

Biology 3010 - Biology 3010H Quarter 1 Practice Exam

This Biology I Semester One Quarter One Exam Study Guide is provided to help the Biology learner prepare for a rigorous Biology Exam. Tackle this study guide to prepare yourself to do your best.

This Semester One Quarter One Study Guide Practice Exam will assess your knowledge, understanding, and some higher level thinking in the following Biology content areas:

The Science Of Life
Populations
Ecosystems

Introduction To Ecology
Community Ecology
Humans And The Environment

Prepare the questions below. Print. Bring to the Semester Exam Study Sessions for review.

Good Luck!!! Remember: Hard work and smart work pay dividends!!!

=====

Completion

Complete each statement.

1. _____ is the study of the interaction of organisms with their environment and with each other.
2. To function properly, all living things must maintain a constant internal environment through the process of _____.
3. An educated guess, or a(n) _____, may be tested by experimentation.
4. Stating in advance the result that may be obtained from testing a hypothesis is called _____.
5. A unifying explanation for a broad range of observations is a _____.
6. A _____ experiment is one in which the condition suspected to cause the effect is compared to the same situation without the suspected condition.
7. The base unit for length in the Système International d'Unités (International System of Units) is the _____.
8. A _____ electron microscope passes a beam of electrons over a specimen's surface, whereas a _____ electron microscope passes a beam of electrons through a thin slice of a specimen.
9. _____ is the study of how organisms interact with each other and with their environment.
10. An ecosystem consists of the living and _____ environment.

Name: _____

ID: A

11. The physical area in which an organism lives is called its _____.
12. An ecological model is limited in its application because no model can account for every _____ in an environment.
13. Organisms that do not regulate their internal conditions are called _____, while those that do are called _____.
14. The _____ of an organism includes its habitat, its feeding habits, other aspects of its biology, and its interactions with other organisms and with the environment.
15. If a deer in a forest is classified as a herbivore, then the cougar that eats the deer is classified as a(n) _____.
16. Animals that eat only primary producers are classified as _____.
17. Bacteria that break down dead tissue are called _____.
18. When the interrelated food chains in an ecosystem are represented together, the model is called a(n) _____.
19. The primary productivity of an ecosystem is a measure of the amount of organic material that the _____ organisms in the ecosystem produce.
20. A one-way path of feeding relationships among organisms in an ecosystem is called a(n) _____.
21. In an ecosystem, _____ diminishes at each successive trophic level.
22. An energy pyramid shows the amount of energy contained in the bodies of organisms at each _____ level.
23. Every time energy is transferred in an ecosystem, some of the energy is lost as _____.
24. Cellular respiration and photosynthesis are the two processes that form the basis of the biogeochemical cycle known as the _____ cycle.
25. When forests are cut down, both water and nutrient _____ are disrupted.
26. Water that seeps into the soil is called _____.
27. The conversion of nitrogen gas to nitrate by the action of bacteria is called _____.
28. The process of _____ occurs when anaerobic bacteria break down nitrates and release nitrogen gas back into the atmosphere.

Name: _____

ID: A

29. Population density refers to how many _____ are present in a particular location.
30. The way that members of a population are arranged in a given area is called the _____ of the population.
31. A population of organisms will grow when its _____ exceeds its death rate.
32. A _____ is the average mortality rate of individuals of a species, over a typical lifetime, modeled as a curve on a graph.
33. _____ is the study and measurement of the factors that determine how populations grow.
34. _____ is defined as the amount by which a population's size changes in a given amount of time.
35. The population size that can be sustained by an environment is called the _____ of the environment.
36. The main reason Earth's human population has increased over the past 350 years is because of a decrease in the _____ rate.
37. The _____ countries are currently experiencing the greatest increase in population growth.
38. In a parasitic relationship, the organism that provides a benefit to another organism at its own expense is called the _____.
39. The general term for the relationship in which one organism eats another is _____.
40. A symbiotic relationship in which one organism benefits and another is often harmed but not killed is called _____.
41. A close relationship between two dissimilar organisms is called _____.
42. The presence of colored bands on the body of a harmless king snake that resemble the bands on a poisonous coral snake is an example of _____.
43. To protect themselves from predators, some plants produce chemicals called _____ compounds as a byproduct of their metabolism.
44. The struggle among organisms for the same limited natural resources is called _____.
45. The symbiotic relationship in which one organism benefits and the other neither benefits nor suffers harm is called _____.

Name: _____

ID: A

46. A fish called a cleaner wrasse eats the tiny parasites that cling to and feed upon much larger fish. This activity benefits both kinds of fish. Therefore, the cleaner wrasse has a(n) _____ relationship to the larger fish.
47. The sequential establishment of populations in an area that has not previously supported life is called _____.
48. _____ species are adapted for growing well in habitats where other species are not yet present.
49. Secondary succession is typically completed in less time than primary succession because there is already _____ present in the habitat.
50. The tendency of a community to maintain relatively constant conditions is called _____.
51. Stable communities are less likely to be greatly affected by _____.
52. The biome that has coniferous trees as the dominant vegetation is the _____.
53. The thick, continually frozen soil layer found in the northern tundra is called _____.
54. _____ is a type of biome that is located in the middle latitudes and contains grasses, spiny shrubs, and scattered clumps of trees.
55. The _____ is a cold and mostly treeless biome with a frozen soil layer.
56. Zebras, gazelles, and lions usually live in the biome called the _____.
57. The biome that makes up most of the central part of the continental United States is the _____.
58. A dry grassland dominated by dense, spiny shrubs and scattered clumps of coniferous trees is called the _____.
59. Some plants have adapted for living in the desert by opening their _____ only at night.
60. Trees that lose their leaves every year are known as _____ trees.
61. _____ are characterized by lush vegetation, abundant rain, and year-round warm temperatures.
62. The _____ zone is small in area but contains most of the ocean's biodiversity.
63. Most of the ocean is the deep, open part known as the _____ zone.
64. A(n) _____ occurs where a major river flows into the ocean.

Name: _____

ID: A

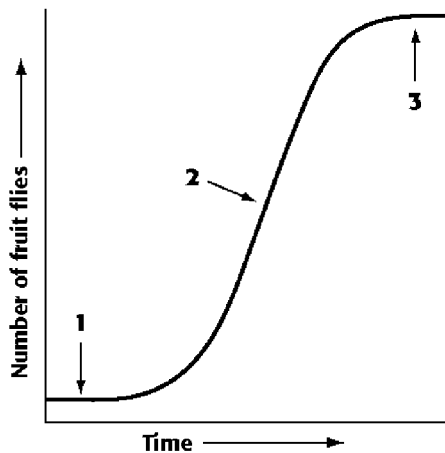
65. Streams in mountainous areas have _____ gradients.
66. Marshes, swamps, and bogs are examples of _____.
67. Rock layers in Earth's interior are part of the _____.
68. The field of study called _____ uses biological principles to look at the relationships between humans and the biosphere.
69. Scientific evidence suggests that the release of large quantities of chlorofluorocarbons (CFCs) has resulted in thinning of the _____ in the upper atmosphere.
70. Evidence suggests that the atmospheric levels of _____ have increased significantly in the last two hundred years and may result in a significant warming of Earth's atmosphere.
71. A location that has 17 species of birds has greater _____ than a location that has 10 species of birds.
72. A strategy for conserving biodiversity in developing countries is _____, in which people who want to visit the local ecosystem pay money for guides, food, and lodging.
73. A crucial argument made by promoters of biodiversity conservation is that there are many undiscovered _____ that have potential value to humans and that are primarily located in areas being subjected to habitat destruction.
74. The field of study called _____ seeks to identify and maintain natural areas.
75. Many migratory birds have winter _____ outside the United States, so conservation efforts must be international.
76. The amount of _____ habitat present in the Florida Everglades had declined by about 50 percent by the end of the 20th century.
77. The phenomenon called the _____ is the mechanism that keeps some of the energy absorbed by Earth from radiating back out to space.
78. Chemicals called _____ catalyze the breakdown of ozone into molecular oxygen.
79. Pollutants called _____ can convert ozone in the atmosphere into oxygen, thereby diminishing the protective ozone layer.
80. The natural heat-trapping ability of carbon dioxide, methane, and nitrous oxide in the atmosphere is known as the _____.
81. Many scientists have hypothesized that the increased levels of carbon dioxide in the atmosphere are causing global _____.

82. The ability to fulfill human needs in a way that allows the human population to survive indefinitely is called _____.

Problem

83. Some scientists conducted an experiment in which they evaluated various measurements of human health in people who drank at least one cup of coffee a day. They found no significant differences in these health indicators between the subjects who drank only one cup of coffee a day and those who drank as many as 20 cups a day. They concluded that coffee has no adverse effects on human health. Write your answers to the following in the spaces below.
- What were the independent and dependent variables in this experiment?
 - Was this a controlled experiment? If so, what were the control and experimental groups?
 - Do you agree with the conclusion the scientists drew from their results? Why or why not?

84.



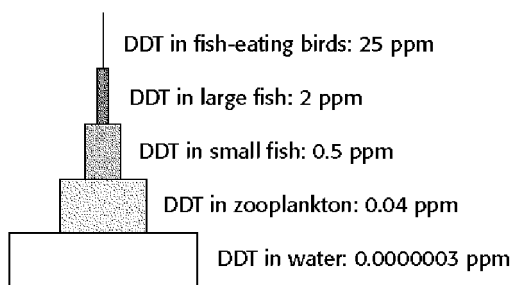
Refer to the illustration above. The graph depicts the growth of a population of fruit flies in an enclosed area over time. Write your answers to the following in the spaces below.

- Why does the population stop increasing after it reaches the point on the curve labeled 3?
- If a density-dependent limiting factor is present, does it have a greater impact on the population at point 1, point 2, or point 3 on the curve? Why?
- Name one density-independent limiting factor that could affect this population of fruit flies. Would you expect this limiting factor to have a greater impact on the population at any particular point on the curve, and if so, which one?

85. The data in the table below were gathered during a study of an abandoned agricultural field. Scientists counted the number of different kinds of herbs, shrubs, and trees present in the field 1, 25, and 40 years after it had been abandoned.

	Time after abandonment of agricultural field		
	1 year	25 years	40 years
Number of herb species	31	30	36
Number of shrub species	0	7	19
Number of tree species	0	14	22
Total number of species	31	51	77

- In the space below, write three conclusions that you can draw from these data.
 - Predict the relative numbers of herbs, shrubs, and trees and the total number of plant species that you would expect to see 100 years after abandonment of the field.
86. The diagram below shows the concentration of the pesticide DDT in water and in a number of organisms that make up a food chain.



Refer to the illustration above. Explain how DDT and other toxic substances can become concentrated in organisms and how the substance is transferred up through a food chain. Write your answer in the space below.

87. Nitrogen fertilizer is added to soil in virtually all agricultural areas of the world. The use of nitrogen fertilizer greatly increases the amount of food produced. However, nitrogen fertilizer can also affect the ecology of an area. The data presented in the table below were obtained in an experiment conducted to evaluate the effects of nitrogen fertilizer on grass species diversity. Nitrogen fertilizer was applied yearly to an experimental plot, beginning in 1856.

Year	1856	1872	1949
Total number of grass species	49	15	3
Number of species producing more than 10% of the total dry weight of all species combined	2	3	1
Number of species producing more than 50% of the total dry weight of all species combined	0	1	1
Number of species producing more than 99% of the total dry weight of all species combined	0	0	1

Write your answers to the following in the space below.

- Write three inferences you can make from the data.
- How could this experiment have been designed differently to make it a better test of the effects of nitrogen fertilizer on grass species diversity?

Essay

- Briefly discuss some of the major themes in biology that we will examine this year. Write your answer in the space below.
- Name five characteristics that are considered distinct properties of all living things. Write your answer in the space below.
- Toads that live in hot, dry regions bury themselves in the soil during the day. How might this be important to the toad? Write your answer in the space below.
- The results of an experiment do not support the hypothesis that the experiment was designed to test. Was the experiment a waste of time? Explain. Write your answer in the space below.
- Why is it important to study biology even if you are not planning a career in biology? Write your answer in the space below.
- Explain how a change in the habitat of a species affects the entire ecosystem. What could ultimately result from such a disruption? Write your answer in the space below.
- A plant disease infects most of the vegetation in a particular area, destroying the vegetation. How might the destruction of vegetation affect the animal life in the area? Write your answer in the space below.
- What adaptation do many plant species have that enables them to survive through very cold winters? Write your answer in the space below.

96. Which types of organisms are most likely to survive change in an ecosystem, those that have a narrow ecological niche or those that have a broad niche? Explain. Write your answer in the space below.
97. Rabbits, coyotes, and clover plants are some of the organisms that occupy a particular ecosystem. Assign the roles of primary producers, consumers, herbivores, and carnivores to these three groups of organisms and explain your answer. Write your answer in the space below.
98. Why are decomposers necessary for the continuation of life on Earth? Write your answer in the space below.
99. Describe how energy is transferred from one trophic level to another. Write your answer in the space below.
100. Why is it cheaper for a farmer to produce a pound of grain than a pound of meat? Write your answer in the space below.
101. Describe the major steps of the phosphorus cycle. Write your answer in the space below.
102. Give an example of an organism with a Type III survivorship curve, and explain the advantage a high reproductive rate might give an organism with this type of survivorship curve. Write your answer in the space below.
103. Contrast exponential population growth with logistic population growth by completing the chart below.

Criteria	Exponential Population Growth	Logistic Population Growth
Graph of growth rate		
Assumptions		
Birth and death rates		

104. Describe the relationship called competition. Write your answer in the space below.
105. Can two species occupy exactly the same niche? Explain. Write your answer in the space below.
106. 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. The orchids have little effect on the trees. What form of symbiosis is illustrated by this relationship? Explain your answer. Write your answer in the space below.
107. Why might species evenness be considered a more informative measure than species richness? Write your answer in the space below.

Name: _____

ID: A

108. What is the difference between primary and secondary succession? Write your answer in the space below.
109. Describe the steps by which primary succession progressed in Glacier Bay, Alaska, over a period about two hundred years. Write your answer in the space below.
110. Explain and give an example of what is meant by the statement "Climate has an important influence on the type of ecosystem found in an area." Write your answer in the space below.
111. Explain how species richness and species evenness differ. Write your answer in the space below.
112. How many species of organisms are there in the world? Explain your answer. Write your answer in the space below.
113. Compare and contrast restoration biology and conservation biology. Write your answer in the space below.
114. Why must efforts to conserve migratory birds be international? Give an example of such efforts. Write your answer in the space below.
115. How did the diversion of water from the Everglades lead to environmental problems? Write your answer in the space below.
116. Relate the greenhouse effect to global warming. Write your answer in the space below.
117. Many environmental problems require international cooperation between governments. However, individuals can also have an impact on the environment. List four things that you or your classmates could do to help solve environmental problems. Write your answer in the space below.

Biology 3010 - Biology 3010H Quarter 1 Practice Exam Answer Section

COMPLETION

1. ANS: Ecology
PTS: 1 DIF: 1 OBJ: 1-2.1
2. ANS: homeostasis
PTS: 1 DIF: 1 OBJ: 1-1.5
3. ANS: hypothesis
PTS: 1 DIF: 1 OBJ: 1-3.2
4. ANS: predicting prediction
PTS: 1 DIF: 1 OBJ: 1-3.1
5. ANS: theory
PTS: 1 DIF: 1 OBJ: 1-3.5
6. ANS: controlled
PTS: 1 DIF: 1 OBJ: 1-3.3
7. ANS: meter
PTS: 1
8. ANS: scanning, transmission
PTS: 1 DIF: 1 OBJ: 1-4.2
9. ANS: Ecology
PTS: 1 DIF: 1 OBJ: 18-1.1
10. ANS: nonliving
PTS: 1 DIF: 1 OBJ: 18-1.4
11. ANS: habitat
PTS: 1 DIF: 1 OBJ: 18-1.4
12. ANS: variable
PTS: 1 DIF: 1 OBJ: 18-1.3
13. ANS: conformers, regulators
PTS: 1 DIF: 1 OBJ: 18-2.2

14. ANS: niche
PTS: 1 DIF: 1 OBJ: 18-2.3
15. ANS: carnivore
PTS: 1 DIF: 1 OBJ: 18-3.2
16. ANS: herbivores
PTS: 1 DIF: 1 OBJ: 18-3.2
17. ANS: decomposers
PTS: 1 DIF: 1 OBJ: 18-3.3
18. ANS: food web
PTS: 1 DIF: 1 OBJ: 18-3.4
19. ANS: photosynthetic
PTS: 1 DIF: 1 OBJ: 18-3.1
20. ANS: food chain
PTS: 1 DIF: 1 OBJ: 18-3.4
21. ANS: energy
PTS: 1 DIF: 1 OBJ: 18-3.5
22. ANS: trophic
PTS: 1 DIF: 1 OBJ: 18-3.5
23. ANS: heat
PTS: 1 DIF: 1 OBJ: 18-3.5
24. ANS: carbon
PTS: 1 DIF: 1 OBJ: 18-4.3
25. ANS: cycles
PTS: 1 DIF: 2 OBJ: 18-4.1
26. ANS: groundwater
PTS: 1 DIF: 1 OBJ: 18-4.2
27. ANS: nitrogen fixation.
PTS: 1 DIF: 1 OBJ: 18-4.4
28. ANS: denitrification
PTS: 1 DIF: 1 OBJ: 18-4.4

29. ANS:
individual members of a species
individuals of a species
individuals
- PTS: 1 DIF: 1 OBJ: 19-1.1
30. ANS: dispersion
- PTS: 1 DIF: 1 OBJ: 19-1.1
31. ANS: birth rate
- PTS: 1 DIF: 1 OBJ: 19-1.3
32. ANS: survivorship curve
- PTS: 1 DIF: 1 OBJ: 19-1.4
33. ANS: Demography
- PTS: 1 DIF: 2 OBJ: 19-2.1
34. ANS: Growth rate
- PTS: 1 DIF: 1 OBJ: 19-2.1
35. ANS: carrying capacity
- PTS: 1 DIF: 1 OBJ: 19-2.2
36. ANS: death
- PTS: 1 DIF: 1 OBJ: 19-3.2
37. ANS: developing
- PTS: 1 DIF: 1 OBJ: 19-3.3
38. ANS: host
- PTS: 1 DIF: 1 OBJ: 20-1.3
39. ANS: predation
- PTS: 1 DIF: 1 OBJ: 20-1.1
40. ANS: parasitism
- PTS: 1 DIF: 1 OBJ: 20-1.3
41. ANS: symbiosis
- PTS: 1 DIF: 1 OBJ: 20-1.3
42. ANS: mimicry
- PTS: 1 DIF: 1 OBJ: 20-1.1

43. ANS: secondary
 PTS: 1 DIF: 1 OBJ: 20-1.1
44. ANS: competition
 PTS: 1 DIF: 1 OBJ: 20-1.2
45. ANS: commensalism
 PTS: 1 DIF: 1 OBJ: 20-1.3
46. ANS: mutualistic
 PTS: 1 DIF: 1 OBJ: 20-1.3
47. ANS: primary succession
 PTS: 1 DIF: 1 OBJ: 20-2.3
48. ANS: Pioneer
 PTS: 1 DIF: 1 OBJ: 20-2.3
49. ANS: soil
 PTS: 1 DIF: 1 OBJ: 20-2.3
50. ANS: stability
 PTS: 1 DIF: 1 OBJ: 20-2.2
51. ANS:
 disturbances
 disturbance
 PTS: 1 DIF: 1 OBJ: 20-2.2
52. ANS: taiga
 PTS: 1 DIF: 1 OBJ: 21-1.2
53. ANS: permafrost
 PTS: 1 DIF: 1 OBJ: 21-1.2
54. ANS: Chaparral
 PTS: 1 DIF: 1 OBJ: 21-1.4
55. ANS: tundra
 PTS: 1 DIF: 1 OBJ: 21-1.2
56. ANS: savanna
 PTS: 1 DIF: 1 OBJ: 21-1.4

57. ANS: temperate grassland
PTS: 1 DIF: 1 OBJ: 21-1.4
58. ANS: chaparral
PTS: 1 DIF: 1 OBJ: 21-1.4
59. ANS: stomata
PTS: 1 DIF: 1 OBJ: 21-1.5
60. ANS: deciduous
PTS: 1 DIF: 1 OBJ: 21-1.3
61. ANS: Tropical rain forests
PTS: 1 DIF: 1 OBJ: 21-1.3
62. ANS: neritic
PTS: 1 DIF: 1 OBJ: 21-2.3
63. ANS: pelagic
PTS: 1 DIF: 1 OBJ: 21-2.1
64. ANS: estuary
PTS: 1 DIF: 1 OBJ: 21-2.4
65. ANS: high steep
PTS: 1 DIF: 1 OBJ: 21-2.6
66. ANS: freshwater wetlands
PTS: 1 DIF: 1 OBJ: 21-2.7
67. ANS: geosphere
PTS: 1 DIF: 1 OBJ: 22-1.2
68. ANS: environmental science
PTS: 1 DIF: 1 OBJ: 22-1.1
69. ANS: ozone layer
PTS: 1 DIF: 1 OBJ: 22-2.1
70. ANS: carbon dioxide
PTS: 1 DIF: 1 OBJ: 22-2.2

71. ANS:
species richness
species diversity
- PTS: 1 DIF: 1 OBJ: 22-1.4
72. ANS: ecotourism
- PTS: 1 DIF: 1 OBJ: 22-3.3
73. ANS: species
- PTS: 1 DIF: 1 OBJ: 22-1.5
74. ANS: conservation biology
- PTS: 1 DIF: 1 OBJ: 22-3.1
75. ANS: habitats
- PTS: 1 DIF: 1 OBJ: 22-3.3
76. ANS: wetland
- PTS: 1 DIF: 1 OBJ: 22-3.2
77. ANS: greenhouse effect
- PTS: 1 DIF: 1 OBJ: 22-1.3
78. ANS:
CFCs
chlorofluorocarbons
chlorofluorocarbons (CFCs)
CFCs (chlorofluorocarbons)
- PTS: 1 DIF: 1 OBJ: 22-2.1
79. ANS:
CFCs
chlorofluorocarbons
chlorofluorocarbons (CFCs)
CFCs (chlorofluorocarbons)
- PTS: 1 DIF: 1 OBJ: 22-2.1
80. ANS: greenhouse effect
- PTS: 1 DIF: 1 OBJ: 22-1.3
81. ANS: warming
- PTS: 1 DIF: 1 OBJ: 22-2.2

82. ANS: sustainability

PTS: 1 DIF: 1 OBJ: 22-2.6

PROBLEM

83. ANS:

- a. The independent variable was the number of cups of coffee a subject drank each day; the dependent variables were the indicators of human health measured.
- b. This was not a controlled experiment because there was no group of subjects who drank zero cups of coffee a day.
- c. Students should disagree with the scientists' conclusion because this was not a controlled experiment (there could be something harmful in coffee that would be effective when only one cup of coffee was consumed each day).

PTS: 1 DIF: 3 OBJ: 1-3.4

84. ANS:

- a. The population stops increasing because it has reached the carrying capacity of the ecosystem in which it lives. The ecosystem cannot support any more flies than this number.
- b. It has the greatest impact on the population at point 3. This is because population density is greatest at point 3. Density-dependent limiting factors impact populations more as populations increase in density.
- c. Suitable answers include a number of abiotic factors. The most obvious answer and the most commonly important abiotic factor is a temperature extreme (e.g., freezing). Other abiotic limiting factors include floods, hurricanes, fires, and volcanic eruptions. Such limiting factors would not be expected to have a greater impact on the population at any particular population size.

PTS: 1 DIF: 3 OBJ: 19-2.3

85. ANS:

- a. The following are some valid conclusions: (1) The total number of plant species present in the field increased over the 40-year time period. (2) The plants that grew initially in the field were all herbs. (3) Over the 40-year time period, the relative proportions of herbs, shrubs, and trees changed. The relative number of herbs decreased while the relative number of shrubs and trees increased. (4) The total number of herbs present did not change significantly over the 40-year time period.
- b. It is possible that the total number of species present would be even greater 100 years after abandonment, although at some point the community would probably reach a stable stage. There would probably be relatively fewer herbs and relatively more trees.

PTS: 1 DIF: 1 OBJ: 20-2.1

86. ANS:

If there is a toxic substance such as DDT in an organism's food, it will pass through the organism's body. These substances are often taken up and stored in body tissues. When another organism ingests the organism containing stored toxins, it can also take up and store the toxins. The toxic substances become increasingly concentrated as they move up through the food chain because each successive organism consumes several contaminated organisms. This increased concentration is called biological magnification.

PTS: 1 DIF: 3 OBJ: 22-2.3

87. ANS:

- a. The following are some possible inferences:
- (1) The total number of grass species decreased over time and with exposure to nitrogen fertilizer.
 - (2) At the beginning of the experiment, there was no one dominant species of grass. Over time and with exposure to nitrogen fertilizer, a few species became dominant.
 - (3) Prolonged use of nitrogen fertilizer encourages the growth of one or at least only a few dominant species.
- b. The experiment should have included a control plot that did not receive nitrogen fertilizer. With the experiment as presented, the effects of nitrogen fertilizer cannot be distinguished from the effects of time.

PTS: 1 DIF: 3 OBJ: 22-1.5

ESSAY

88. ANS:

Major themes are the diversity and unity of life, the interdependence of organisms, and the evolution of life. Diversity and unity refers to the many different kinds of organisms that share similar characteristics even though the organisms themselves are so different. Interdependence refers to ecology and the interaction of organisms with each other and the environment. Evolution refers to changes in species over time.

PTS: 1 DIF: 2 OBJ: 1-2.1

89. ANS:

Possible answers include the following: All living things are composed of one or more cells and have a hierarchy of organization. All living things respond to stimuli. All living things maintain a constant internal environment (homeostasis). All living things carry out metabolic reactions that involve the use of energy. All living things grow. All living things reproduce and pass on genetic information to offspring. Populations of living things change over time.

PTS: 1 DIF: 2 OBJ: 1-1.3

90. ANS:

Toads must maintain a constant internal environment (homeostasis) in order to function properly. Burying themselves in the soil is an adaptation that keeps their body temperature from rising too high and keeps their bodies from drying out.

PTS: 1 DIF: 2 OBJ: 1-2.4

91. ANS:

No, the experiment was not a waste of time. A scientist works by systematically showing that certain hypotheses are not valid when they are not consistent with the results of experiments. The results of experiments are used to evaluate alternative hypotheses. An experiment can be successful if it shows that one or more of the alternative hypotheses are inconsistent with observations.

PTS: 1 DIF: 2 OBJ: 1-3.2

92. ANS:

By studying biology, you can make informed decisions that impact both you and the society in which you live. Decisions about your health, your food supply, and your environment are only some of these issues.

PTS: 1 DIF: 2 OBJ: 1-1.2

93. ANS:
A change in habitat may disturb the interactions of plants and animals in the ecosystem. A drastic habitat change that affects one species can have an effect on the whole ecosystem because it affects the natural cycling of nutrients through food chains and food webs. This disruption could result in endangerment or extinction of species in the ecosystem.
- PTS: 1 DIF: 2 OBJ: 18-1.2
94. ANS:
The ecosystem would be seriously disrupted. Herbivores that eat the vegetation would be affected because their major source of food would be eliminated. The carnivores in the area would soon die or leave the area because their source of energy—the herbivores—was gone.
- PTS: 1 DIF: 2 OBJ: 18-1.2
95. ANS:
They lose their leaves in winter or produce seeds that can survive very cold winters.
- PTS: 1 DIF: 3 OBJ: 18-2.2
96. ANS:
Answers may vary. Sample answer: Organisms having a broad niche are more likely to survive because they are not likely to depend on a single food source or a single habitat. If one food source becomes scarce, they can turn to another, or if one habitat is destroyed, they can move to another. An organism having a narrow niche may depend on a single food source or require a specific habitat. If the food source disappears or habitat is disrupted, the organism may not survive.
- PTS: 1 DIF: 2 OBJ: 18-2.3
97. ANS:
In this ecosystem, the clover plants are the primary producers. These autotrophs help manufacture the organic nutrients necessary to sustain the ecosystem. Both the rabbits and coyotes are consumers. Rabbits are herbivores that consume the primary producers (the clover plants). Coyotes eat the herbivores (the rabbits), so they are classified as carnivores.
- PTS: 1 DIF: 2 OBJ: 18-3.4
98. ANS:
Matter for life is cycled through ecosystems. Decomposers recycle essential materials such as nitrogen and carbon by releasing them from waste materials and dead organisms. Without the action of decomposers, the Earth would eventually be depleted of usable sources of these essential materials that organisms require to survive.
- PTS: 1 DIF: 2 OBJ: 18-3.3
99. ANS:
A portion of the energy available to the organisms at each level of the food chain is stored in the chemical bonds of nutrients or tissues of an organism. When that organism is eaten by another, some of the stored chemical energy is transferred to the new organism and used to sustain its life.
- PTS: 1 DIF: 2 OBJ: 18-3.5

100. ANS:

Animals are on higher trophic levels than plants. Consequently, it takes several pounds of grain to feed an animal in order to produce one pound of meat from the animal.

PTS: 1 DIF: 3 OBJ: 18-3.5

101. ANS:

When rocks erode, phosphorus dissolves as phosphate and enters the soil and water. Plants absorb phosphorus from the soil through their roots. Phosphorus is recycled into the soil and water when organisms excrete excess phosphorus or when organisms die and decompose.

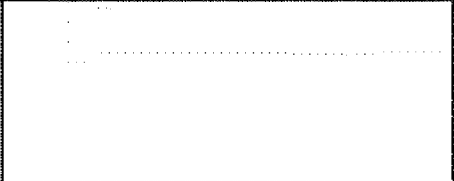
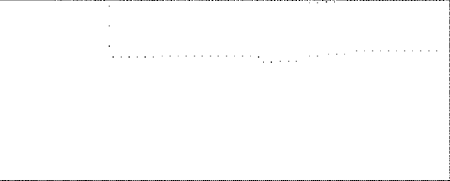
PTS: 1 DIF: 3 OBJ: 18-4.5

102. ANS:

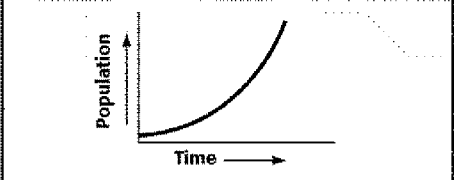
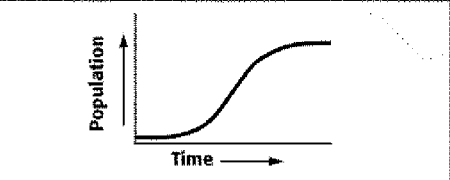
Organisms with a Type III survivorship curve, such as salmon, insects, or frogs, produce many young at once. A large number of these individuals die while young. A high reproductive rate offsets this enormous early mortality.

PTS: 1 DIF: 2 OBJ: 19-1.4

103. ANS:

Criteria	Exponential Population Growth	Logistic Population Growth
Graph of growth rate		
Assumptions		
Birth and death rates		

ANS:

Criteria	Exponential Population Growth	Logistic Population Growth
Graph of growth rate		
Assumptions	Unlimited resources	Resources limit population growth; stabilizes at the carrying capacity
Birth and death rates	Constant--rates do not change	Vary with population size

PTS: 1 DIF: 2 OBJ: 19-2.2

104. ANS:
Competition occurs when two or more organisms seek to use the same limited resource, such as food, water, space, sunlight, or other resources. One type of competition occurs between members of the same species, and another type of competition occurs between different species.
- PTS: 1 DIF: 2 OBJ: 20-1.2
105. ANS:
No, two species cannot occupy the exact same niche. The principle of competitive exclusion states that if two species are competing for the same resource, the species that uses the resource more efficiently will eventually eliminate the other.
- PTS: 1 DIF: 2 OBJ: 20-1.2
106. ANS:
Commensalism is the form of symbiosis illustrated here. In commensalism, one organism benefits and the other organism neither benefits nor suffers harm. In this example, the orchids benefit from the presence of the trees, but the orchids have little effect on the trees.
- PTS: 1 DIF: 2 OBJ: 20-1.3
107. ANS:
Species richness takes into consideration only the number of different species in a community. Species evenness, on the other hand, takes into consideration both the number of species in a community and the relative abundance of each. Thus, species evenness provides more information about the ecological relationships within a community.
- PTS: 1 DIF: 2 OBJ: 20-2.1
108. ANS:
Primary succession is the replacement of species in an area that had not previously supported life, such as bare rock or sand dunes. Secondary succession is the replacement of species in a habitat that has been disrupted due to natural disaster or human activity but still possesses a small amount of soil and vegetation.
- PTS: 1 DIF: 2 OBJ: 20-2.3
109. ANS:
The process of primary succession in Glacier Bay, Alaska, began when the ground consisted of pulverized bare rock. The rock was likely first colonized by lichens that secreted acids that slowly broke down some of the rock into smaller pieces. Eventually, a thin layer of soil formed from the accumulation of small fragments of rock and dead lichens. Grasses were then able to colonize the area. As these plants died, their decomposing bodies added organic matter to the soil, and the soil became able to support the growth of larger plants. Shrubs began to grow in the area, and then trees were finally able to grow. After about two hundred years, the area became dominated by large, slow-growing trees that can grow on thin soil.
- PTS: 1 DIF: 3 OBJ: 20-2.3

110. ANS:

Answers will vary. Sample answer: The climate of an area refers to the daily atmospheric conditions—the temperature, amount of rainfall, and amount of sunlight in a given area. Ecosystems vary based on the types of living organisms—plants and animals—that can survive in an area. Areas receiving large amounts of sunlight and precipitation tend to be warm and moist and will support different types of organisms than colder, dry areas. Areas that are warm and dry, such as parts of southern Arizona, allow the growth of fewer plants than areas with heavy rainfall. The plants that do survive in warm, dry areas, such as cacti, have developed structures that promote water conservation. Areas with mild temperatures and heavier rainfall, such as Virginia and North Carolina, promote the growth of dense forests with tall trees that shed their leaves and consume large amounts of water on a daily basis. (Acceptable answers may include other examples that establish a link between the type of organisms that can survive and the area's climate.)

PTS: 1 DIF: 2 OBJ: 21-1.1

111. ANS:

Species richness is the number of species in an area. Species evenness takes into account the relative number of individuals of each species in an area.

PTS: 1 DIF: 1 OBJ: 22-1.4

112. ANS:

No one is certain how many species there are. About 2 million have been named and described, but the total number may be between 2 million and 100 million.

PTS: 1 DIF: 1 OBJ: 22-1.4

113. ANS:

Restoration biology is concerned with rebuilding badly damaged ecosystems. Conservation biology is concerned with protecting areas that retain most of their biodiversity. Both disciplines use biological knowledge to help conserve biodiversity.

PTS: 1 DIF: 1 OBJ: 22-3.1

114. ANS:

Conservation efforts must be international because migratory birds fly long distances and live in different countries at different times of the year. One example is the effort by the United States and Canada to save the whooping crane.

PTS: 1 DIF: 1 OBJ: 22-3.3

115. ANS:

The diversion of water from the Everglades reduced the amount of groundwater, leading to water shortages in Miami and surrounding areas and to changes in the native ecosystems. Florida Bay, south of the Everglades, became excessively salty because it no longer received the fresh water that had passed through the Everglades.

PTS: 1 DIF: 1 OBJ: 22-3.2

116. ANS:

The greenhouse effect is the natural phenomenon in which certain gases in the atmosphere, such as carbon dioxide and water vapor, absorb heat and reflect it back onto Earth, resulting in the warming of Earth. This effect is intensified by increased concentrations of the greenhouse gases in the atmosphere due to human activities. The increase in these gases causes an increase in the atmosphere's ability to trap heat, thus causing temperatures to rise gradually—a trend known as global warming.

PTS: 1 DIF: 2 OBJ: 22-1.2

117. ANS:

Answers will vary but could include the following: recycle or reuse materials; buy recycled paper and other recycled products; carpool; use public transportation, walk, or ride a bike instead of driving; turn off lights when not in use; turn off water when not in use; use water- and energy-saving devices or appliances; and plant native plants.

PTS: 1 DIF: 2 OBJ: 22-3.5