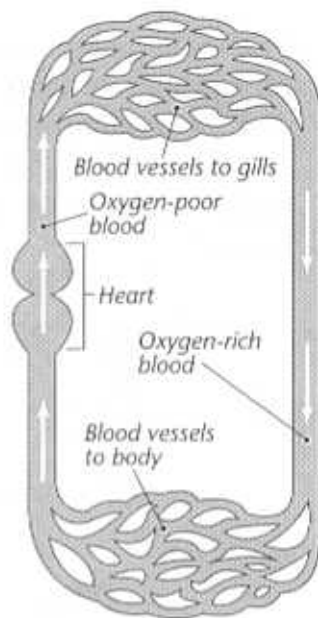


**LIFE SCIENCE**

**PRACTICE TEST A**

- 1 A scientist planted two morning glory vines. He put a stake near the first vine. The first vine grew upward, coiling around the stake, while the second vine grew low to the ground. **Why did only the first vine grow upward?**
- A It responded positively to the stimulus of touching the stake.
  - B It responded more strongly to light than the second vine.
  - C It responded less strongly to gravity than the second vine.
  - D It responded negatively to the stimulus of touching the ground.



- 2 What is the function of a red blood cell?

- F To transport white blood cells
- G To ward off infection
- H To transport carbon dioxide and oxygen
- J To aid in blood clotting

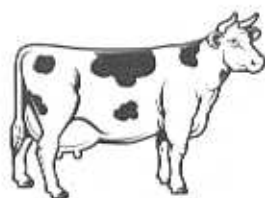
- 3 What characteristic do all mammals have in common?

- A They have feathers.
- B They have a pouch.
- C They are omnivorous.
- D Their young feed on milk.

- 4 Which organism is most likely to have the type of circulatory system shown?



F



G



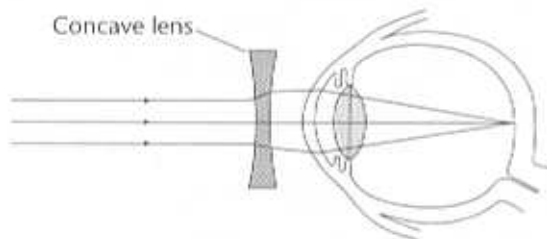
H



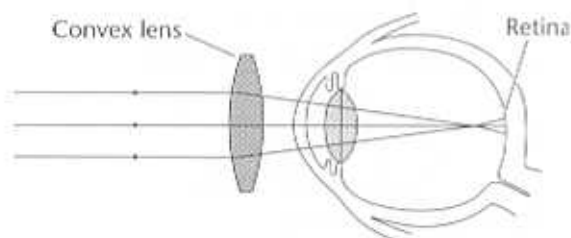
J

**PRACTICE TEST A** (continued)

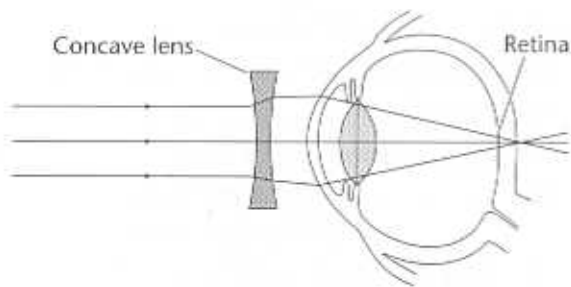
- 5 José loved to play baseball with his father. However, he was having trouble hitting the ball. José's father realized that José might be having trouble with his vision. When José visited the doctor, the doctor discovered that José was nearsighted. Which diagram shows the type of lens José needs to correct his vision?



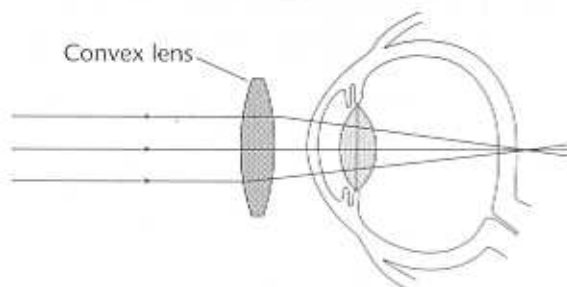
A



B

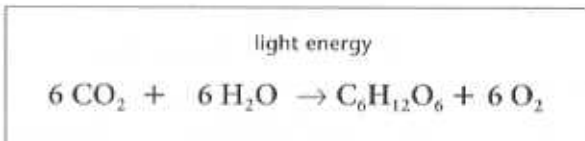


C



D

**Directions:** The equation below shows the chemical reaction that occurs during photosynthesis. Use the equation to answer questions 6–7.



- 6 What is produced during photosynthesis?
- F Carbon dioxide and water
  - G Light energy
  - H Carbon dioxide and glucose
  - J Glucose and oxygen
- 7 Why are the words “light energy” written above the arrow in the equation?
- A Light energy is necessary for the reaction to occur.
  - B Light energy is produced during the reaction.
  - C Oxygen exists only in the presence of light.
  - D Glucose exists only in the presence of light.
- 8 Which divisions of time are the longest?
- F Eras
  - G Periods
  - H Epochs
  - J Centuries

**PRACTICE TEST A** *(continued)*

**Directions:** Use the information given below to answer questions 9–11.

**Regulating Glucose in the Bloodstream**

If the concentration of glucose in a person's bloodstream is not kept within a certain range, serious health problems can result. When the concentration of glucose increases, special cells in the pancreas secrete a hormone called insulin. Insulin acts to decrease the amount of glucose in the bloodstream by moving glucose from the blood into body cells.

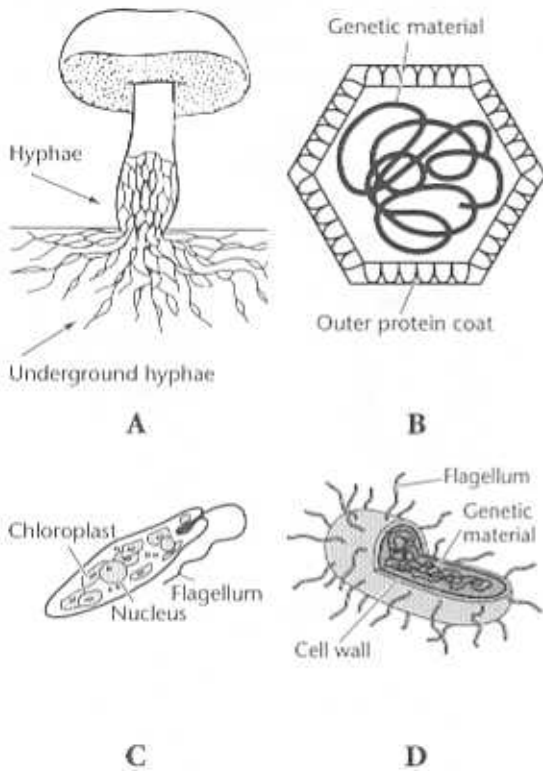
Other special cells in the pancreas release a hormone called glucagon when the amount of glucose in the blood decreases. Glucagon causes muscle and liver cells to release stored glucose into the bloodstream. In this way, the pancreas helps the body maintain a constant level of glucose in the blood.

- 9 After a person eats a large meal, glucose begins to move into the bloodstream and the level of insulin released by the pancreas —
- A increases
  - B decreases
  - C remains the same
  - D is equal to the level of glucagon

- 10 The pancreas of a person with Type I diabetes produces little or no insulin. People with this condition must get insulin injections to prevent —
- F low levels of glucose in the bloodstream
  - G high levels of glucagon in the muscle and liver cells
  - H low levels of glucose in the body cells
  - J high levels of glucagon in the bloodstream
- 11 When the amount of insulin reaches a certain level in the blood, the pancreas stops releasing insulin. This process, in which a system is turned off by the condition it produces, is called —
- A passive immunity
  - B negative feedback
  - C an inflammatory response
  - D a chain reaction
- 12 How do sex cells form with half the number of chromosomes as body cells?
- F Pairs of chromosomes join to become single chromosomes in sex cells.
  - G The number of chromosomes is reduced by half during meiosis.
  - H Half the chromosomes are unused in sex cells.
  - J Single chromosomes are split in two as cells divide into sex cells.

**PRACTICE TEST A** (continued)

**13** Which of these organisms is a protist?



**14** Arachnids, centipedes, millipedes, and insects are types of —

- F arthropods
- G mollusks
- H echinoderms
- J amphibians

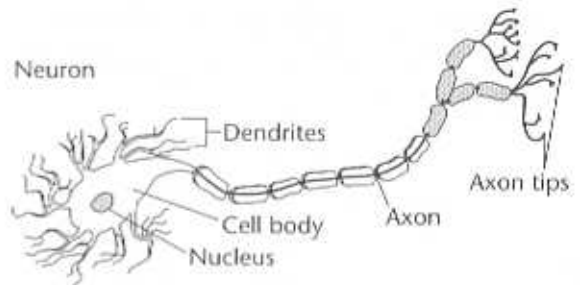
**15** The individual bones of the vertebral column are called —

- A ligaments
- B vertebrae
- C peripheral nerves
- D long bones

**16** Which characteristics do biologists use to classify fishes into three major groups?

- F Number of fins and type of diet
- G Eye structure and number of teeth
- H Color and length
- J Mouth structure and type of skeleton

**Directions:** Use the diagram below to answer questions 17–18.



**17** What is the function of the axon in a nerve cell?

- A Controls all the activities of the neuron
- B Receives messages from the axon tips
- C Sends messages to the dendrites
- D Carries messages away from the cell body

**18** What is the function of the dendrites in a nerve cell?

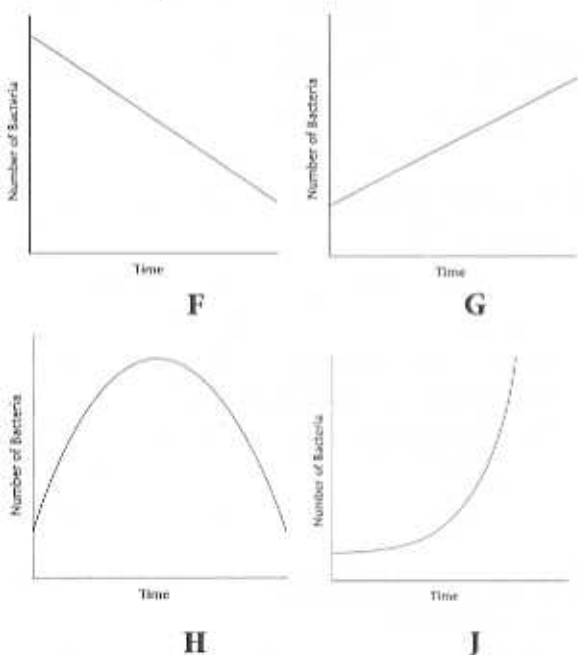
- F Controls all the activities of the neuron
- G Carries impulses toward the cell body
- H Acts as an effector
- J Receives messages from the cell body

**19** After the Industrial Revolution in England, the numbers of light- and dark-colored peppered moths in the population changed. **Which color of moths became more common and why?**

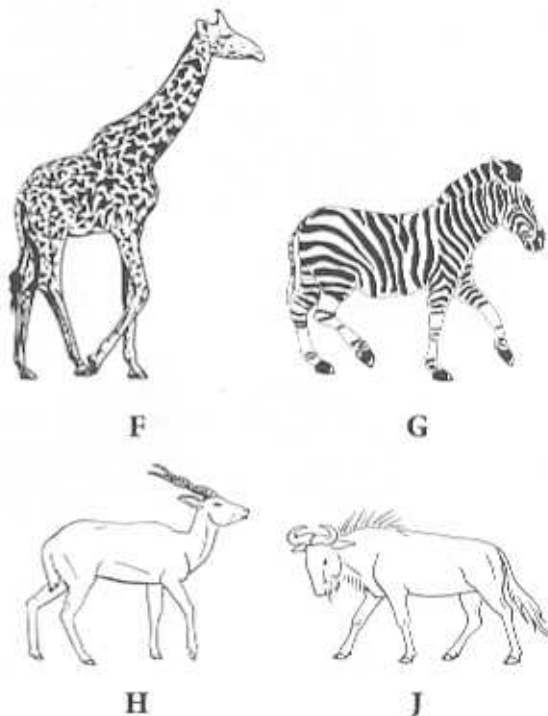
- A Light-colored moths, because they blended in with soot-covered trees
- B Light-colored moths, because they blended in with the light given off by industrial processes
- C Dark-colored moths, because gardeners sprayed chemicals to kill light-colored moths
- D Dark-colored moths, because they blended in with soot-covered trees

**PRACTICE TEST A** (continued)

**20** A species of bacterium reproduces by binary fission every 15 minutes. Which graph describes the growth rate of a population of these bacteria over a 3-hour period?

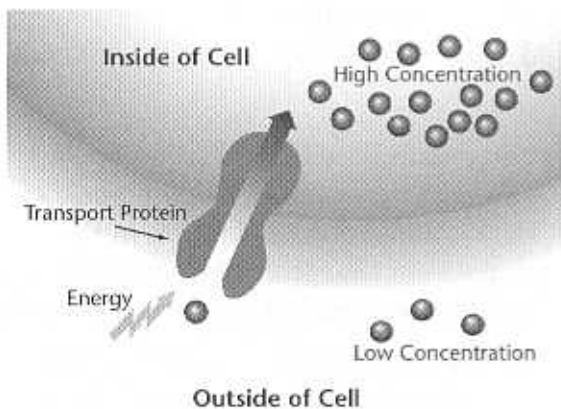


**22** Which animal has an adaptation that allows it access to a source of food that is protected from most other plant-eating mammals?



**23** Which of the following characteristics do bacterial cells have in common with plant cells?

- A Both have chloroplasts.
- B Both have cell walls.
- C Both are prokaryotes.
- D Both have mitochondria.



**21** What cell process is represented in the drawing?

- A Diffusion
- B Osmosis
- C Active transport
- D Engulfing

**24** Which of the following organisms is an angiosperm?

- F Moss
- G Dandelion
- H Yeast
- J Fern

**PRACTICE TEST A** (continued)

**Directions:** Use the information given below to answer questions 25–27.

A marine biologist scuba dives to study organisms in the ocean. During a dive on a coral reef, she found an interesting organism.

When she studied the organism with a hand lens, she found that it looked like a bag pierced by numerous tiny openings. As she observed the organism, she discovered that water entered it through tiny openings called pores. Water left the organism through a large opening called an osculum. The central cavity was lined with cells with whiplike structures that beat back and forth. These cells moved water through the organism and trapped food particles. The biologist also found that she needed to handle the organism with care because it was covered by tiny spikes.

**25** What organism did the biologist find?

- A Cnidarian
- B Sponge
- C Segmented worm
- D Mollusk

**26** How does the organism rely on its spikes?

- F They capture prey.
- G They develop into new organisms.
- H They support the body and provide protection.
- J They digest food.

**27** The cells that lined the central cavity of the organism are called —

- A collar cells
- B polyp cells
- C pore cells
- D stinging cells

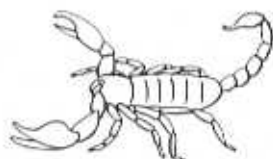
**28** Which of these is an inherited trait?

- F Pierced ears
- G Long fingernails
- H Long hair
- J Brown eyes

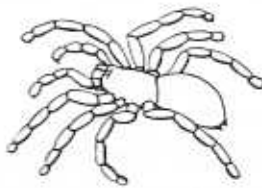
**29** Which of these arthropods is *not* an arachnid?



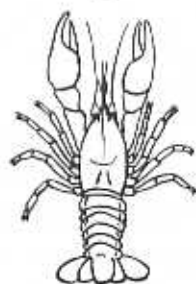
A



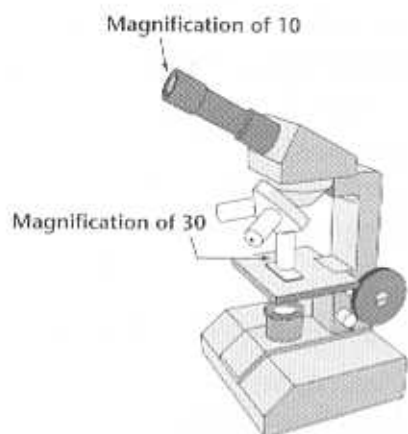
B



C



D

**PRACTICE TEST A** (continued)

**30** What is the total magnification of this microscope?

- F 300 ( $10 \times 30$ )    H 40 ( $30 + 10$ )  
 G 3 ( $30 \div 10$ )    J 20 ( $30 - 10$ )

**Directions:** Use the information given below to answer questions 31–34.

A dog breeder has begun to raise Labrador retrievers. So far, she hasn't been able to predict the color of the puppies that she breeds. She does not know that dark fur (D) is dominant over yellow fur (d).

When the breeder crossed a yellow female Labrador retriever with a male Labrador with dark fur, she expected half of the puppies to be yellow and half to be dark. However, in a litter of 8 puppies, all had dark fur. The breeder next crossed the same yellow female with a different dark male. This time, half of the puppies were yellow and half were dark.

**31** Which letters represent the genotype of the first male?

- A Dd                      C dD  
 B DD                      D dd

**32** Which letters represent the genotype of the second male?

- F Dd                      H DO  
 G DD                      J dd

**33** How can the woman breed a litter of all yellow puppies?

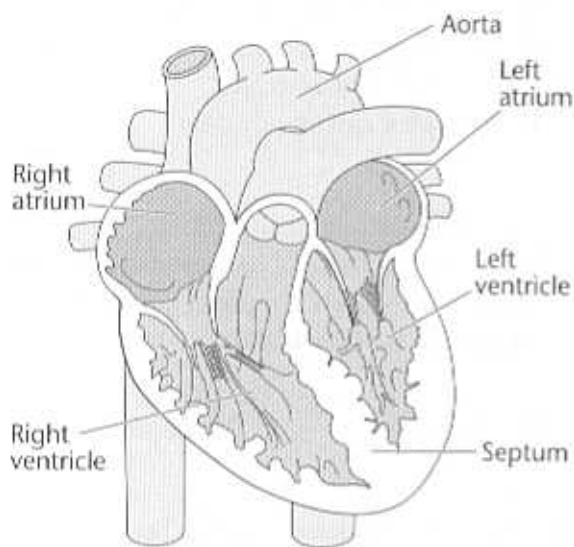
- A By making sure that either the mother or the father is yellow  
 B By making sure that both the mother and the father are yellow  
 C By making that at least one of the grandparents is yellow  
 D She cannot breed a yellow litter since yellow fur is recessive.

**34** The breeder is going to cross two dark Labradors. One is homozygous and the other is heterozygous. **Predict what percentage of the puppies will be yellow.**

- F 0  
 G 25  
 H 50  
 J 75

**PRACTICE TEST A** *(continued)*

**Directions:** Use the diagram below to answer questions 35–36.



**35** Where does blood enriched with oxygen from the lungs enter the heart?

- A Right atrium
- B Right ventricle
- C Left ventricle
- D Left atrium

**36** What muscle divides the heart into a right side and a left side?

- F Left ventricle
- G Left atrium
- H Septum
- J Aorta

**37** Which of the following shows the path of food through the human digestive system?

- A Mouth → esophagus → stomach → small intestine → large intestine → anus
- B Mouth → trachea → stomach → small intestine → large intestine → anus
- C Anus → mouth → esophagus → stomach → small intestine → large intestine
- D Mouth → esophagus → stomach → large intestine → small intestine → anus

**38** Organisms that cannot make their own food are called —

- F microtroths
- G homotrophs
- H autotrophs
- J heterotrophs

**39** The organisms that form coral reefs are —

- A cnidarians
- B sponges
- C flatworms
- D segmented worms



**PRACTICE TEST A** (continued)

**Directions:** Use the information and the chart below to answer questions 40–41.

The arthropods shown differ in the numbers of body sections, legs, and antennae.

**Comparisons of the  
Largest Arthropod Groups**

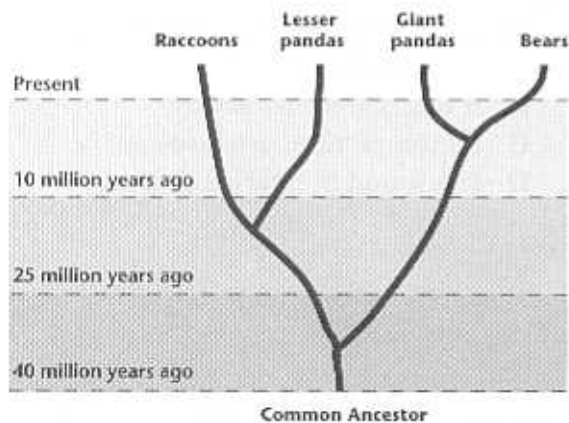
Characteristic	Crustaceans	Arachnids	Insects
Number of Body Sections	2 or 3	2	3
Number of Legs	5 or more pairs	4 pairs	3 pairs
Number of Antennae	2 pairs	none	1 pair
Where found?	in water or damp places	mostly on land	mostly on land

- 40** A scorpion is an arthropod with 4 pairs of legs and no antennae. **What type of arthropod is a scorpion?**
- F** Crustacean  
**G** Arachnid  
**H** Insect  
**J** Millipede
- 41** A crab is an arthropod with 5 pairs of legs and 2 pairs of antennae. **What type of arthropod is a crab?**
- A** Crustacean  
**B** Arachnid  
**C** Insect  
**D** Millipede
- 42** **What is the most abundant substance in cells?**
- F** Water  
**G** Chlorophyll  
**H** Carbon dioxide  
**J** DNA
- 43** **Meats, nuts, and beans are all good sources of —**
- A** complete proteins  
**B** incomplete proteins  
**C** simple carbohydrates  
**D** complex carbohydrates
- 44** **An organism is a multicellular heterotroph. Its cells have nuclei and cell walls. Into which kingdom could this organism be classified?**
- F** Plants                      **H** Fungi  
**G** Animals                    **J** Eubacteria
- 45** **DNA contains four nitrogen bases: adenine (A), guanine (G), thymine (T), and cytosine (C). Thymine pairs with adenine and guanine pairs with cytosine. DNA breaks into two strands. RNA bases then pair up with the DNA bases. Instead of thymine, however, uracil pairs with adenine. Which sequence of RNA bases would pair up with a strand of DNA bases that reads TACTGCA?**
- A** ATCACGT  
**B** CGACAGC  
**C** AUGACGU  
**D** UGCAGUA
- 46** **Which of these shows the correct path of air through the human respiratory system?**
- F** Nose → trachea → esophagus → bronchi → alveoli  
**G** Nose → alveoli → pharynx → trachea → bronchi  
**H** Nose → pharynx → trachea → alveoli → bronchi  
**J** Nose → pharynx → trachea → bronchi → alveoli

**PRACTICE TEST A** *(continued)*

- 47 A scientific theory is —
- A a well-tested concept that explains a wide range of observations
  - B a prediction about the outcome of an experiment
  - C an educated guess that is probably true
  - D a conclusion that all scientists agree with

- 48 The joint in your shoulder is classified as a —
- F gliding joint
  - G ball-and-socket joint
  - H hinge joint
  - J pivot joint



- 49 What does this diagram show?
- A How the organisms depend on each other for survival
  - B How scientists think different groups of organisms are related
  - C The types of food the organisms eat
  - D The relative sizes of the organisms

- 50 How are vitamins different from minerals?
- F Only vitamins are nutrients.
  - G The body needs large amounts of vitamins, but only small amounts of minerals.
  - H Vitamins are found only in food, and minerals are found only in water.
  - J Only vitamins are made by living things.

- 51 Which of the following is not found in bacteria?
- A Hereditary material
  - B Cell membrane
  - C Cytoplasm
  - D Nucleus

- 52 An infectious disease is caused by —
- F a pathogen
  - G defective genes
  - H toxins
  - J missing chromosomes

- 53 Mammals that lay eggs are called —
- A marsupials
  - B monotremes
  - C placental mammals
  - D flying mammals

**PRACTICE TEST A** (continued)

**Directions:** Use the information and the chart below to answer questions 54–55.

A scientist wants to determine the age of a fossil by using a radioactive element with a half-life of one billion years. The scientist determines the amount of the radioactive element present in the fossil. Then he determines the amount of the stable element into which the radioactive element decays. The table shows how the radioactive element decays over time. Use the table to answer the questions.

**Decay of a Radioactive Element With a Half-life of 1 Billion Years**

Time	Amount of Radioactive Element	Amount of Decay Element
4 billion years ago, when rock became solid	1 g (1)	0 g (0)
3 billion years ago	0.5 g (1/2)	0.5 g (1/2)
2 billion years ago	0.25 g (1/4)	0.75 g (3/4)
1 billion years ago	0.125 g (1/8)	0.875 g (7/8)
Present	0.0625 g (1/16)	0.9375 g (15/16)

**54** How old is the fossil?

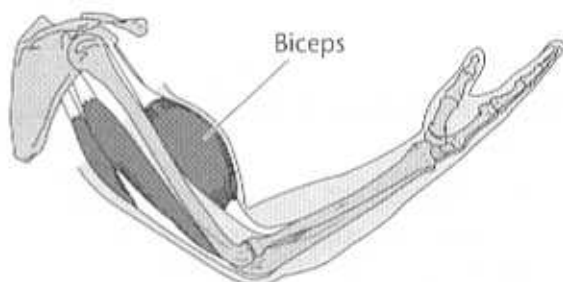
- F 1 billion years
- G 2 billion years
- H 3 billion years
- J 4 billion years

**55** How much of the radioactive element will be left one billion years from now?

- A 0.1250 g
- B 0.03125 g
- C 0.01563 g
- D 0.9688 g

**56** Which of the following is *not* an organ of excretion?

- F The kidneys
- G The skin
- H The lungs
- J The pancreas

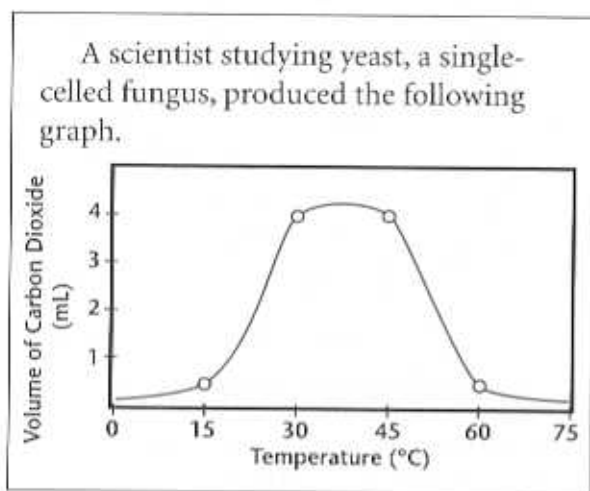


**57** Why is the biceps classified as a skeletal muscle?

- A It is attached to bones and is used to move them.
- B It reacts and tires slowly.
- C Its contractions are involuntary.
- D It is found in internal organs.

**PRACTICE TEST A** (continued)

**Directions:** Use the information and the graph below to answer questions 58–60.



- 58** Which of these best states the question the scientist was trying to answer?
- F How large are yeast cells?
  - G How does temperature affect yeast activity?
  - H Do yeast cells grow larger at high temperatures?
  - J Do yeast cells divide at specific temperatures?
- 59** At what temperatures do yeast cells produce the most carbon dioxide?
- A 5–15°C
  - B 20–30°C
  - C 30–45°C
  - D 50–60°C
- 60** How does the production of carbon dioxide by yeast cells change with temperature?
- F Production of carbon dioxide decreases with temperature.
  - G Production of carbon dioxide increases with temperature.
  - H Production of carbon dioxide decreases as temperature rises, then increases.
  - J Production of carbon dioxide increases as temperature rises, then decreases.

