed is what?

a. the thin shell covering of the seed
b. where the radicle first emerges from a germination seed
c. where the seed is attached to the pod
d. where the first leaves form

13. A mixture of proteins that gives bread its elastic texture is called what?

a. gluten
b. glucosinates
c. amino acids
d. omega 3's

14. Corn is an example of what type of plant?

a. dicot
b. monoecious plant
c. dioecious plant
d. legume
e. gynoecious

15. The plant structure that develops because of a fertilized flower on the peanut plant is called a what?

a. stolon
b. rhizome
c. corm
d. boll
e. peg

16. In a corn crop, stage R2 refers to what?

a. denting
b. 50% milk line
c. tasseling
d. blister

17. How many acres are in one section?

a. 160 acres
b. 640 acres
c. 333 acres
d. 400 acres

18. Purple seed stain is a common disease found in which of the following crops?

a. corn
b. cotton
c. canola
d. soybeans
e. barley

19. In cool moist springs, the ergot fungus can infect the floret of certain grasses and develops a fruiting body, a hard dry sclerotium inside the husk of the floret. This blackish sclerotia mimics to some degree the grain produced by the grass crop. The most common grain infected and one that can impact bread making is which of the following?

a. Wild rice
b. Oats
c. Rye
d. Corn

20. Why is it important to spray preemergence herbicides before a rain or scheduled irrigation?

a. to decrease the chances of chemical runoff
b. to increase the rate of chemical breakdown
c. to decrease the rate of microbial activity
d. to move the herbicide into the weed germination zone

Using the following information answer the next five questions (21-25).
John, a farmer in Missouri, is planting a field of corn which measures 2026' by 1400'. He will use a no-till planter and apply fertilizer at the same time that he seeds the field using both a liquid broadcast sprayer mounted ahead of the planter and dry fertilizer placed in a band 2 inches to the side and 2 inches below the seed. The broadcast liquid fertilizer will be at a rate of 8 gallons per acre of 30% UAN (urea-ammonium nitrate solution with a density of 10.83 lbs/gallon and having 3.25 lb N/gallon) at a cost of $0.57/lb of nitrogen. His banded dry starter fertilizer is 11-52-0 that costs $600/ton and will be applied at 25 pounds per acre. He has a target population of 34,000 plants per acre for this irrigated corn field. His corn seed lot tested 90% germination guaranteed so he figures that he will need to plant 38,000 seeds per acre to ensure obtaining a final population of 34,000 plants/acre. A bag of corn contains 80,000 kernels.

21. How many acres are in the field John is planting?

a. 12.1
b. 35.9
c. 65.1
d. 75.6

22. How many total pounds of nitrogen did John apply during the seeding operation as broadcast liquid fertilizer plus banded dry fertilizer?

a. 2.75 lbs N/acre
b. 14.5 lbs N/acre
c. 26.0 lbs N/acre
d. 28.75 lbs N/acre

23. How many total pounds of phosphorus (P2O5) did John apply during the seeding operation?

a. 13.0 lbs P_2O_5/acre
b. 26.0 lbs P_2O_5/acre
c. 35.88 lbs P_2O_5/acre
d. 38.08 lbs P_2O_5/acre

24. What is the cost per acre of the total starter fertilizer package that John is applying during the seeding operation (broadcast and banded)?

a. $42.03/acre
b. $22.32/acre
c. $14.82/acre
d. $7.50/acre

25. How many bags of corn seed should John order from his local co-op? (Round up to the next whole bag if fractionally above a whole number.)

a. 31 bags
b. 28 bags
c. 25 bags
d. 34 bags

26. A definition of an annual plant is which of the following?

a. a plant that grows one year then flowers and reproduces the next
b. a plant that reproduces only by vegetative parts
c. a plant that grows, flowers and reproduces in one growing season
d. a plant that lives more or less indefinitely, keeps coming back each year

27. The fixation of nitrogen from the atmosphere occurs in which group of plants?

a. cereal grains such as wheat barley, oats
b. legumes such as clovers, peas, alfalfa, beans
c. vegetable crops such as carrots, squash, watermelon
d. oilseed crops such as canola

28. The release of a substance by one plant that is toxic to another plant is known by what term?

a. alleopathy
b. symbiosis
c. abiotic
d. autotrophic

29. You buy a 50-lb bag of fertilizer with a grade of 14-5-10. With respect to pounds of nutrients as represented by the bag's label, what did you buy?

a. 7 lbs of nitrogen (N), 2.5 lbs of P, and 10 lbs of K_2O
b. 14 lbs of N, 5 lbs of P_2O_5, and 10 lbs of K_2O
c. 7 lbs of N, 2.5 lbs of P, and 4.15 lbs of K_2O
d. 7 lbs of N, 2.5 lbs of P_2O_5, and 5 lbs of K_2O

30. Which soil structure would be typical for a good seed bed?

a. massive
b. platy
c. granular
d. blocky

31. Which of the following have chewing mouth parts?

a. aphids
b. earwigs
c. adult moths
d. leafhoppers

32. Of the following practices, which one is important to follow to insure the safety of pollinating bees?

a. avoid unnecessary insecticide use
b. use low hazard insecticide formulations
c. time spray application when bees are inactive.
d. all of the above

33. Carrots raised for seed are examples of what type of plant?

a. annuals
b. perennials
c. biennials
d. spring annuals

34. Lodging in grains tends to happen because a grower has applied an excess of which nutrient when growing conditions are good?

a. sulfur
b. potassium
c. phosphorous
d. nitrogen

35. Vernalization is a process some plants require to flower and produce seed. An example of a crop that needs vernalization is which of the following?

a. winter wheat
b. sweet corn
c. dent corn
d. cotton

36. Ginned cotton is cotton that has undergone what?

a. had the seed removed
b. boll opening
c. flowering
d. has had a defoliate applied

37. Seeding emergence is hindered by which of the following?

a. plow pans
b. deep clay layers
c. surface crusting
d. warm, wet weather

38. Some weeds show herbicide resistance because:

a. weeds are finding ways to reproduce in different methods
b. the same herbicide has been used year after year
c. more organic farming is taking place
d. their seeds live in the soil for many years

39. How are loess soils deposited?

a. wind
b. glaciers
c. water
d. equipment

40. Chlorosis can be defined as what?

a. failure of flowers to produce pollen
b. failure of roots to absorb water
c. shrinking or narrowing of the xylem
d. pale, yellow or bleached leaves

41. A crop of barley can best take up which of the following forms of nitrogen?

a. nitrite
b. atmospheric nitrogen
c. nitrate
d. 0-46-0

42. Which of the following characteristics is used to identify grass weed seedlings?

a. leaf arrangement
b. presence or absence of ligules
c. simple versus compound leaf
d. pubescence on the cotyledons

43. The method of applying P (phosphorus) that usually results in the most available P is what?

a. banded
b. broadcast
c. top dressed
d. broadcast following by disking

44. Which of the following is NOT one of the three sides of the disease development triangle?

a. environment
b. antigen
c. host
d. pathogen

45. Your soil test shows that you need 40 lbs of P2O5 per acre to produce the desired bushels of wheat per acre. If you are applying potassium phosphate (0-52-35), how many pounds of the fertilizer should you apply (Round up to the next highest whole number)?

a. 77
b. 73
c. 49
d. 83

46. In question 45, how many pounds of potassium (K2O) did you apply to the soil?

a. 35
b. 27
c. 22
d. 17

47. Which of the different stages of growth of a corn plant is most affected by drought?

a. cotyledon
b. rooting
c. dry down before harvest
d. reproductive

48. The apical stem on your canola crop has been slightly damaged by spray drift. It may regrow from what structure?

a. internodes
b. radicle
c. axillary buds
d. cotyledons

49. Which of the following soil types would best be described as formed from organic matter?

a. Histosols
b. Vertisols
c. Inceptisols
d. Vertisols

50. What is another description for the term rhizome?

a. tuber
b. crown
c. horizontal above ground stem
d. horizontal underground stem

Key for 2018 National FFA Agronomy CDE Written Test
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1. b
2. d
3. c
4. e
5. a
6. b
7. a
8. c
9. b
10. d
11. c
12. c
13. a
14. b
15. e
16. d
17. b
18. d
19. c
20. d
21. c
22. d
23. a
24. b
25. a
26. c
27. b
28. a
29. d
30. c
31. b
32. d
33. c
34. d
35. a
36. a
37. c
38. b
39. a
40. d
41. c
42. b
43. a
44. b
45. a
46. b
47. d
48. c
49. a
50. d