

Ecology Practice Questions

1. Which of the following would be most likely to exhibit uniform dispersion?
 - A. red squirrels, which hide food and actively defend territories
 - B. cattails, which grow primarily at edges of lakes and streams
 - C. dwarf mistletoes, which parasitize particular species of forest trees
 - D. tassel-eared squirrels, which are nonterritorial
 - E. lake trout, which seek out deep water

2. Which of the following characterizes relatively *K*-selected populations?
 - A. offspring with a relatively good chances of survival
 - B. many offspring per reproductive episode
 - C. very small offspring
 - D. a high intrinsic rate of increase

3. In general, the total biomass in a terrestrial ecosystem will be greatest for which trophic level?
 - A. producers
 - B. herbivores
 - C. primary consumers
 - D. secondary consumers

4. Starting from a single individual, what is the size of a population of bacteria that reproduce by binary fission every 20 minutes at the end of a 2-hour time period? (Assume unlimited resources and no mortality.)
 - A) 18
 - B) 64
 - C) 128
 - D) 256

5. Which of the following causes populations to shift most quickly from an exponential to a logistic population growth?
 - A) increased birth rate
 - B) removal of predators
 - C) decreased death rate
 - D) competition for resources
 - E) favorable climatic conditions

6. How are matter and energy used in ecosystems?

- a. Matter is cycled through ecosystems; energy is not.
- b. Energy is cycled through ecosystems; matter is not.
- c. Energy can be converted into matter; matter cannot be converted into energy.
- d. Matter can be converted into energy; energy cannot be converted into matter.
- e. Matter is used in ecosystems; energy is not

7. Which of the following would be most significant in understanding the structure of an ecological community?

- a. determining how many species are present overall
- b. determining which particular species are present
- c. determining the kinds of interactions that occur among organisms of different species
- d. determining the relative abundance of species
- e. determining how many species are present overall, which particular species are present, the kinds of interactions that occur among organisms of different species, and the relative abundance of species

8. Approximately how many kg of secondary consumer biomass can be supported by a field plot containing 1,000 kg of plant material?

- a. 10,000
- b. 1,000
- c. 100
- d. 10
- e. 1

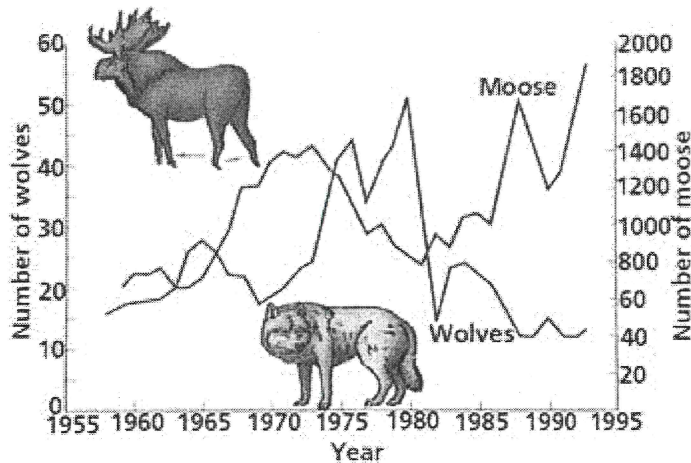
9. Elephants are not the most dominant species in African grasslands, yet they influence community structure. The grasslands contain scattered woody plants, but they are kept in check by the uprooting activities of the elephants. Take away the elephants, and the grasslands convert to forests or to shrublands. The newly growing forests support fewer species than the previous grasslands. Which of the following describes why elephants are the keystone species in this scenario?

- a. Essentially all of the other species depend on the presence of the elephants to maintain the community.
- b. Grazing animals depend upon the elephants to convert forests to grassland.
- c. Elephants prevent drought in African grasslands.
- d. Elephants are the biggest herbivore in this community.
- e. Elephants help other populations survive by keeping out many of the large African predators.

10. Consider the food chain grass --> grasshopper --> mouse --> snake --> hawk. How much of the chemical energy fixed by photosynthesis of the grass (100%) is available to the hawk?

- a. 0.01%
- b. 0.1%
- c. 1%
- d. 10%
- e. 60%

11. The following graph shows the population of the North American Moose and the Eastern Canadian Wolf in Isle Royale National Park between 1955 and 1995. Both species are well adapted to their own environments and are very successful at finding food, especially in the cold Michigan winters. These winters can be brutally cold, sometimes with temperatures reaching -35°C . However, the thick coats of both of the animals keep them warm throughout the winter.



Based on the graph, which is the most likely ecological relationship between the North American Moose and the Eastern Canadian Wolf?

- A) Mutualism: both animals have different niches and together prevent the Canadian Lynx from becoming too populous in the Isle Royale National Park and taking resources for the Moose and Wolves.
- B) Predation: the moose overpower the wolves and eat them for food.
- C) Commensalism: the wolves prey on the moose and in return keep the moose population from growing so large that they exhaust all the food in the area.
- D) Predation: the wolves prey on the moose and depend on them for food.

12. A bacterial colony that exists in an environment displaying ideal conditions will display which of the following growth patterns?

- a. Logistic growth
- b. Intrinsic growth
- c. Demographic growth
- d. Exponential growth

13. Which of the following interspecific interactions represents a form of interaction different from the others?

- a. A tick on a human
- b. Deer browsing on shrubs
- c. A honeybee pollinating apple blossoms
- d. A deadly bacterium and its host

14. When one species was removed from a tide pool, the species richness became significantly reduced. The removed species was probably

- a. The species with the greatest biomass
- b. A potent parasite
- c. The species with the highest relative abundance
- d. A keystone species

15. Which of the following would not be a density-dependent factor limiting a population's growth?

- a. Increased predation by a predator
- b. A limited number of available nesting sites
- c. A stress syndrome that alters hormone levels in individuals
- d. A very early fall frost

16. A Type I survivorship curve is level at first, with a rapid increase in mortality in old age. This type of curve is:

- a. Typical of many invertebrates that produce large numbers of offspring
- b. Typical of large mammals
- c. Found most often in r-selected populations, which have a rapid rate of reproduction
- d. Almost never found in nature.

17. A species' specific use of the biotic and abiotic factors in an environment is collectively called the species'

- a. Habitat
- b. Trophic level
- c. Ecological niche
- d. Partition

18. A fire cleared a large area of forest in Yellowstone National Park in the 1980s. When the first plants pioneered this burned area, this was an example of

- a. Primary succession
- b. Secondary succession
- c. Biological evolution
- d. A keystone species

19. Which of the following is the most probable sequence of events when fertilizer runoff reaches the bay?

- a. Submerged vegetation increases, more food for fish and shellfish, fish and shellfish populations and increases
- b. Phytoplankton population increases, more food for fish and shellfish, fish and shellfish population increase
- c. Phytoplankton population increases, sunlight blocked to submerged vegetation, submerged vegetation dies, fish and shellfish populations decrease
- d. Submerged vegetation decreases, fish and shellfish feed on decaying plants, phytoplankton feed on fish and shellfish, commercial fisheries decline

- 1. A
- 2. A
- 3. A
- 4. B
- 5. D
- 6. A
- 7. C
- 8. D
- 9. A
- 10. A
- 11. D
- 12. D
- 13. C
- 14. D
- 15. D
- 16. B
- 17. C
- 18. B
- 19. c