

The number of points (out of a total of 150) that each question is worth is indicated in parentheses. For multiple choice questions, provide the BEST answer. Answer essay and short answer questions thoroughly but concisely; extraneous information may be counted against you. Also, if you are asked to list, for example, three items, listing more than three items may be counted against you. Good luck!

1. (2) Your name: \_\_\_\_\_
2. (3) Compared to K-selected plants, r-selected plants
  - a. have shorter life cycles
  - b. are adapted to stable environments
  - c. have fixed population sizes
  - d. are more competitive on a per plant basis
3. (3) In seeds, abscisic acid
  - a. has an unknown function
  - b. promotes germination
  - c. monitors light quality
  - d. maintains dormancy
4. (3) Compounds involved in allelopathy are generally
  - a. comprised of amino acids
  - b. of small molecular weight
  - c. produced by primary metabolism
  - d. large and chemically complex
5. (3) What two species below were discussed in class as examples of crop mimics?
  - a. johnsongrass and field pennycress
  - b. field pennycress and barnyardgrass
  - c. falseflax and johnsongrass
  - d. falseflax and barnyardgrass
6. (3) Which of the following statements is FALSE?
  - a. Winter annuals often require vernalization to flower.
  - b. Biennials often require vernalization to flower.
  - c. Seeds of winter annuals often require vernalization to germinate.
  - d. Seeds of summer annuals often require stratification to germinate.
7. (3) The primary means of spread and survival for quackgrass is?
  - a. seeds
  - b. rhizomes
  - c. stolons
  - d. bulbs

8. (3) A plant that is monoecious
  - a. reproduces using apomixis
  - b. has male and female flowers on separate plants
  - c. has male and female flowers on the same plant
  - d. has flowers that contain both male and female organs
  
9. (3) Which of the following is the LEAST useful strategy for controlling parasitic weeds?
  - a. systemic herbicides
  - b. crop varieties resistant to the parasite
  - c. contact herbicides
  - d. preventative strategies such as quarantines
  
10. (3) According to the C, S, and R plant ecology theory, R plants are adapted to conditions of
  - a. high stress and low disturbance
  - b. high stress and high disturbance
  - c. low stress and low disturbance
  - d. low stress and high disturbance
  
11. (3) Functional allelopathy
  - a. is best illustrated by walnut trees
  - b. involves microbial activity
  - c. is used to designate proven allelopathy
  - d. is used to designate allelopathy in agronomic crops
  
12. (3) Under good growing conditions, a single female waterhemp plant could be expected to produce
  - a. 1000 seeds
  - b. 10,000 seeds
  - c. 1,000,000 seeds
  - d. 100,000,000 seeds
  
13. (3) The basic idea behind the ecological niche theory is that
  - a. plants must have high reproduction rates to be successful
  - b. plants are specialized to take advantage of particular habitats
  - c. plants must have seed dormancy to be persistent
  - d. plants will someday take over humans and rule the world
  
14. (3) A seed that does not germinate because it is in a dry environment has
  - a. no dormancy
  - b. innate dormancy
  - c. induced dormancy
  - d. enforced dormancy
  
15. (3) Germination will not occur until after-ripening if the seed
  - a. has enforced dormancy
  - b. has an immature embryo
  - c. contains a high concentration of phytochrome
  - d. has induced dormancy

16. (3) In the worldwide agricultural chemical market
- herbicides make up a minor component
  - herbicides and insecticides are about equal in terms of amounts used
  - herbicides and fungicides are about equal in terms of amounts used
  - herbicides exceed insecticides and fungicides combined in terms of amounts used
17. (3) Grass weeds in corn exhibit their competitive effects primarily through competition for
- nitrogen
  - light
  - CO<sub>2</sub>
  - O<sub>2</sub>
18. (3) Of the some 250,000 flowering plants, how many are considered major weeds?
- 50%
  - 25%
  - 10%
  - 1%
19. (3) Which of the following is true regarding the soil seed bank?
- the seed bank can be rapidly depleted with good management
  - deep burial of seeds will increase their longevity
  - frequent soil tillage will increase seed longevity
  - weed management decisions should not be hindered by seed bank considerations
20. (3) For Illinois corn and soybean production, the critical weed-free period typically
- is a relatively short period beginning after crop emergence
  - is a relatively short period beginning with crop planting
  - extends until seed set
  - begins with seed set
21. (3) Which of the following weeds would be expected to germinate earliest in the spring?
- fall panicum
  - giant ragweed
  - jimsonweed
  - common cocklebur
22. (3) Which of the following terms is LEAST similar in meaning to the word “biotype”?
- genotype
  - haplotype
  - ecotype
  - subspecies
23. (3) This parasitic weed is under quarantine in the Carolinas
- dodder
  - mistletoe
  - loosestrife
  - striga

24. (3) Herbicide resistance that is qualitative
- is controlled by multiple genes
  - is controlled by a single gene
  - is expressed at a low magnitude
  - is strongly influenced by the environment
25. (3) Two seeds within a common cocklebur fruit have different dormancies. This illustrates
- genetic variation
  - developmental plasticity
  - somatic polymorphism
  - cross-species hybridization
26. (3) An example of genetic diversity exhibited by field pennycress entailed
- prostrate vs. upright growth habits
  - dormant vs. non-dormant seeds
  - seed vs. vegetative reproduction
  - summer annual vs. winter annual life cycles
27. (3) A stolon is
- a below-ground stem capable of vegetative reproduction
  - an above-ground stem capable of vegetative reproduction
  - a thickened swelling at the end of a rhizome
  - another term for a rhizome
28. (3) Which of the following is most likely to promote genetic diversity
- vegetative reproduction
  - self pollination
  - monoecism
  - dioecism
29. (3) The first major case of herbicide resistance was resistance
- to glyphosate in waterhemp
  - to paraquat in velvetleaf
  - to atrazine in common groundsel
  - to 2,4-D in giant foxtail
30. (3) Stating that weeds have a “general-purpose genotype” is another way of saying
- they are genetically diversity
  - they have high developmental plasticity
  - they are widely outcrossed
  - they are highly inbred
31. (3) This weed, featured in “Alien Invasion,” reduced the property value of ranches out west.
- old world climbing fern
  - kudzu
  - purple loosestrife
  - leafy spurge

32. (3) Which of the following is the most competitive in soybean?
- giant ragweed
  - prickly sida
  - fall panicum
  - goosegrass
33. (3) An allelochemical
- is a synthetic herbicide
  - a plant compound that promotes seed germination
  - a chemical that induces parasitic weeds to germinate
  - a compound produced by a plant that inhibits the growth of another plant
34. (3) The type of competition experiment in which the overall density of two species is kept constant
- Nelder design
  - additive experiment
  - diallel design
  - replacement series
35. (3) As weed density increases, crop yield generally decreases
- linearly, and slowly reaches zero yield
  - linearly, and rapidly reaches zero yield
  - following a sigmoid (S-shaped) curve and slowly reaches zero yield
  - following a sigmoid (S-shaped) curve and rapidly reaches zero yield
36. (3) An obligate parasite
- contains chlorophyll
  - requires a living host for survival
  - does not require a living host for survival
  - does not reproduce by seed
37. (3) Common cocklebur biotypes that differ in their ability to reduce soybean yield are examples of
- genetic variation
  - development plasticity
  - somatic polymorphism
  - cross-species hybridization
38. (3) Anthropocentric means
- human centered
  - insect orientated
  - plant specific
  - weed related
39. (3) Attachment of parasitic weeds to their host occurs via \_\_\_\_\_.

40. (6) Compared to outcrossing, what are two advantages and one disadvantage that self pollination presents to a species.
41. (4) Weeds negatively impact us by causing crop yield losses. Name two other general ways, not related to crop yields, in which weeds negatively impact us.
42. (4) Besides biotic agents and the mechanism of forceful dehiscence, what are the two agents of seed dispersal?
43. (6) List three reasons why many Illinois farmers often control weeds at a level greater than what is needed to prevent significant yield loss.
44. (6) Besides direct physical effects and indirect effects such as acting as an alternate host for a disease, what are the three categories of plant interference?
45. (4) What are the four general fates of a seed after it is produced and falls to the soil?
46. (4) What is the significance of the number 4 in  $C_4$  photosynthesis (i.e., why is it called  $C_4$  photosynthesis)?