1. Fly larvae consume the body of a dead rabbit. In this activity, they function as
   A. producers  B. scavengers  C. herbivore  D. parasites

2. The study of the interrelationships of plants and animals and their interaction with the physical environment is known as
   A. evolution  B. ecology  C. anatomy  D. taxonomy

3. An organism that could be classified as an autotroph is a
   A. mushroom  B. bean plant  C. segmented worm  D. frog

4. An earthworm lives and reproduces in the soil. It aerates the soil and adds organic material to it. Together these statements best describe an earthworm’s
   A. habitat  B. nutrition  C. niche  D. environment

5. Knowledge of ecology would be used most directly in studying the
   A. production of hormones and neurotransmitters in two related organisms
   B. current decline of bighorn sheep in the Rocky Mountains
   C. structure of subcellular organelles
   D. biochemical nature of genetic transmission

6. The major environmental factor limiting the presence of numerous autotrophs at great depths in the ocean is the
   A. type of substratum
   B. amount of light
   C. availability of minerals
   D. absence of biotic factors
7. The field of biological study that most directly deals with the interrelationships among living things and their relationships with the physical environment is known as

A. physiology  B. ecology  
C. genetics  D. embryology

8. The bark of trees around Manchester, England was covered with white lichens before the Industrial Revolution. Light-colored peppered moths that rested on the trees were camouflaged against bird predators, while dark-colored peppered moths were easily preyed upon. After a few years of industrialization the tree bark darkened from pollution. The table shown represents a change in the number of light- and dark-colored moths within the peppered moth population over a period of 6 years from the beginning of industrialization.

<table>
<thead>
<tr>
<th>End of Year</th>
<th>Number of Light Moths</th>
<th>Number of Dark Moths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>556</td>
<td>64</td>
</tr>
<tr>
<td>2</td>
<td>537</td>
<td>112</td>
</tr>
<tr>
<td>3</td>
<td>484</td>
<td>198</td>
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<tr>
<td>4</td>
<td>392</td>
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<td>246</td>
<td>281</td>
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<tr>
<td>6</td>
<td>225</td>
<td>357</td>
</tr>
</tbody>
</table>

The number of dark-colored moths was closest to the number of light-colored moths at the end of which year of the study?

A. 1  B. 2  C. 5  D. 6

9. Crows frequently are observed feeding on dead animals they have not killed. On this basis, the crow is classified as a

A. predator  B. scavenger  
C. decomposer  D. herbivore

10. If algal growth in a lake increases, which organisms will be most immediately affected?

A. primary consumers  
B. secondary consumers  
C. saprophytes  
D. carnivores

11. Pictured here is a nitrogen cycle. The arrow labeled D represents the process of

A. nitrogen fixation  B. decomposition  
C. nitrification  D. denitrification
12. Pictured here is a nitrogen cycle. The organisms that carry on nearly all of the processes represented by arrows $A$ through $F$ are most likely

A. legumes  
B. bacteria  
C. herbivores  
D. scavengers

13. Pictured here is a nitrogen cycle. The action of decomposers is represented by arrows

A. $A$ and $B$  
B. $E$ and $F$  
C. $C$ and $D$  
D. $D$ and $F$

14. A characteristic shared by both predators and parasites is that they

A. feed on decomposing plant material  
B. capture and kill animals for food  
C. live inside their hosts  
D. attack a living food source

15. Which type of scientist is generally most involved with the study of the interdependence of organisms and their dependence on abiotic factors?

A. a biochemist  
B. an immunologist  
C. a physiologist  
D. an ecologist

16. In the nitrogen cycle, which organisms are responsible for converting ammonia into nitrates that can be used by plants?

A. nitrogen-fixing bacteria  
B. decomposers  
C. nitrifying bacteria  
D. denitrifying bacteria

17. The processes of photosynthesis, transpiration, evaporation, condensation, respiration, and excretion are all involved in the cycling of

A. water  
B. nitrogen  
C. carbon dioxide  
D. sulfur

18. Nitrifying bacteria synthesize compounds containing $\text{NO}_3$ from

A. ammonia  
B. water  
C. cellulose  
D. chlorophyll
19. The letters in the diagram shown represent the processes involved in the water cycle. Which letter represents the process of transpiration

A. A  B. B  C. C  D. D

20. In the nitrogen cycle, decomposers break down nitrogen compounds and release

A. oxygen gas  B. ammonia  C. urea  D. nitrogen gas

21. Processes involved in the water cycle are represented by letters in the diagram shown. In which group are the processes correctly identified?

A. A—deamination; B—transpiration; C—condensation; D—evaporation
B. A—transpiration; B—evaporation; C—condensation; D—precipitation
C. A—condensation; B—precipitation; C—transpiration; D—evaporation
D. A—transpiration; B—deamination; C—condensation; D—precipitation

22. A desired outcome derived from an understanding of the principles of ecology would be

A. the elimination of most predatory species
B. an increase in world human population
C. a decrease in disruptions of existing wildlife habitats
D. the increased use of pesticides in agriculture
23. The science of ecology is best defined as the study of
A. the classification of plants and animals
B. the interactions of living organisms and their environment
C. technology and its effects on society
D. weather and its effects on food production in the ocean

24. In the diagram shown, which processes are most closely associated with the arrows labeled A?

A. runoff and respiration
B. photosynthesis and decomposition
C. respiration and transpiration
D. nitrogen fixation and synthesis

25. A cycling of materials is represented in the diagram shown. Which statement is supported by events shown in the diagram?

A. Materials are cycled between living organisms, only.
B. Materials are cycled between heterotrophic organisms, only
C. Materials are cycled between the living and nonliving components of the environment.
D. Materials are cycled between the physical factors of the environment by the processes of condensation and evaporation.

26. The fact that an organism cannot live without interacting with its surroundings is a basic concept in the field of study known as
A. ecology  
B. anatomy
C. physiology  
D. embryology
27. Which processes are involved in the water cycle?

A. respiration and photosynthesis, only  
B. transpiration and excretion, only  
C. respiration, photosynthesis, evaporation, and condensation, only  
D. respiration, photosynthesis, transpiration, excretion, evaporation, and condensation

28. Information relating to an ecosystem is contained in the accompanying diagram

Which information belongs in areas X and Y?

A. X — biotic factors; Y — abiotic factors  
B. X — ecological relationships; Y — biotic relationships  
C. X — abiotic factors; Y — interacting population  
D. X — energy flow; Y — biotic factors

29. The accompanying pyramid illustrates some feeding relationships in alpine meadows of Yellowstone National Park.

Which statement is best supported by the information shown in the pyramid?

A. Chipmunks and insects can occupy the same niche.  
B. As the number of bears in this community increases, the number of chipmunks will increase.  
C. Insects are classified as omnivores in alpine meadow communities.  
D. Biomass decreases as energy is transferred from one level to another.
30. Base your answer(s) to the following question(s) on the map below, which shows the general location of some major biomes of Earth, and on your knowledge of biology. A different biome is represented by each of the following symbols:

Which symbol indicates an area with coniferous trees; long, severe winters; and black bears?

A.  
B.  
C.  
D.  

31. The portion of Earth in which all life exists is known as

A. the climax stage  
B. the biosphere  
C. a population  
D. a biotic community

32. The large amount of salt in the air and water of coastal areas determines which species can exist there. In these areas, the salt functions as a

A. source of energy  
B. biotic factor  
C. food source  
D. limiting factor

33. The type of climax vegetation associated with a terrestrial biome is primarily determined by yearly temperature variation and the

A. presence of animal predators  
B. presence of climax fauna  
C. number of deciduous trees  
D. annual precipitation

34. The diagram provides some information concerning an ecosystem.

Which title is most appropriate for the diagram?

A. Energy Flow and Material Cycles in an Ecosystem  
B. Evolution in an Ecosystem  
C. Succession in an Ecosystem  
D. The Water Cycle in an Ecosystem
35. Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

An ecologist passed through different biomes while driving up a high mountain. At the lowest elevation (sea level), the ecologist saw deep-green vegetation, many birds, and small mammals. At the highest elevation, the ecologist saw bare rock, very little vegetation, and few birds.

Which change was most likely encountered as the ecologist drove up the mountain?

A. an increase in the diversity of species
B. an increase in the amount of atmospheric oxygen
C. a decrease in temperature
D. a decrease in latitude
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