

AP Biology Summer Assignment

Unit 7 Ecology Chps. 40-43

Chp. 40

Define:

1. Abiotic:
2. Biotic:
3. Biomes:
4. Demography:
5. Exponential population growth:
6. Logistic population growth:
7. Carrying capacity:
8. Population dynamics:

Matching:

- | | |
|--|-----------------|
| _____ 9. Climate at the global, regional, and landscape levels | a. exponential |
| _____ 10. Age-specific summaries of the survival pattern of a population | b. ZPG |
| _____ 11. Population growth that occurs at a constant rate | c. community |
| _____ 12. Occurs when the per capita birth and death rates are equal | d. macroclimate |
| _____ 13. A group of individuals of the same species living in an area | e. life tables |
| _____ 14. An event that changes a community | f. disturbance |
| _____ 15. A group of populations of different species in an area | g. population |

Short answer:

16. Describe the relationship between the abiotic and biotic factors within an ecosystem.

17. Why can't a population maintain exponential growth indefinitely?

Solve:

Using the formula in table 40.2 (pg. 837), calculate the growth rate for the following population:

18. $r_{\max} = 1.0$ and $k = 1,500$, population size (N) = 1,200 _____

Chp. 41

Define:

1. Competitive exclusion:
2. Symbiosis:
3. Mutualism:
4. Biomass:
5. Trophic structure:
6. Keystone species:
7. Primary succession:
8. Secondary succession:
9. Pathogens:

Fill-in:

10. _____ is an interspecific interaction in which one organism derives its nourishment from another organism.
11. Another term for camouflage is _____.
12. The _____ of an organism is the specific set of biotic and abiotic resources that are used in its environment.
13. The transfer of food energy up trophic levels from producers to consumers is called a _____.
14. A _____ is an event, such as a storm, fire, drought, or human activity, that changes a community.
15. _____ are parasites that spread zoonotic diseases.
16. Organisms that have become established outside their native range are considered _____.

Short answer:

17. Distinguish between a food chain and a food web.
18. Use the symbols + and – to indicate how each interspecific interaction affects the survival and reproduction of the two species engaged in the interaction. Ex. ++ or +/-
- Herbivory: _____ Mutualism: _____ Predation: _____
- Commensalism: _____ Parasitism: _____ Interspecific competition: _____
19. Discuss the two components of species diversity within a community.

Self Quiz Chps. 40 & 41:

- _____ 1. The number of individuals in a given area or volume of a habitat is
- The population density
 - The population growth
 - The population birth rate
 - The population size
- _____ 2. _____ are any essential resources that are in short supply for a population
- Density-independent factors
 - Extrinsic factors
 - Limiting factors
 - Intrinsic factors
- _____ 3. An interaction in which both species benefit is best described as _____
- Commensalism
 - Mutualism
 - Predation
 - Parasitism
- _____ 4. _____ is represented by foxtail grass, mallow plants, and smartweed because their root systems exploit different areas of the soil in a field.
- Succession
 - Resource partitioning
 - A climax community
 - A disturbance
- _____ 5. Density –independent factors
- Tend to maintain a population around the carrying capacity
 - Are involved in the population cycles seen in some mammals
 - Are important in the regulation of K-selected populations
 - Include climatic events and habitat disruptions
- _____ 6. When one species was removed from a tidepool, the species richness became significantly reduced. The species removed was probably
- A strong competitor
 - A potent parasite
 - A resource partitioner
 - A keystone predator

Chp. 42

Define:

1. Ecosystem:
2. Producers:
3. Consumers:
4. Decomposers:
5. Limiting nutrient:
6. Trophic efficiency:
7. Biogeochemical cycles:
8. Bioremediation:
9. Biological augmentation:

Matching:

- | | |
|--|----------------------------|
| _____ 10. Uses organisms to add essential materials to a degraded system | |
| _____ 11. Carnivores that eat other carnivores | a. ecosystem |
| _____ 12. Nonliving organic material | b. GPP |
| _____ 13. The reduction in oxygen content and clarity of water | c. eutrophication |
| _____ 14. The % of energy stored in assimilated food that is not used for respiration | d. tertiary consumers |
| _____ 15. The amount of energy from light converted to the chemical energy of organic molecules per unit of time | e. production efficiency |
| _____ 16. The sum of all the organisms living in a given area and the abiotic factors with which they interact. | f. detritus |
| | g. biological augmentation |

Short answer:

17. Why do most food chains rarely exceed more than 4 trophic levels?

18. In which natural ecosystem do nutrients cycle the fastest? Why?

19. Summarize the carbon cycle discussing all the key processes involved.

20. Explain the Gaia hypothesis as proposed by James Lovelock.

Chp. 43:

Define:

1. Endangered species:

2. Introduced species:

3. Overharvesting:

4. Biological magnification:

5. Greenhouse effect:

6. Sustainable development:

7. Ecological footprint:

8. Critical load:

Matching:

- | | |
|---|----------------------|
| _____ 9. Pesticide that prevents calcium deposition in bird eggshells | |
| _____ 10. Greenhouse gas released from the burning of fossils | a. habitat loss |
| _____ 11. A narrow strip of habitat connecting otherwise isolated patches | b. CO ₂ |
| _____ 12. Minimal population size at which a species is able to sustain its numbers | c. DDT |
| _____ 13. The single greatest threat to biodiversity | d. MVP |
| _____ 14. Type of population growth exhibited by human population after the industrial revolution | e. overharvesting |
| | f. exponential |
| _____ 15. The removing of wild organisms at rates exceeding the ability of their populations to rebound | g. movement corridor |

Short answer:

16. Explain the relationship between the amount of atmospheric CO₂ and global mean temperature. Why and how much have CO₂ levels changed the last 150 years?

17. Discuss the process of biological magnification of toxins in food chains. Use PCB's or DDT as examples in your discussion.

18. Why should humans be concerned about the loss of biodiversity?

19. What happens when a population drops below a minimum viable population?

Self Quiz: Chps. 42&43

- _____ 1. DDT will be most concentrated in
- Producers
 - Primary consumers
 - Tertiary consumers
 - All of these are correct
- _____ 2. Which of the following organisms and trophic levels is mismatched?
- Algae---producer
 - Phytoplankton---primary consumer
 - Earthworm---decomposer
 - Bobcat---secondary consumer
- _____ 3. In the carbon cycle, carbon enters the atmosphere through _____
- Carbon dioxide fixation
 - Respiration, burning, and volcanic eruptions
 - Oceans and accumulation of plant biomass
 - Release of methane
- _____ 4. In a natural community, the primary consumers are _____
- Herbivores
 - Carnivores
 - Scavengers
 - Decomposers
- _____ 5. The members of feeding relationships are structured in a hierarchy, the steps of which are called _____.
- Organism level
 - Energy source level
 - Eating level
 - Trophic levels
- _____ 6. The finding of harmful levels of DDD in grebes (fish-eating birds) in Clear Lake, California, following years of trying to eliminate bothersome gnat populations, is an example of
- Eutrophication
 - Biological magnification
 - The biomass pyramid
 - Chemical cycling
 - Increasing resistance to pesticides