

## Reporting Category 4

**5** Health-care workers are exposed to many different types of pathogenic and nonpathogenic microorganisms. Which body systems work together to protect the body from pathogens? **(R10A)**

- A Muscular and vascular
- B Digestive and excretory
- C Circulatory and immune
- D Endocrine and reproductive

**7** Leaves are part of a plant's shoot system. The xylem tissue in leaves transports — **(R10B)**

- A the bacteria needed for nitrogen fixation in root nodules
- B the wax required to coat the surface of actively growing tissue
- C the water and minerals that are absorbed by the roots
- D the oxygen that regulates the rate of carbohydrate production

**10** Enzymes are proteins that help increase the rate of chemical reactions inside cells. These proteins are composed of many simpler molecules called amino acids. Which of the following suggests that the shape of an enzyme determines the enzyme's function? **(S9C)**

- F Enzymes are specific to a substrate.
- G Enzymes can operate in a wide range of conditions.
- H Enzymes are activated by neighboring molecules.
- J Enzymes can be found in all life-forms.

**12** Which of the following correctly describes how a diagram of cellular respiration would differ from a diagram of photosynthesis? **(S9B)**

- F The cellular-respiration diagram would show electromagnetic waves as the final product.
- G The cellular-respiration diagram would show glucose as the main source of energy.
- H The cellular-respiration diagram would show energy stored in large protein molecules.
- J The cellular-respiration diagram would show water as the main source of chemical energy.

**17** A dog's pituitary gland produces the hormone ACTH, which stimulates the adrenal glands to secrete cortisol. Cortisol helps regulate body weight, mineral balance, the structure of connective tissue, the production of white blood cells, and skin health. When cortisol levels are low, the pituitary gland secretes ACTH. When cortisol levels are high, the pituitary gland stops secreting ACTH. Based on this information, which of the following would most likely be the cause of elevated levels of cortisol in a dog? **(S11A)**

- A Undersized adrenal glands
- B An excess of ACTH
- C An inactive pituitary gland
- D An immune response to the excess level of cortisol

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**22** Which of the following correctly describes an interaction that occurs between two body systems of a rabbit that helps the rabbit outrun a pursuing coyote? **(R10A)**

**F** The skeletal system releases additional calcium, and the circulatory system retains more sodium in the blood to provide muscles with ions for contraction.

**G** The digestive system increases the rate of digestion, and the excretory system ceases to provide tissues with more nutrients.

**H** The respiratory system increases the breathing rate, and the circulatory system increases blood pressure to provide tissues with more oxygen.

**J** The endocrine system releases hormones that prepare the immune system to deal with possible injuries.

**32** Plant hormones serve as chemical messengers between cells and tissues. Auxin is a plant hormone that causes the cells on the shady side of a plant shoot to elongate. The response enabled by auxin is known as — **(R10B)**

**F** geotropism

**G** transpiration

**H** phototropism

**J** photosynthesis

**35** A student is studying the ecology of a playa lake, which forms after a rainfall in a dry lake bed. The table lists the organisms that the student observed. **(S10C)**

| Organisms Observed                            |  |              |       |
|---|--|--------------|-------|
| Day 1   | Day 2  | Day 3        | Day 4 |
| Fairy shrimp<br>Clam shrimp<br>Tadpole shrimp | Fairy shrimp<br>Clam shrimp<br>Tadpole shrimp<br>Mayfly larvae | Fairy shrimp | None  |

Which level of biological organization has the student described in the table?

**A** Biosphere

**B** Organelle

**C** Ecosystem

**D** Community

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**44** Copper is a micronutrient that can be found in soil. Copper is important for reproductive growth in plants and plays an indirect role in chlorophyll production. Which statement correctly describes the interaction that occurs between the root and the shoot systems of plants to allow reproduction to occur? **(R10B)**

**F** Copper is produced in the roots when copper-containing compounds are hydrolyzed.

**G** Copper that is absorbed by the roots is transported to reproductive tissues by the shoot system.

**H** The shoot system stores copper for later use by the roots and the reproductive structures.

**J** The shoot system transports copper to the roots after it is taken in through stomata in the leaves.

**48** The human digestive system is approximately 900 cm long. Food is moved through the digestive tract primarily by — **(R10A)**

**F** bile produced by the pancreas

**G** the enzymes amylase and pepsin

**H** muscular contractions

**J** hydrochloric acid in the stomach

**51** Changes in water pressure within guard cells cause the cells to open or close the stoma. This response helps the plant maintain homeostasis by — **(S11A)**

**A** stabilizing the plant's temperature through the evaporation of water

**B** regulating the amount of water the plant loses during transpiration

**C** allowing oxygen needed for photosynthesis to enter the plant

**D** enabling the plant to release more carbon dioxide at night for photosynthesis