

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!!!

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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.

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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.

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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 _____.

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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.

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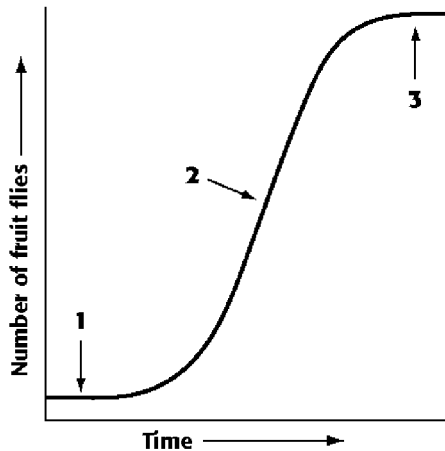
65. Streams in mountainous areas have _____ gradients.
66. Marshes, swamps, and bogs are examples of _____.
67. Rock layers in Earth's interior are part of the _____.
68. The field of study called _____ uses biological principles to look at the relationships between humans and the biosphere.
69. Scientific 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.



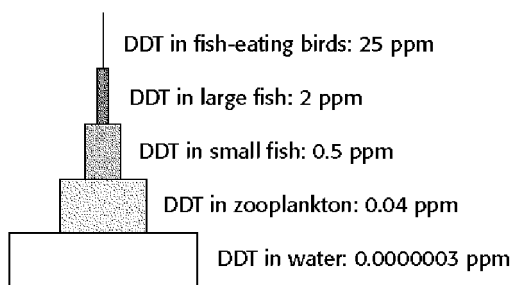
Refer to the illustration above. The graph depicts the growth of a population of fruit flies in an enclosed area over time. Write your answers to the following in the spaces below.

- 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.

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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.