Practice Test

Part A

Answer all questions in this part. [15]

Directions (1–15): For *each* statement or question, circle the number of the word or expression that, of those given, best completes the statement or answers the question.

1 Which animal has modified ecosystems more than any other animal and has had the greatest negative impact on world ecosystems?

(1) gypsy moth (3) human
(2) zebra mussel (4) shark

2 Which set of statements best illustrates a material cycle in a self–sustaining ecosystem?

(1) In summer, growing plants remove magnesium ions from the soil to make chlorophyll. In autumn, these plants release magnesium when they die and decompose. In spring, new plants will grow in this same area.
(2) Trees do not live in a desert ecosystem where there is not enough water present in the sandy soil to support their growth. Trees can live in a desert oasis.
(3) DDT is sprayed on a forest ecosystem to control the mosquito population. After a year, the level of DDT is found to be much higher in the tissues taken from a hawk than in the tissues taken from a mouse in this ecosystem.
(4) Plants trap the Sun's energy in the chemical bonds of organic molecules. This energy is then used for plant metabolic activities.

3 Which factor is *not* considered by ecologists when they evaluate the impact of human activities on an ecosystem?

(1) amount of energy released from the Sun
(2) quality of the atmosphere
(3) degree of biodiversity
(4) location of power plants

4 Which statement illustrates how human activities can most directly change the dynamic equilibrium of an ecosystem?

(1) A hurricane causes a stream to overflow its banks.
(2) Increased wind increases water evaporation from a plant.
(3) Water pollution causes a decrease in fish populations in a river.
(4) The ozone shield helps prevent harmful radiation from reaching the surface of Earth.

5 Which human activity would be *least* likely to disrupt the stability of an ecosystem?

(1) disposing of wastes in the ocean
(2) using fossil fuels
(3) increasing the human population
(4) recycling bottles and cans

6 Which situation has had the most *negative* effect on the ecosystems of Earth?

(1) use of air pollution controls
(2) use of natural predators to control insect pests
(3) recycling glass, plastic, and metals
(4) increasing human population

7 Which factor is primarily responsible for the destruction of the greatest number of habitats?

(1) human population growth
(2) decreased use of renewable resources
(3) spread of predatory insects
(4) epidemic diseases

8 The *negative* effect humans have on the stability of the environment is most directly linked to an increase in

(1) recycling activities by humans
(2) supply of finite resources
(3) predation and disease
(4) human population size

9 Humans are responsible for some of the *negative* changes that occur in nature because they

(1) have encouraged the development of wildlife refuges and parks
(2) have passed laws to preserve the environment
(3) are able to preserve scarce resources
(4) are able to modify habitats more than any other species

10 Changes in the chemical composition of the atmosphere that may produce acid rain are most closely associated with

(1) insects that excrete acids
(2) runoff from acidic soils
(3) industrial smoke stack emissions
(4) flocks of migrating birds

11 In most states, automobiles must be inspected every year to make sure that the exhaust fumes they emit do not contain high levels of pollutants such as carbon monoxide. This process is a way humans attempt to

(1) control the water cycle
(2) recycle nutrients from one ecosystem to another
(3) control energy flow in natural ecosystems
(4) maintain the quality of the atmosphere

12 Increased production of goods makes our lives more comfortable, but causes an increase in the demand for energy and other resources. One *negative* impact of this situation on ecosystems is an increase in

(1) living space for wildlife
(2) renewable resources
(3) the diversity of plant species
(4) pollution levels in the atmosphere

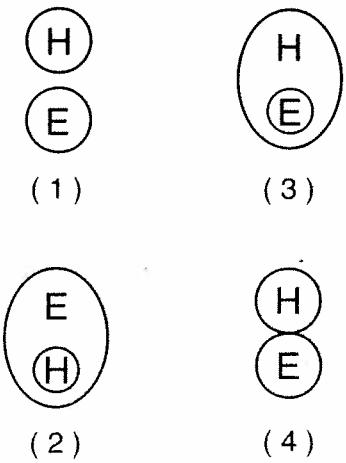
13 Which method of controlling populations of mosquitoes most likely involves the *least* risk of causing damage to the environment?

(1) draining swamps where mosquitoes deposit eggs
(2) spraying adult mosquitoes with pesticides from airplanes
(3) releasing more predators of mosquitoes native to mosquito habitats
(4) spraying oil on wet areas where mosquitoes breed

14 A new type of fuel gives off excessive amounts of smoke. Before this type of fuel is widely used, an ecologist would most likely want to know

(1) what effect the smoke will have on the environment
(2) how much it will cost to produce the fuel
(3) how long it will take to produce the fuel
(4) if the fuel will be widely accepted by consumers

15 Which diagram best illustrates the relationship between humans (H) and ecosystems (E)?



Part B

Answer all questions in this part. [3]

Directions (16–18): For multiple-choice questions, circle the number of the word or expression that, of those given, best completes the statement or answers the question. For short-answer questions, record your answers in the spaces provided.

16 Oak trees in the northeastern United States have survived for hundreds of years, in spite of attacks by native insects. Recently, the gypsy moth, which has a caterpillar stage that eats leaves, was imported from Europe. The gypsy moth now has become quite common in New England ecosystems. As a result, many oak trees are being damaged more seriously than ever before. [1]

State *one* biological reason that this imported insect is a more serious problem for the trees than other insects that have been present in the area for hundreds of years.

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_____

Base your answer to question 17 on the information below and on your knowledge of biology.

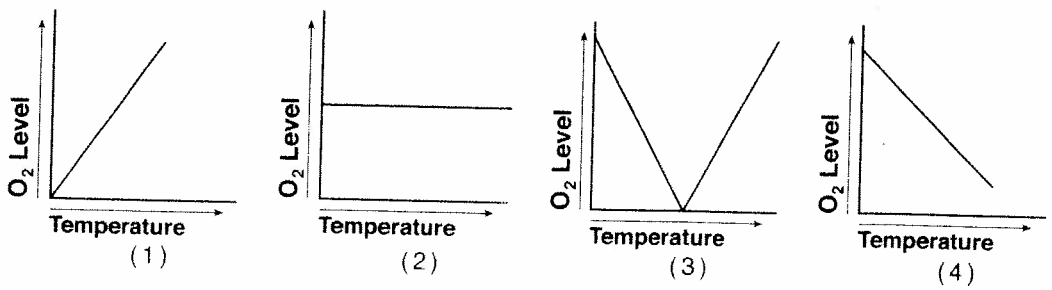
The dodo bird inhabited the island of Mauritius in the Indian Ocean, where it lived undisturbed for years. It lost its ability to fly and it lived and nested on the ground where it ate fruits that had fallen from trees. There were no mammals living on the island.

In 1505, the first humans set foot on Mauritius. The island quickly became a stopover for ships engaged in the spice trade. The dodo was a welcome source of fresh meat for the sailors and large numbers of dodos were killed for food. In time, pigs, monkeys, and rats brought to the island ate the dodo eggs in the ground nests.

17 Which statement describes what most likely happened to the dodo bird within 100 years of the arrival of humans on Mauritius?

(1) Dodo birds developed the ability to fly in order to escape predation and their population increased.
(2) The dodo bird population increased after the birds learned to build their nests in trees.
(3) Human exploitation and introduced species significantly reduced dodo bird populations.
(4) The dodo bird population became smaller because they preyed upon the introduced species.

18 Which graph best shows the relationship between changes in temperature in the Great Lakes waters and the amount of dissolved oxygen those waters can hold?

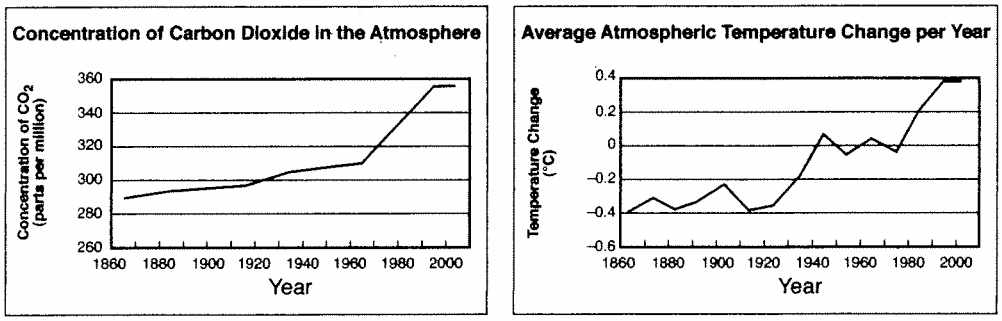


Part C

Answer all questions in this part. [11]

Directions (19–21): Record your answers in the spaces provided.

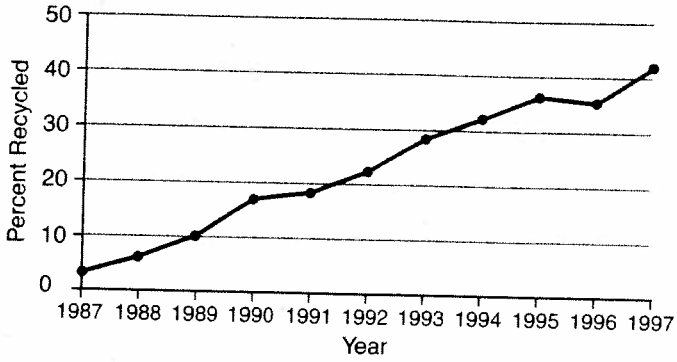
19 For over 100 years scientists have monitored the carbon dioxide concentrations in the atmosphere in relation to changes in the atmospheric temperature. The graphs below show the data collected for these two factors.



Discuss the overall relationship between carbon dioxide concentrations and changes in atmospheric temperature and the effect of these factors on ecosystems. Your answer must include:

- a statement identifying the overall relationship between the concentration of carbon dioxide and changes in atmospheric temperature [1]
- *one* way in which humans have contributed to the increase in atmospheric carbon dioxide [1]
- *one* specific *negative* effect the continued rise in temperature would be likely to have on an ecosystem [1]
- *one* example of how humans are trying to reduce the problem of global warming [1]

20 The graph below shows the percentage of solid wastes recycled in New York State between 1987 and 1997.



Discuss the impacts of recycling. In your answer be sure to:

- explain what recycling is and provide one example of a material that is often recycled [2]
- state one specific positive effect recycling has on the environment [1]
- state one specific reason that the percentage of solid wastes recycled increased between 1987 and 1997 [1]

21 Human activities continue to place strains on the environment. One of these strains on the environment is the loss of biodiversity. Explain what this problem is and describe some ways humans are involved in both the problem and the possible solutions. In your answer be sure to:

- state the meaning of the term *biodiversity* [1]
- state one *negative* effect on humans if biodiversity continues to be lost [1]
- suggest one practice that could be used to preserve biodiversity in New York State [1]