

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. (3) Your name: _____
2. (3) K-selected plants
 - a. have short life spans
 - b. have high allocations to reproduction
 - c. are adapted to stable environments
 - d. have rapid growth rates
3. (3) Allelopathy could be used to manage weeds via
 - a. the use of certain cover crops
 - b. the use of allelochemicals as leads for new herbicides
 - c. genetically modifying crops to produce allelochemicals
 - d. all of the above
4. (3) Two seeds within the fruit of common cocklebur that have different dormancy is an example of
 - a. developmental plasticity
 - b. somatic polymorphism
 - c. genetic diversity
 - d. apomixis
5. (3) What statement is true regarding the relationship of crop yield and weed density.
 - a. yield decreases linearly with increasing weed density
 - b. yield decreases drastically even with extremely low weed densities
 - c. yield typically does not go to zero even with very high weed densities
 - d. yield increases in a step-wise fashion as weed density increases
6. (3) Defined from an ecological perspective, weeds are
 - a. any plant growing where they are not wanted
 - b. plants adapted to unstable environments
 - c. plants that are competitive, persistent, and widely adapted
 - d. plants that are parasitic or allelopathic
7. (3) Functional allelopathy
 - a. designates allelopathy in agronomic crops
 - b. designates allelopathy in natural ecosystems
 - c. involves allelochemicals that are volatile
 - d. is mediated by microbial activity
8. (3) Rubisco is a
 - a. 4-carbon sugar
 - b. 3-carbon sugar
 - c. plant hormone
 - d. enzyme

9. (3) Invasive weeds are often successful in their new range because
 - a. they exhibit high genetic diversity
 - b. they exhibit low developmental plasticity
 - c. they are displaced by native plants
 - d. they are released from their natural pests

10. (3) Which of the following statements is true?
 - a. Biennials require stratification to flower.
 - b. Summer annuals germinate in the fall and flower in the summer.
 - c. Winter annuals flower in the spring.
 - d. All creeping perennials have stolons.

11. (3) Herbicide resistance controlled by a recessive allele is most likely to evolve in
 - a. an outcrossing weed
 - b. a self-pollinated weed
 - c. a creeping perennial
 - d. a simple perennial

12. (3) The niche concept suggests that
 - a. weeds will be strong competitors
 - b. weeds will be very persistent
 - c. plant species are genetically diverse
 - d. plants are specialized

13. (3) Considering weeds as ruderals, a primary factor contributing to their competitiveness with crops is
 - a. their stable population sizes
 - b. their high reproductive outputs
 - c. their ability to tolerate stress
 - d. their long life cycles

14. (3) The first major case of herbicide resistance was triazine resistance in
 - a. velvetleaf
 - b. smooth pigweed
 - c. common groundsel
 - d. common cocklebur

15. (3) In terms of plant competition, the most limiting resource in grass crops is often
 - a. oxygen
 - b. nitrogen
 - c. micronutrients
 - d. carbon dioxide

16. (3) That different accessions of common cocklebur exhibit different levels of competition with soybean is an example of
 - a. developmental plasticity
 - b. somatic polymorphism
 - c. polyploidy
 - d. genetic diversity

17. (3) Which of the following is an example of a weed “species shift”?
- an increase in the prevalence of tropical spiderwort due to increased use of glyphosate
 - the rapid evolution of herbicide-resistant biotypes of waterhemp
 - an increase in the competitive ability of common cocklebur
 - the selection of both summer annual and winter annual forms of field pennycress
18. (3) This species can reproduce via the production of aerial bulblets
- purple loosestrife
 - leafy spurge
 - wild garlic
 - saltcedar
19. (3) Approximately what percentage of all flowering plants are widely considered problematic weeds?
- 1%
 - 5%
 - 10%
 - 20%
20. (3) Allelochemicals
- can convert a gene to a different allele
 - are hypothesized to exist, but have not yet been identified
 - are diverse and complex molecules
 - are products of primary metabolism
21. (3) Abscisic acid
- is a plant hormone that promotes dormancy
 - is a plant hormone that promotes germination
 - is a plant pigment that promotes dormancy
 - is a plant pigment that promotes plasticity
22. (3) This herbicide is credited as ushering in the modern age of organic herbicides
- glufosinate
 - ALS inhibitors
 - sulfonylurea
 - 2,4-D
23. (3) Economic treatment thresholds are not as widely used in weed science as in other pest disciplines because
- the effectiveness of a particular herbicide is largely unknown
 - farmers are willing to tolerate more yield loss from weeds than from other pests
 - in most fields weeds exceed the threshold so some treatment is almost always needed
 - all of the above
24. (3) An agroecotype of this species evolved to look like rice and thereby avoid hand weeding
- johnsongrass
 - barnyardgrass
 - pearl millet
 - annual bluegrass

25. (3) Parasitic weeds
- do not exist in the U.S.
 - do not have chlorophyll
 - are extremely severe weed problems in some under-developed countries
 - all of the above
26. (3) The critical weed free period
- is determined from replacement series experiments
 - in soybean, lasts only a relatively short period of time
 - in corn, typically lasts until pollination
 - can occur only between planting and seed set
27. (3) A seed that does not germinate when placed in a favorable environment (adequate moisture and temperature) immediately after release from its parent has this type of dormancy
- induced
 - innate
 - secondary
 - enforced
28. (3) Which of the following weeds germinates very early in the spring?
- kochia
 - morningglory
 - jimsonweed
 - fall panicum
29. (3) An ecotype is a term used to describe
- species adapted to different ecological conditions
 - genetically identical individuals found in diverse environments
 - genetically diverse individuals of a species
 - species adapted to different niches
30. (3) According to the C, S, and R theory, S plants are adapted to environments of
- high stress and low disturbance
 - high stress and high disturbance
 - low stress and low disturbance
 - low stress and high disturbance
31. (3) Weeds exhibit high development plasticity, which means
- weeds are genetically diverse
 - weed species have diverse reproductive strategies
 - weeds are competitive with crops throughout their development
 - weeds alter their growth to maximize reproductive output
32. (3) Weeds negatively impact humans via which of the following effects?
- health
 - economic
 - aesthetic
 - all of the above

33. (3) This invasive weed, described in the article, Alien Invasion, is wreaking havoc in the Florida Everglades.
- leafy spurge
 - spotted knapweed
 - old world climbing fern
 - salt cedar
34. (3) Regarding plant interference, which of the following statements is true?
- Competition means the same thing as plant interference.
 - Plant interference is always detrimental to one of the plants.
 - Plants interfere with each other when they have to share limited resources.
 - Competition is usually a minor component of plant interference.
35. (3) P_{fr}
- emits far-red light
 - absorbs red light
 - has an absorption peak that overlaps with that of chlorophyll
 - promotes germination
36. (3) A plant that uses resources efficiently
- will create highly competitive conditions
 - will compete well under competitive conditions
 - is unlikely to be a weed
 - is likely to exhibit allelopathy
37. (3) An experiment in which the density of one species is constant and the density of a second species changes is
- a replacement series
 - an additive experiment
 - a method for study allelopathy
 - a negative interference experiment
38. (3) A self-pollinated species is expected to have
- high variability within populations and high variability among populations
 - high variability within populations and low variability among populations
 - low variability within populations and high variability among populations
 - low variability within populations and low variability among populations
39. (3) Short-day plants
- are induced to flower by long nights
 - germinate when the days get shorter
 - produce dormant seed under short-day conditions
 - usually are winter annuals
40. (8) Match the following parasite with its description
- | | |
|---------------|---------------------------------------|
| ___ broomrape | a. hemiparasite of pine and nut trees |
| ___ witchweed | b. root parasite of vegetable crops |
| ___ mistletoe | c. stem parasite of legume crops |
| ___ dodder | d. root parasite of grass crops |

41. (6) What is a “simple perennial”?
42. (4) According to the course web pages about the soil seed bank, what does Dr. Tranel wish would behave more like the soil seed bank?
43. (6) Describe what is meant by a genetic “bottleneck”?
44. (6) Compare the meanings of the following three terms:
- a. monoecious
 - b. hermaphroditic
 - c. dioecious
45. (6) List the four agents/mechanisms of seed dispersal