Biology Chapter 4 Test: Population Ecology

True/False
Indicate whether the statement is true or false.

_____ 1. To determine how many members of a population are in a given area, an ecologist would study the population's dispersion.

_____ 2. Density-dependent limiting factors have the strongest influence on a population's growth rate when the population is small and widely spread over an area.

_____ 3. In the lag stage of a logistic growth curve, the population size increases slowly, but resource use is exponential.

_____ 4. The study of demographics helps to predict changes in the human population.

_____ 5. The human population growth rate has always increased.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 6. Density, distribution, and growth rate are characteristics used to classify which one of the following?
  a. biomes
  b. populations
  c. limiting factors
  d. age structure

_____ 7. Which of the following does *not* affect the spatial distribution of a population?
  a. the carrying capacity of a population
  b. the distribution of food and other resources
  c. abiotic conditions like rainfall and sunlight
  d. the existence of predators or parasites

_____ 8. Which of the following involves a situation in which a density-dependent factor influences a population?
  a. Several seasons passed during which rainfall was ample, winters were not severe and food for snow hares was in good supply.
  b. A hurricane severely disrupted a salt marsh and uprooted most of the marsh grass in an estuary.
  c. A forest fire on the north side of a mountain forced the white-tailed deer from the north side to move into the range of the white-tailed deer on the south side of the mountain, making food more scarce.
  d. After a heavy rain, pesticides that were applied to a cotton crop to control weevils ran off into a waterway that flows next to a field.

_____ 9. On ten acres of native forest there are eight white-tailed deer, seven coyotes, 45 armadillos, and 231 loblolly pine trees. Which population has the highest density?
  a. white-tailed deer
  b. coyotes
  c. armadillos
  d. loblolly pine trees

_____ 10. American bison, which are large grazing mammals, are most often found clumped in small groups. What might you infer about the spatial distribution of American bison?
  a. A clumped group provides better protection from predators.
  b. A clumped group attracts more prey.
  c. A clumped group can graze a larger area.
  d. A clumped group takes better advantage of water resources.

_____ 11. A flowering plant has seeds that are carried by the wind. Infer the most likely dispersion pattern of the plants that grow from these seeds.
    a. uniform
    b. clumped groups
    c. random
    d. spatial

_____ 12. Which of the following statements is correct?
    a. Population size of predators increases when their prey is scarce.
    b. Competition for resources is density-independent when food is plentiful.
    c. Disease is density-dependent because transmission occurs more easily when a population is large.
    d. A change in average temperature is a density-dependent factor because fewer organisms can acclimate to variations in temperature.

_____ 13. Young adult male chimpanzees look for mates outside their own population. The males then take the females back to their group. Which of the following occurs in females' original population?
    a. emigration
    b. immigration
    c. mortality
    d. natality

_____ 14. To assess a population's growth rate, an ecologist must know how many individuals are born, how many died, and how many move away in a given period of time. What else must an ecologist know?
    a. how many individuals find mates
    b. how many individuals move in from somewhere else
    c. how many individuals carry communicable diseases
    d. how many individuals are young or old

_____ 15. You are an ecologist collecting data about the declining growth rate of the critically endangered Philippine eagle. The eagles' only known population is estimated to have about 350–650 individuals. Which of the following can you assume is zero?
    a. natality
    b. mortality
    c. emigration
    d. immigration

_____ 16. A population's emigration in one month totaled three individuals. During the same period, immigration was 17 individuals. Natality was 12, and mortality was 26 due to a parasite infection. What was the net effect on the population size?
    a. −14
    b. 0
    c. +12
    d. +26

_____ 17. How does the logistic model of population growth differ from the exponential model?
    a. The exponential model shows a restricted growth rate.
    b. The logistic model considers the environment's carrying capacity.
    c. The graph of the exponential model is S shaped.
    d. The graph of the logistic model has a longer lag phase.

_____ 18. A fruit fly that has a short life span and produces many offspring can be classified into which reproductive strategy?
    a. r-strategist
    b. k-strategist
    c. a carrying-capacity strategist
    d. a logistic strategist

_____ 19. Which characteristic is typical of a k-strategist?
    a. short life span
    b. generally a small organism
    c. produces many offspring
    d. lengthy parental care

_____ 20. Agriculture led to an increase in the size of the human population. Which of the following was the most important impact of agriculture on the human population size?
   a. It stabilized and increased available food supplies.
   b. It made people better able to resist disease.
   c. It reduced accidental deaths from hunting.
   d. It decreased the negative impacts of storms.

_____ 21. Which of the following methods might be used to decrease the rate of approach to carrying capacity by the developed world?
   a. increase birthrate
   b. decrease death rate
   c. decrease resource use
   d. decrease emigration

_____ 22. What is likely to be true of a population with an age structure that is pyramid shaped?
   a. It is expected to grow slowly in the future.
   b. It is expected to decline in population size over time.
   c. It has potential for rapid growth in the future.
   d. This age structure is characteristic of zero population growth.

_____ 23. Which event is correlated with the beginning of exponential growth in human population?
   a. the start of the Industrial Revolution
   b. the invention of agriculture
   c. the bubonic plague epidemic
   d. the end of the Second World War

_____ 24. Which change describes a demographic transition?
   a. a population moves from a high birthrate and death rate to a high birthrate and low death rate
   b. a population moves from a high birthrate and low death rate to a low birthrate and death rate
   c. a population moves from a low birthrate and death rate to a low birthrate and high death rate
   d. a population moves from a high birthrate and death rate to a low birthrate and low death rate

_____ 25. A demographer is investigating various populations to find out how they use resources. She wants to select the population that uses most resources per individual. Which population should she choose for her study?
   a. the population of a industrially developed country
   b. the population of a South American indigenous people
   c. the population of a developing country with a high birthrate
   d. the population of an agricultural society with a low death rate