

The number of points 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. (3) Your name: \_\_\_\_\_
2. (3) According to the C, S, and R theory, C plants are adapted to conditions of
  - a. low stress and low disturbance
  - b. high stress and high disturbance
  - c. low stress and high disturbance
  - d. high stress and low disturbance
3. (3) A competition experiment in which the density of the crop is held constant and the density of the weed species varies is
  - a. a substitutive experiment
  - b. an additive experiment
  - c. a replacement series
  - d. a Nelder design
4. (3) Compared to K-selected plants, r-selected plants tend to have
  - a. longer generation times
  - b. higher reproduction rates
  - c. larger sizes
  - d. longer life spans
5. (3) An example of developmental plasticity is
  - a. flowering early in response to moisture stress
  - b. falseflax biotype with seed the same size as that of cultivated flax
  - c. qualitative herbicide resistance
  - d. quantitative herbicide resistance
6. (3) Which of the following does NOT use the C-4 photosynthetic pathway?
  - a. tall waterhemp
  - b. common cocklebur
  - c. johnsongrass
  - d. yellow nutsedge
7. (3) Which of the following is LEAST likely to increase genetic diversity?
  - a. vegetative reproduction
  - b. dioecy
  - c. cross-species hybridization
  - d. high seed production rates
8. (3) For which of the following two resources do crops and weeds most strongly compete?
  - a. nutrients and carbon dioxide
  - b. nutrients and oxygen
  - c. light and carbon dioxide
  - d. water and light

9. (3) A biotype refers to a
- closely related species
  - herbicide-tolerant species
  - herbicide-resistant species
  - genetic variant within a species
10. (3) A common parasitic weed of alfalfa is
- loranthacia
  - dimboa
  - dwarf mistletoe
  - dodder
11. (3) Which of the following is true in regards to distinguishing vegetative reproduction from rhizomes versus reproduction from roots?
- Underground reproductive structure for dicots is usually rhizomes, and for grasses is usually roots.
  - Rhizomes can be distinguished from roots by their presence of nodes and internodes.
  - Rhizomes are aboveground whereas roots are belowground.
  - Simple perennials reproduce from rhizomes, whereas creeping perennials reproduce from roots.
12. (3) Which of the following is NOT an implication of the niche concept?
- Weeds are generally more competitive than crop plants.
  - Monoculture cropping systems are destined to have weeds.
  - Species are specialized to occupy different habitats.
  - All of the above can be derived from the niche concept.
13. (3) From a biological perspective, weeds are those plants that tend to be
- persistent
  - competitive
  - capable of rapid spread
  - all of the above
14. (3) As weed density increases, crop yield generally decreases
- linearly, and rapidly reaches zero yield
  - following a sigmoid (S-shaped) curve, and rapidly reaches zero yield
  - linearly, and slowly reaches zero yield
  - following a sigmoid (S-shaped) curve, and slowly reaches zero yield
15. (3) Two hormones that play key roles in seed dormancy are
- abscisic acid and auxin
  - abscisic acid and gibberellin
  - auxin and gibberellin
  - phytochrome and gibberellin
16. (3) An example of common cocklebur genetic diversity presented in class is
- common cocklebur biotypes differ in their competitive ability
  - a common cocklebur biotype is resistant to glyphosate
  - the two seeds in a bur of common cocklebur have different levels of dormancy
  - common cocklebur biotypes in England bowling greens differ in their growth habits
17. (3) Which of the following parasitic weeds is under quarantine in the Carolinas?
- green mistletoe
  - striga
  - broomcorn
  - haustoria

18. (3) Which of the following is FALSE regarding the lack of adoption of weed economic thresholds by Illinois' farmers?
- It is hard to factor in the effect of weed escapes on the long-term impact to the soil seed bank.
  - Because of personal pride and landowner/tenant relationships, farmers often want weed-free fields.
  - Unpredictable weather conditions can make estimates of yield loss inaccurate.
  - The optimum net return is obtained with weed-free fields.
19. (3) Barnyardgrass that evolved to look like rice is an example of
- an agroecotype
  - developmental plasticity
  - a herbicide-resistant biotype
  - somatic polymorphism
20. (3) Which of the following is true regarding functional allelopathy?
- functional allelopathy is mediated via microbial degradation
  - functional allelopathy involves allelochemicals secreted by roots only
  - functional allelopathy involves allelochemicals secreted by shoots only
  - functional allelopathy is impossible to demonstrate
21. (3) The first widespread case of herbicide resistance was atrazine resistance in
- common groundsel
  - prickly pear
  - tall waterhemp
  - common cocklebur
22. (3) For which of the following weeds is vegetative reproduction LEAST important?
- multiflora rose
  - wild garlic
  - field bindweed
  - Canada thistle
23. (3) In general, the contribution of allelopathy to the negative effects exhibited by weeds
- is greater than the contribution of competition to the negative effects of most weeds
  - is largely unknown
  - is proven and well-documented for most weeds
  - is important only in very rare instances
24. (3) Which of the following weeds is not an alien species in the United States?
- kudzu
  - tall waterhemp
  - purple loosestrife
  - spotted knapweed
25. (3) For Illinois corn and soybean production, the critical weed free period
- only lasts a few weeks
  - lasts most of the season
  - begins a few weeks before planting
  - ends at the time of crop emergence
26. (3) The most important step to proving allelopathy is
- documenting a negative plant-plant interaction
  - verifying that the allelopathic plant survives its own allelochemical
  - reproducing the phytotoxic effect with the identified allelochemical at the concentration at which it is present in the soil
  - determining the chemical composition of the allelochemical

27. (3) The “K” in K-selected plants refers to
- the rate of reproduction
  - the rate of mortality
  - the key of life
  - the carrying capacity of the environment
28. (3) From an anthropocentric definition, weeds are defined as
- plants that are highly competitive and persistent
  - plants that are adapted to unstable environments
  - plants growing where they are not wanted
  - plants that reproduce vegetatively
29. (3) Allelochemicals are usually
- inorganic molecules
  - simple compounds with low molecular weights
  - simple compounds produced by primary metabolism
  - complex compounds produced by secondary metabolism
30. (3) Winter annuals and biennials may require this to promote flowering.
- polyploidization
  - hibernation
  - stratification
  - vernalization
31. (3) A hemiparasite
- is a facultative parasite
  - depends on the host for water and nutrients
  - depends on the host for fixed carbon
  - does not contain chlorophyll
32. (3) A weed species with a high “competitive effect” would
- compete with itself but not with the crop
  - compete with the crop but not with itself
  - use resources efficiently
  - use resources luxuriously
33. (3) Commercialization of herbicide resistant crops such as Roundup-Ready soybean began in the mid
- 1960s
  - 1970s
  - 1980s
  - 1990s
34. (3) Match each of the following three terms with the appropriate description.
- |                       |                                                        |
|-----------------------|--------------------------------------------------------|
| a. ____ monoecious    | 1. flowers contain both male and female organs         |
| b. ____ dioecious     | 2. distinct male and female flowers on the same plant  |
| c. ____ hermaphrodite | 3. distinct male and female flowers on separate plants |
35. (6) What is the difference between “plant interference” and “plant competition”?

36. (4) Besides biotic intervention (e.g., humans, animals, birds) and forceful dehiscence, what are the two major agents of seed dispersal?
37. (4) In terms of their growth morphology, what is characteristic of biennials?
38. (8) What are the four fates of seed?
39. (6) Besides direct effects and indirect effects, what are the three types of plant interference?
40. (8) How does tillage influence the soil seed bank?
41. (15) We spent a fair amount of time in lecture discussing the evolutionary history and ecology of weeds. Specifically, we stated that weeds are “ruderal” or “r-selected” plants. In an essay format (i.e., in a well-thought and well-written paragraph or two) describe how the knowledge of “weeds are ruderal plants” can be extended to weed management.