Section: Biological Hazards

Read the passage below and answer the questions that follow.

Our actions cause pathogens to evolve resistance to antibiotics that are used to kill them. For example, in the United States, large quantities of antibiotics are fed to livestock each year to speed their growth. As a result, Salmonella, Escherichia coli (E. coli), and other bacteria that live in livestock evolve resistance to antibiotics. These bacteria now make thousands of U.S. citizens sick each year when they eat contaminated meat that has been improperly refrigerated or undercooked.

We also use enormous amounts of antibiotics to treat human illnesses. In 1979, 6 percent of European strains of pneumonia bacteria were resistant to antibiotics. Ten years later, 44 percent of the strains were resistant. Tuberculosis (TB) is another illness treated with antibiotics. The spread of TB in recent years is mostly due to the evolution of antibiotic resistance in the bacterium that causes TB.

IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about main ideas.

Read the following question and write your answer in the space provided.

1. How have pathogens changed as a result of human action?

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

2. Why are livestock in the United States fed large quantities of antibiotics?
   a. to treat the many animals that become sick
   b. to speed the animals' growth
   c. so bacteria in livestock will develop a resistance to the antibiotics
   d. to prevent people who eat meat from becoming sick

3. People use large quantities of antibiotics in order to
   a. prevent human illnesses.
   b. prevent the spread of disease.
   c. treat contaminated meat.
   d. treat human illnesses.
VOCABULARY DEVELOPMENT

Read each question and write the answer in the space provided.

4. The prefix *anti-* means “against” or “opposing.” *Biotic* means “way of life.” Use this information and information from the passage to define *antibiotic*.

5. *Patho-* refers to disease. The suffix *-gen* means “producer.” What is a *pathogen*?

In the space provided, write the letter of the term that best completes the statement.

6. Food that contains bacteria such as *Salmonella* and *E. coli* is
   a. resistant.
   b. undercooked.
   c. contaminated.
   d. antibiotic.

RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

In the space provided, write the letter of the phrase that best completes the statement.

7. Tuberculosis (TB) has spread in recent years because
   a. more people are exposed to TB than were exposed in the past.
   b. antibiotics are unavailable in many parts of the world.
   c. no cure has yet been found for TB.
   d. the bacterium that causes TB has become resistant to antibiotics.

Read each question and write the answer in the space provided.

8. How are people in the U.S. exposed to such bacteria as *Salmonella* and *E. coli*?

9. Give two reasons why pathogens have evolved resistance to antibiotics in recent years.
Active Reading

SECTION: POLLUTION AND HUMAN HEALTH
1. d
2. a
3. c
4. Concentration is the amount of a substance gathered together at a specific place.
5. A pollutant is something that makes something else impure.
6. The health damage is called a response because it refers to the body's reaction to a harmful substance.
7. b
8. a
9. Whether a chemical has a toxic effect depends on how many times a person is exposed to the chemical and the amount of exposure, the person's size, and how well the person's body breaks down the chemical.

SECTION: BIOLOGICAL HAZARDS
1. They have become resistant to antibiotics.
2. b
3. d
4. An antibiotic is a substance used to kill bacteria.
5. A pathogen is a substance (or organism) that causes disease.
6. c
7. d
8. People in the U.S. are exposed through contaminated meat that has been improperly refrigerated or undercooked.
9. First, large amounts of antibiotics have been given to livestock to increase growth. Second, large amounts of antibiotics have been used to treat human illnesses.

Map Skills
1. Sicily, Sardinia, Corsica, Marseilles
2. a year and a half
3. 3 years
4. more than 1,000 miles
5. Answers may vary. Accept all logical responses. For example, geographic features such as mountains might have blocked the plague's spread into certain areas.

Quiz

SECTION: POLLUTION AND HUMAN HEALTH
Matching
1. b 2. d 3. c 4. a 5. e

Multiple Choice
6. a 7. d 8. d 9. c 10. a

SECTION: BIOLOGICAL HAZARDS
Matching
1. b 2. d 3. c 4. a 5. e

Multiple Choice
6. c 7. a 8. d 9. c 10. b

Chapter Test General
Matching
1. c 2. a 3. e 4. b 5. d

Multiple Choice

Chapter Test Advanced
Matching
1. a 2. c 3. d 4. e 5. b

Multiple Choice