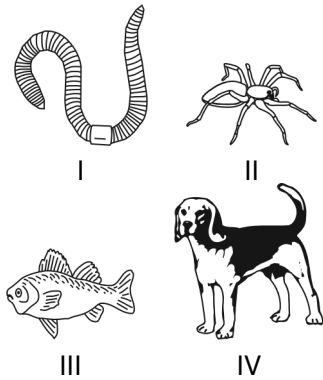


NY Regents Living Environment Samples

1 Fill in all of the blanks in parts 2 and 3 of the dichotomous key below, so that it contains information that could be used to identify the four animals shown below.



Dichotomous Key

1. a. Legs present..... Go to 2
- b. Legs not present..... Go to 3

Characteristic	Organism
-----------------------	-----------------

- | | | | |
|----|----|-------|-------|
| 2. | a. | _____ | _____ |
| | b. | _____ | _____ |
| 3. | a. | _____ | _____ |
| | b. | _____ | _____ |

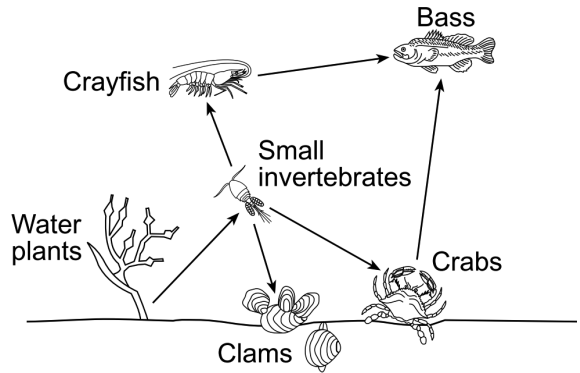
2 The first trial of a controlled experiment allows a scientist to isolate and test

- A. a logical conclusion
- B. a variety of information
- C. a single variable
- D. several variables

3 An ameba is a single-celled, heterotrophic organism. In order to meet its energy needs, it relies directly on the interaction of which cell structures?

- A. chloroplasts and the cell membrane
- B. the cell membrane and mitochondria
- C. nucleus and ribosomes
- D. vacuoles and the nucleus

4 The diagram below represents a food web in a pond ecosystem.



Two carnivores in the food web are

- A. bass and small invertebrates
- B. small invertebrates and crabs
- C. water plants and clams
- D. crabs and crayfish

5 Scientists have been investigating a way to recreate extinct species such as the saber-toothed cat illustrated below.

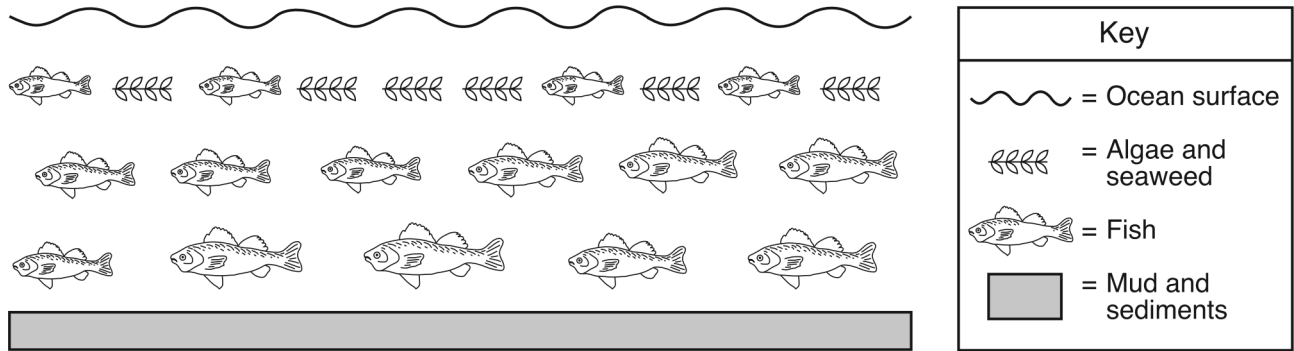


Source: <https://IGS.Indiana.edu>

Which technique would use DNA from an extinct species to recreate an organism of the species?

- A. natural selection
- B. differentiation
- C. cloning
- D. selective breeding

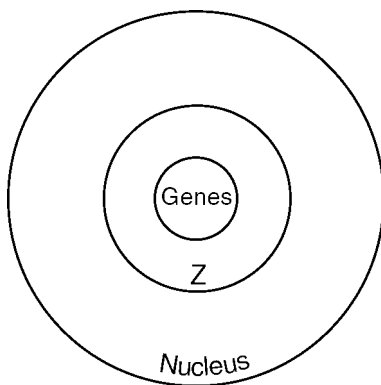
6 An ecosystem is represented below.



The organisms represented as are found in the area shown due to which factor?

- A. pH B. sediment C. light intensity D. colder temperature

7 The accompanying diagram represents the organization of genetic information within a cell nucleus.



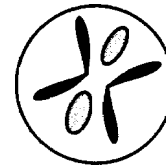
The circle labeled Z most likely represents

- A. amino acids B. chromosomes
C. vacuoles D. molecular bases

8 Compare asexual reproduction to sexual reproduction. In your comparison, be sure to include:

- which type of reproduction results in offspring that are usually genetically identical to the previous generation and explain why this occurs
- *one* other way these methods of reproduction differ

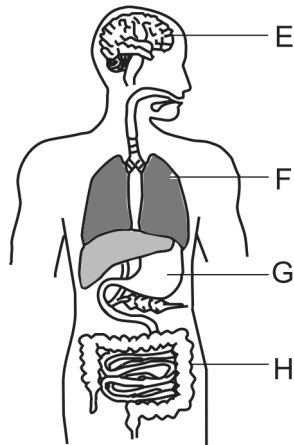
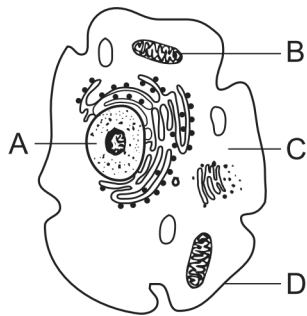
9 The accompanying diagram represents chromosomes in a zygote.



Which diagrams best illustrate the daughter cells that result from normal mitotic cell division of this zygote?

- A.
- B.
- C.
- D.

- 10 Base your answer to the following question on the diagrams below and on your knowledge of biology. The diagrams represent a single-celled organism and a multicellular organism.



Which statement correctly identifies the levels of organization for the structures indicated?

- A. A and B are tissues; E and G are organs.
- B. A and B are organs; E and G are systems.
- C. A and B are tissues; E and G are organelles.
- D. A and B are organelles; E and G are organs.
- 11 Which sequence best represents increasing complexity?
- A. tissues → cells → organelles → organs
- B. cells → organelles → organs → organism
- C. organelles → cells → tissues → organs
- D. organism → cells → tissues → organelles

- 12 Which phrase best describes cellular respiration, a process that occurs continuously in the cells of organisms?

- A. removal of oxygen from the cells of an organism
- B. conversion of light energy into the chemical bond energy of organic molecules
- C. transport of materials within cells and throughout the bodies of multicellular organisms
- D. changing of stored chemical energy in food molecules to a form usable by organisms

- 13 Some people with spinal cord injuries do not sweat below the area of the injury. Without the ability to sweat, the human body temperature begins to rise. Which statement would best describe this situation?

- A. Feedback mechanisms regulate blood sugar levels.
- B. Gene mutations are increased.
- C. Energy from ATP is not available.
- D. Dynamic equilibrium is disrupted.

- 14 One likely reason some experimental automobiles have been developed to use electricity rather than gasoline is that

- A. gasoline is made from petroleum, a nonrenewable resource
- B. Earth has an unlimited supply of fossil fuels
- C. the use of electricity will eliminate the need for all antipollution laws
- D. the use of electricity will increase the manufacture of antipollution devices for cars

Base your answers to the following questions on the information below and on your knowledge of biology.

Beware of Dust Mites



Quietly lurking within our mattresses, under our beds, and inside sofas and carpets are creatures too small to be seen without a microscope. Dust mites are arthropods closely related to spiders, scorpions, and ticks. They feed on the dead skin cells regularly shed by humans and their animal pets. The average human sheds about 10 grams of dead skin a week. Cats and dogs create even more dander for dust mites to eat. The mites also eat pollen, fungi, and bacteria. They do not drink water but absorb it from the air.

Dust mites do not carry diseases and are harmless to most people. It's their bathroom habits that make some of us itch and sneeze. Many people develop severe allergies to dust mite feces (wastes). If you lie on a rug where dust mites live, you might develop itchy red bumps on your skin. Breathe in dust containing their feces and you might have more serious symptoms, such as difficulty breathing or a severe asthma attack.

Dust mites thrive in warm, humid environments—eating and nesting in dust—collecting bedding, fabric, and carpet. Think about this! A typical mattress can contain anywhere from 100,000 to 10 million dust mites. Nearly 100,000 dust mites can live in one square yard of carpet.

During a process called sensitization, a person's immune system mistakenly identifies the inhaled dust mite waste as an invader. The next time the person is exposed to the dust mite waste, the immune system launches an allergic reaction.

- 15 The immune system of an individual who is allergic to dust mite waste produces
- A. specialized chemicals that mark dust mite waste for destruction
 - B. viruses that combat dust mites
 - C. white blood cells that attack human skin cells
 - D. white blood cells that attack the skin cells of cats and dogs

- 16 State *one* way, other than using a pesticide, that an individual could decrease the number of dust mites present in his home.

- 17 Which statement best describes enzymes?

- A. Every enzyme controls many different reactions.
- B. The rate of activity of an enzyme might change as pH changes.
- C. Temperature changes do not affect enzymes.
- D. Enzymes are produced from the building blocks of carbohydrates.

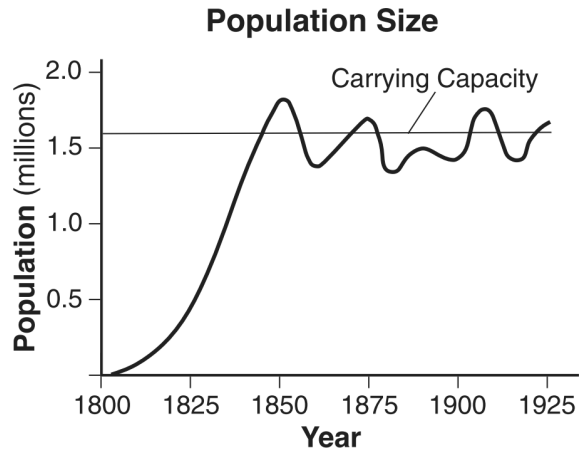
- 18 The list below includes three organ systems that are directly used when a human runs.

circulatory system
muscular system
skeletal system

Which system should also be included in the list?

- A. immune system
- B. reproductive system
- C. digestive system
- D. nervous system

- 19 The graph below shows the size of a population of foxes over a period of years.



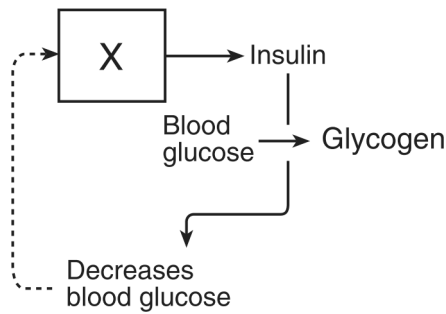
If the line did not stay around the carrying capacity, but continued to rise, which concept would this graph best illustrate?

- A. environmental stability
- B. genetic variety
- C. behavioral change
- D. overproduction

- 20 Carnivorous plants, such as pitcher plants and sundews, live in bogs where many other organisms cannot. Due to the high rate of decomposition occurring in bogs, the environment is acidic and contains very little oxygen and nutrients. The bogs only support certain types of organisms because

- A. organisms in an environment are not limited by available energy and resources
- B. the growth and survival of organisms depends upon specific physical conditions
- C. favorable gene mutations only occur when organisms live in harsh environments
- D. photosynthetic organisms can only inhabit environments that have a low acidity

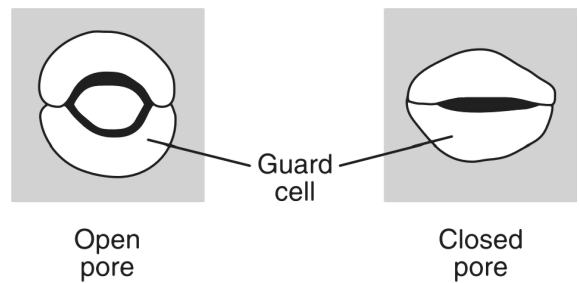
- 21 Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology.



The dashed line in the diagram represents

- A. a digestive process
- B. a feedback mechanism
- C. cellular differentiation
- D. recycling of organic chemicals

- 22 The diagram below represents a change in guard cells that open and close pores in a plant.

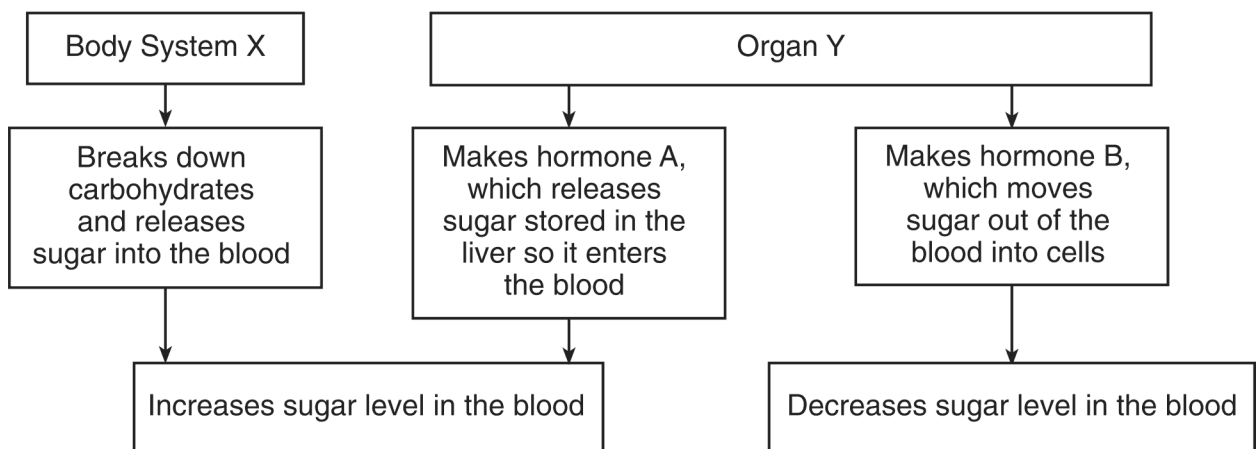


This change directly helps to

- A. increase heterotrophic nutrition
- B. absorb minerals
- C. regulate water loss
- D. reduce seed production

- 23 Base your answers to the following questions on the diagram below and on your knowledge of biology. This diagram represents the roles of different parts of the human body in keeping blood sugar at a balanced, normal level over time.

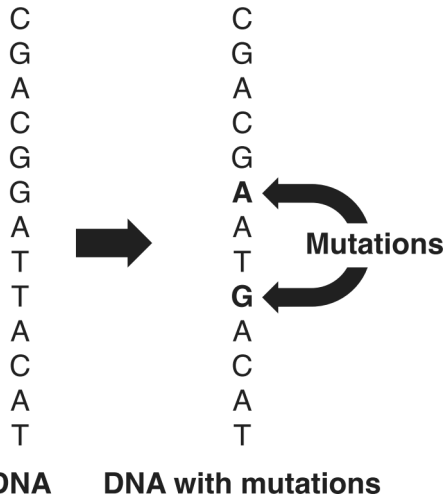
Homeostasis of Blood Sugar Level



If body system *X* temporarily stops releasing sugar into the blood, a likely response of the body would be to

- A. stop using enzymes in body system *X*
- B. stop organ *Y* from producing hormone *A*
- C. start to increase synthesis of hormone *B*
- D. start to increase synthesis of hormone *A*

24 The diagram below represents the locations of two mutations in a strand of a DNA molecule.



If this DNA is located in the nucleus of a skin cell, the cell will

- A. pass the mutations on to only half the cells that develop from it
- B. delete all of the DNA in the nucleus and synthesize new DNA
- C. correct the mutations after several generations
- D. pass the mutations on to the cells that develop from it

25 Base your answer(s) to the following question(s) on the information below and on your knowledge of biology.

Carbon exists in a simple organic molecule in a leaf and in an inorganic molecule in the air humans exhale.

Identify the carbon-containing molecule that humans exhale and the process that produces it.

26 Plants respond to their environment in many different ways. Design an experiment to test the effects of *one* environmental factor, chosen from the list below, on plant growth.

- Acidity of precipitation
- Temperature
- Amount of water

In your answer, be sure to:

- identify the environmental factor you chose
- state *one* hypothesis the experiment would test
- state how the control group would be treated differently from the experimental group
- state *two* factors that must be kept the same in both the experimental and control groups
- identify the independent variable in the experiment
- label the columns on the data table below for the collection of data in your experiment

Data Table
