**2016-1017 Environmental Science Mid-Term Test A**

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

1. The energy in most ecosystems comes from

a. green plants. b. the sun. c. wind. d. soil

2. What is an ecosystem?

a. affecting a certain population b. all living and non-living things in an area c. an increase in the Earth's temperature d. organisms that make their own food

3. Which of the following is one of the main properties used to describe a population?

a. number of individuals b. color of individuals c. number of species d. kind of adaptations

4. The term “biodiversity” refers to

a. The number of species living on Earth. b. The number and variety of species living on Earth. c. The number and variety of species that are considered renewable. d. The number and variety of species that live in an area.

5. Producers make food using \_\_\_\_\_\_ to trap the Sun's energy in a process called photosynthesis.

a. food chains b. chlorophyll c. cellular respiration d. microscopic organisms

6. The community of a pond is made up of all the

a. abiotic factors in the water. b. resources organisms need. c. habitats in and around the water. d. populations of fish, insects, and other living organisms.

7. In which of the following relationships is neither species harmed?

a. predation b. competition c. parasitism d. commensalism

8. What term is used to refer to the many feeding relationships that are possible in an ecosystem?

a. food web b. food chain c. energy pyramid d. energy transfer

9. An example of a population is

a. all trees in a forest. b. all maple trees in a forest. c. all plants in a forest. d. all animals in a forest.

10. Which of the following best describes a population?

a. members of the same species living in the same place at the same time b. all the red birds in an area c. all types of organisms living in the same place d. all members of the same species

11. Decomposers are important in the food chain because they

a. produce their own food using light from the Sun. b. stop the flow of energy from one organism to another. c. break down dead organisms and recycle nutrients into the soil. d. are microscopic and other organisms cannot consume them.

12. One way that bacteria and fungi are important to the environment is that they

a. produce oxygen. b. use the sun’s energy to make their own food. c. are a major food source in many ecosystems. d. break down dead organisms.

13. The energy consumed by organisms

a. can be stored in fat and sugar molecules. b. remains constant at all trophic levels. c. undergoes magnification in food chains. d. is not partially lost during digestion.

14. Which organism is likely to be in the bottom trophic level of a food chain?

a. grasshopper b. corn c. mouse d. wolf

15. An environment's biotic and abiotic factors interact to make a(n) .

a. habitat b. ecosystem c. niche d. resource

16. Only a small amount of the energy stored in food is available to the next organism in a food chain because

a. there are more producers than consumers in a food chain b. there are fewer top consumers than producers in a food chain c. primary and secondary consumers compete for food d. most of the energy is used for life processes

17. Which example shows a relationship between both an abiotic and biotic factor in an ecosystem?

a. An insect is food for a salmon. b. Water carries a rock downstream. c. A tree removes a gas from the air. d. A flower makes food for a butterfly.

18. The relationship between a fox and a rabbit hare is an example of

a. parasite and host. b. predator and prey. c. competition. d. mutualism.

19. Consumers are organisms that

a. eat only other animal species. b. get solar or other energy indirectly. c. are also known as self-feeders. d. occupy an ecosystem’s lowest energy level.

20. Most of today’s environmental problems began during which period(s) in human history?

a. hunter-gatherer period b. Agricultural Revolution c. Industrial Revolution d. Technological Revolution

21. Hardin’s “Tragedy of the Commons” essay addresses the conflicts associated with what environmental challenge?

a. preventing pollution b. preserving biodiversity c. curbing overpopulation d. protecting shared resources

22. The “Tragedy of the Commons” describes the conflict between

a. developing and developed nations. b. farmers and industrialized society. c. individuals and society. d. Canada and Mexico.

23. What do ecologists call the transfer of energy that begins with the Sun and passes from one organism to the next in a food chain?

a. a food web b. a top consumer c. energy flow d. a pyramid of numbers

24. Which of the following describes soil and temperature in an ecosystem?

a. abiotic factors b. biotic factors c. unnecessary factors d. selection factors

25. If an insect eats a plant and a bird eats the insect, about how much energy from the plant is stored in the insect for the bird to use? a. 90 percent b. 50 percent c. 10 percent d. 1 percent

26. Which kind of organism obtains energy only from producers?

a. decomposers b. herbivores c. omnivores d. All of the above

27. Which gas makes up 78 percent of our atmosphere but can be used by plants only when transformed by bacteria first?

a. nitrogen b. oxygen c. hydrogen d. carbon dioxide

28. Which of the following plants is likely to be a pioneer species?

a. lichen b. grass c. shrub d. oak tree

29. What kind of natural disaster helps some forest communities by allowing some trees to release their seeds, by clearing away deadwood, and by encouraging new growth?

a. fire b. flood c. windstorm d. drought

30. Where would an ecologist be least likely to go to study primary succession?

a. a new island formed by a volcanic eruption b. a gravel-filled valley that had been covered by a glacier until recently c. a locked, abandoned asphalt parking lot in New York City d. the Amazon Rain Forest

31. Which statement describes how humans are affecting the balance of carbon in the atmosphere?

a. Fewer agricultural crops are planted, reducing the amount of carbon dioxide released into the atmosphere. b. Burning fossil fuels in great quantities has increased the amount of carbon dioxide in the atmosphere. c. Overgrazing of grasslands has reduced the amount of carbon dioxide in the atmosphere. d. Severe drought in large areas of the world has decreased the amount of carbon dioxide that is released into the atmosphere.

32. Plants play a crucial role in the carbon cycle because they

a. do not release carbon dioxide during cellular respiration. b. allow carbon to enter an ecosystem through photosynthesis. c. have special bacteria that live in their root systems. d. are chemically converted into fossil fuels when burned.

33. The bacteria that live within the roots of a soybean plant are a critical part of the nitrogen cycle because they

a. provide the plant with sugars needed for growth. b. transform nitrates into nitrogen gas for release. c. change atmospheric nitrogen into a usable form. d. release nitrogen by decomposing dead plant parts.

34. Succession is possible because

a. climates change over time. b. it is a rapid and chaotic process that is very difficult to control. c. existing plants reproduce quickly. d. new species make the environment less suitable for previous ones.

35. Which of the following is an example of secondary succession?

a. breaking down of bare rock by fungi and mosses b. pioneer plants begin to grow after glacial melting c. growth of plants after a forest is destroyed by fire d. appearance of weeds in cracks in a concrete surface

36. Which of the following is responsible for making nitrogen in the atmosphere usable by living organisms?

a. absorption of nitrogen into water systems b. conversion of nitrogen into carbohydrates by photosynthesis c. nitrogen-fixing bacteria d. decomposing bacteria

37. What type of vegetation would you expect to find on an abandoned farm that has remained undisturbed for 150 years?

a. short grasses b. shrubs c. young pine trees d. tall, mature oak trees

38. What type of succession occurs after a natural process such as a volcanic eruption or flood?

a. primary succession b. secondary succession c. old-field succession d. climax community

39. Animals that live in the desert

a. hibernate in winter. b. are usually nocturnal. c. usually have thin skin to absorb water. d. include camels, moose, and various reptiles.

40. Deserts are a. covered with sand and contain no plant life. b. found only in North America. c. often formed on the dry side of mountain ranges. d. never located in cooler climates.

41. The tundra

a. has a layer of soil that is permanently frozen beneath the top soil. b. is too cold to support insect life. c. is resistant to environmental damage because it is usually frozen. d. All of the above

42. Biomes a. contain two ecosystems, hence the name “biome.” b. are usually described by their vegetation. c. exist in limited regions of the world. d. All of the above

43. Chaparral plants usually survive fires because

a. they contain oils that act as natural fire extinguishers. b. water is stored in their small, leathery leaves. c. they can resprout from small amounts of surviving plant tissue. d. they have deep root systems that keep them moist during a fire.

44. Which of the following adaptations are used by animals of the Arctic tundra?

a. Rodents burrow underground for winter protection. b. Deer and foxes use seasonal camouflage. c. Geese and caribou migrate to avoid predators. d. All of the above

45. The distance north or south of the equator, as measured in degrees, is called

a. altitude. b. latitude. c. longitude. d. magnitude.

46. The main factor that determines what type of plants grow in a biome is

a. temperature. b. precipitation. c. altitude. d. Both (a) and (b)

47. Biomes with higher temperatures and less precipitation tend to have

a. shorter and less dense vegetation. b. taller and denser vegetation. c. taller and less dense vegetation. d. shorter and denser vegetation.

48. Tropical rain forests are threatened by

a. deforestation and the trade of rain forest plants and animals. b. a decrease in the average temperature at the equator. c. a decrease in rainfall at the equator. d. a thinning of the soil.

49. Adaptations of desert animals that help them survive in the hot, dry desert often include

a. searching for water at midday. b. thin skin that readily absorbs water. c. large, bulky size to retain body heat on cold nights. d. searching for food at night.

50. The deforestation of the rain forests may cause climate changes which, in turn, may affect

a. acid precipitation. b. flooding. c. smog. d. habitat destruction.

**Essay**

51. Draw a food web that shows the following relationships. (You may draw pictures or just write the names.) In a mountain meadow, grasshoppers and aphids eat the flowers and grasses. Ladybugs eat the aphids, and blue jays eat the grasshoppers and ladybugs. Blue jays also eat grass seeds and pine nuts and even an occasional small frog from the pond. The frogs ate algae in the pond when they were tadpoles, but now they catch grasshoppers and other insects. The field mice eat grass seeds and pine nuts. Rabbits eat young grass shoots, and the deer graze on small green willow twigs. Owls and hawks eat the frogs, mice, and rabbits, and once in a while a cougar visits the meadow and preys on a fawn or sick deer. Use arrows to show who eats what. Then answer the following question: Do you think there would be more rabbits or owls living in this area? Explain your answer.

**2016-1017 Environmental Science Test One**

**Answer Section**

**MULTIPLE CHOICE**

1. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 1

2. ANS: B PTS: 1

3. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 1

4. ANS: D PTS: 1 DIF: 2 REF: 1

OBJ: 5

5. ANS: B PTS: 1

6. ANS: D PTS: 1 DIF: 1 REF: 1

OBJ: 2

7. ANS: D PTS: 1 DIF: 1 REF: 2

OBJ: 3

8. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 4

9. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 1

10. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 2

11. ANS: C PTS: 1

12. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 2

13. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 4

14. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 5

15. ANS: B PTS: 1

16. ANS: D PTS: 1

17. ANS: C PTS: 1

18. ANS: B PTS: 1 DIF: 1 REF: 2

OBJ: 3

19. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 3

20. ANS: C PTS: 1 DIF: 1 REF: 1

OBJ: 3

21. ANS: D PTS: 1 DIF: 1 REF: 2

OBJ: 1

22. ANS: C PTS: 1 DIF: 1 REF: 2

OBJ: 1

23. ANS: C PTS: 1

24. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 1

25. ANS: C PTS: 1 DIF: 1 REF: 1

OBJ: 3

26. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 2

27. ANS: A PTS: 1 DIF: 1 REF: 2

OBJ: 4

28. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 2

29. ANS: A PTS: 1 DIF: 1 REF: 3

OBJ: 1

30. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 1

31. ANS: B PTS: 1 DIF: 1 REF: 2

OBJ: 3

32. ANS: B PTS: 1 DIF: 1 REF: 2

OBJ: 1

33. ANS: C PTS: 1 DIF: 1 REF: 2

OBJ: 4

34. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 1

35. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 1

36. ANS: C PTS: 1 DIF: 1 REF: 2

OBJ: 5

37. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 3

38. ANS: B PTS: 1 DIF: 1 REF: 3

OBJ: 1

39. ANS: B PTS: 1 DIF: 1 REF: 3

OBJ: 3

40. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 3

41. ANS: A PTS: 1 DIF: 1 REF: 3

OBJ: 4

42. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 1

43. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 2

44. ANS: A PTS: 1 DIF: 1 REF: 3

OBJ: 4

45. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 3

46. ANS: D PTS: 1 DIF: 1 REF: 1

OBJ: 1

47. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 2

48. ANS: A PTS: 1 DIF: 1 REF: 2

OBJ: 5

49. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 3

50. ANS: B PTS: 1 DIF: 1 REF: 3

OBJ: 3

**ESSAY**

51. ANS:

Students' diagrams should be similar to the one shown on page 122 of the text. Students should use arrows to show that most of the organisms in this ecosystem eat more than one kind of food. There would be more rabbits than owls in this ecosystem because owls eat at a higher trophic level than rabbits. Only a fraction of the energy that the rabbits obtained from plants is available to the owls. Ecosystems generally support fewer carnivores than herbivores.

PTS: 1 DIF: 3 REF: 1 OBJ: 4

**6-1**

**Answer Section**

**MULTIPLE CHOICE**

1. ANS: B PTS: 1 DIF: 1 REF: 3

OBJ: 3

2. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 3

3. ANS: A PTS: 1 DIF: 1 REF: 3

OBJ: 4

4. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 1

5. ANS: C PTS: 1 DIF: 1 REF: 3

OBJ: 2

6. ANS: B PTS: 1 DIF: 1 REF: 1

OBJ: 3

7. ANS: D PTS: 1 DIF: 1 REF: 1

OBJ: 1

8. ANS: A PTS: 1 DIF: 1 REF: 1

OBJ: 2

9. ANS: D PTS: 1 DIF: 1 REF: 3

OBJ: 2

10. ANS: A PTS: 1 DIF: 1 REF: 2

OBJ: 5

11. ANS: B PTS: 1 DIF: 1 REF: 3

OBJ: 3