Modified True/False

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

T____ 1. Ecologists call the physical location of a community its habitat. __________________________

T____ 2. The number of species living within an ecosystem is a measure of its biodiversity. __________________________

F____ 3. Ecosystems include only the biotic factors in an area. BIOTIC AND ABIOTIC

T____ 4. Succession after a glacier retreat includes soil formation. __________________________

T____ 5. Succession takes place in an area after there has been a disturbance of the natural environment, such as a forest fire. __________________________

F____ 6. The bottom of a food chain is occupied by consumers. PRODUCERS

F____ 7. Producers absorb energy from organisms by breaking down dead tissues. DECOMPOSERS

F____ 8. Producers in an ecosystem transfer all of their energy to first-level consumers. 10%

Short Answer – RESPONSE IN COMPLETE SENTENCES!

9. What does a community include? ALL OF THE SPECIES OF ORGANISM THAT LIVE IN A SPECIFIC AREA

10. Define a trophic level. GROUP OF ORGANISMS WHO’S ENERGY SOURCE ARE THE SAME ENERGY LEVEL AWAY FROM THE SUN

11. List the levels of organization in ecology starting with an individual and moving upwards to the largest category?

INDIVIDUAL, POPULATION, COMMUNITY, ECOSYSTEM, BIOME, BIOSPHERE

12. What is a food web? INTERRELATED FOOD CHAINS

13. A food chain usually begins with what group of organisms? PRODUCERS

14. The first plants to appear during succession are known as? PIONER SPECIES, SMALL, FAST GROWING

15. Organisms living in a community and all the physical parts of its environment make up a(n)? ECOSYSTEM

16. Describe what types of organisms are found in the
First trophic level: PRODUCERS
Second trophic level: HERBIVORE
Third trophic level: OMNIVORE/CARNIVORE

17. How many trophic levels are usually in an energy pyramid? (hint: same as the number in a food chain)

Typically THREE, max 4 or 5, BECAUSE NOT ENOUGH ENERGY TO EXTEND THE CHAIN USUALLY BEYOND 3

17b. How much energy is lost between each trophic level? __90%____
17c. How much is passed along to the next trophic level? __10%____

18. What is the difference between abiotic and biotic?

ABIOTIC IS NONLIVING AND BIOTIC IS LIVING FACTORS IN ECOSYSTEM

19. Describe the roles of plant and animals in the carbon and oxygen cycles.

Plants use the carbon dioxide in the atmosphere to build organic molecules during the process of photosynthesis, which releases oxygen into the environment. Plants and animals use this oxygen to break down organic molecules, which releases energy and carbon dioxide. Then, plants use the carbon dioxide to go through photosynthesis.

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

D____20. Biodiversity is the number of species
   a. of animals living within an ecosystem.
   b. of plants and fungi living within an ecosystem.
   c. of bacteria and protists living within an ecosystem.
   d. living within an ecosystem.

A____21. The plants that first grow on an island formed by a volcano are part of a progression called
   a. succession.
   b. productivity.
   c. competition.
   d. equilibrium.

Questions 22–25 refer to the figure at right.

C____22. The algae are
   a. decomposers.
   b. consumers.
   c. producers.
   d. herbivores.

B____23. The krill are
   a. decomposers.
   b. consumers.
   c. producers.
   d. herbivores.
A 24. This figure is called a
   a. food chain.
   b. food web.
   c. pyramid of energy.
   d. trophic level.

C 25. The most likely reason that this figure shows only five levels is that
   a. pollution probably destroyed all of the higher levels.
   b. no other organisms are powerful enough to kill and eat the killer whale.
   c. too much energy is lost at each level to permit more levels.
   d. there is not enough energy initially present at the first level.

B 26. The process of succession varies depending on
   a. the plant species involved.
   b. initial environmental conditions and chance.
   c. pioneer species.
   d. competition between species.

C 27. Grizzly bears, snakes, and worms can be members of the same
   a. species.
   b. trophic level.
   c. ecosystem.
   d. None of the above.

A 28. All the organisms that live in a particular place and the physical aspects of that
   place make up a(n)
   a. ecosystem.
   b. habitat.
   c. community.
   d. food chain.

B 29. The number of species living in an ecosystem is referred to as
   a. succession.
   b. biodiversity.
   c. the food chain.
   d. productivity.

B 30. The most important abiotic factor for the organisms in an ecosystem is
   a. climate.
   b. sun.
   c. weather.
   d. water.

D 31. In a typical succession initiated by a retreating glacier,
   a. pioneer plants precede trees.
   b. the first plants contribute to soil formation.
   c. it takes many years for trees to be able to thrive.
   d. all of the above

A 32. Every time energy is transferred in an ecosystem, potential energy is lost
   a. as heat.
   b. due to weather.
   c. because some animals die.
   d. when it is recycled back to producers.
*** Make sure you can draw a food web correctly!

**Populations**

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

C____ 1. In the exponential model of population growth, the growth rate
   a. remains constant.  
   b. declines.  
   c. increases.  
   d. rises and falls.

D____ 2. The most important element of population growth is
   a. immigration.  
   b. emigration.  
   c. death rate.  
   d. birthrate.

A____ 3. Most density-dependent factors that affect population growth are
   a. biotic.  
   b. abiotic.  
   c. stable.  
   d. unimportant.

C____ 4. What form of interaction is taking place when a shark devours a seal?
   a. commensalism  
   b. mutualism  
   c. predation  
   d. parasitism

B____ 5. When lions and hyenas fight over a dead zebra, their interaction is called
   a. mutualism.  
   b. competition.  
   c. commensalism.  
   d. parasitism.

A____ 6. Mutualism and commensalism are two types of
   a. symbiosis.  
   b. competition.  
   c. parasitism.  
   d. predation.

C____ 7. In the face of competition, an organism may occupy only part of its fundamental niche. That part is called its
   a. biome.  
   b. community.  
   c. realized niche.  
   d. ecosystem.

C____ 8. The unique function an organism performs in its environment is called its
   a. species.  
   b. biodiversity.  
   c. niche.  
   d. habitat.

A____ 9. Limited resources are the main source of
   a. competition.  
   b. disease.  
   c. predation.  
   d. All of the above

D____ 10. The resilience of an ecosystem depends largely on which factor(s)?
   a. predation  
   b. competition  
   c. biodiversity  
   d. All of the above
Complete each statement by writing the correct term or phrase in the space provided.

11. A characteristic of ___PARASITES_____________ is that they often do not kill their prey because they depend on the prey for food and a place to live.

12. Virtually all plants contain toxic compounds that help protect the plants from ___PREDATION, HERBIVORES___________________.

13. Rabbits that were introduced to Australia in the 1850s multiplied so rapidly because they had no ___COMPETITION, PREDATORS__________.

14. The entire range of conditions an organism can tolerate is its ___FUNDAMENTAL NICHE___________________________.

15. Back-and-forth evolutionary adjustments between interacting members of an ecosystem are called _____COEVOLUTION________________.

16. When sea stars are kept out of their coastal communities, the population of mussels in the ecosystem ___INCREASES___________________.

17. One important part of a population model is the ___GROWTH RATE______________________.

18. Density-independent factors are variables that affect a population regardless of the population ___DENSITY______________________.

19. An important competition among plants is for the abiotic factor of _____SUNLIGHT___________________.

Read each question, and write your answer in the space provided.

20. Explain how the plant toxins in milkweed benefit monarch butterflies.

Monarch caterpillars incorporate the toxins into their own tissues, which makes the butterflies toxic to bird predators.
21. Explain how predation, competition, and biodiversity are related.

**Predation can reduce the effects of competition among species. When an aggressive species is controlled by predation, it allows other species to live in the environment, increasing biodiversity.**

22. Explain how several species of warblers that consume insects in spruce trees can occupy the same tree without competition.

  **Competitive warblers divide the resources in spruce trees, with each species feeding in a different part of the tree. This eliminates competition.**

23. What are two possible outcomes of competition?

  **Competition can result in competitive exclusion of a species, or it can lead to the division of resources.**

**Short answer and Essay Possibilities.**

The diagram shows the size of a particular population over time. Use the diagram to answer questions 24-27.

24. What phase shows the population growing in size?

   PHASE 2

25. What phase shows the population having roughly the same number of deaths as births?

   PHASE 3

26. What phase shows exponential growth?

   PHASE 2

26. What phase shows no growth in the population?

   PHASE 3

27. What does phase 4 tell you about the population? What is happening to it?

   **HIT CARRYING CAPACITY OR MAJOR DISRUPTION TO ECOSYSTEM OR MAJOR PREDATION.**
28. Which two symbiotic relationships do not result in a winner and loser? **MUTUALISM AND COMMENSALISM**

29. What word describes the role that an organism plays in its community? **NICHE**

30. Some species of orchids grow high in the trees of tropical forests. The trees provide the orchids with the support to grow and allow them to capture more sunlight than they would on the forest floor. What form of symbiosis is illustrated by this occurrence? Explain your answer.

**Commensalism –** orchid benefits from its interaction with the tree by receiving support and more sunlight. The tree is not affected by the orchids presence. Commensalism is a symbiotic relationship in which one organism benefits and the other organism is not harmed or helped.

31. Can two species have the same niche? Explain.

No two species can have the same realistic niche. The principle of competitive exclusion states that if two species are competing for the same resource the species that uses or obtains the resource more efficiently will eliminate the other. Species could potentially share the same fundamental niche.

Questions 24–25 refer to the figure below, which shows a growth pattern of a population.

![Graph showing population growth pattern](image)

**Carrying capacity**

**Population size**

**Time**

**Read each question, and write your answer in the space provided.**

24. What population growth model does this graph illustrate?

25. Describe the changes in the line of the graph, and explain what causes the changes.
Skills Worksheet

Vocabulary Review

In the space provided, write the letter of the description that best matches each term.

L____ 1. population
D____ 2. carrying capacity
M____ 3. predation
E____ 4. coevolution
H____ 5. parasitism
F____ 6. symbiosis
B____ 7. mutualism
K____ 8. commensalism
G____ 9. niche
C____ 10. fundamental niche
J____ 11. realized niche
I____ 12. competitive exclusion
A____ 13. keystone species

a. critical species in an ecosystem that affects the survival of a number of other species
b. a relationship in which both participating species benefit
c. the entire range of conditions an organism is potentially able to occupy
d. the largest population that an environment can support at any given time
e. back-and-forth evolutionary adjustments between interacting members of an ecosystem
f. two or more species living together in a close, long-term relationship
g. the unique position occupied by a species in an ecosystem
h. one organism feeds on and usually lives on or in another larger organism
i. the elimination of a competing species
j. the part of its fundamental niche that a species occupies
k. a relationship in which one species benefits and the other is neither harmed nor helped
l. a group of organisms of the same species that live together in one place at the same time
m. the act of one organism killing another organism for food