Chapter 1
The Scientific Study of Life

1. A hypothesis
   a. is the same as a theory
   b. is an educated guess proposed as a tentative explanation for a specific phenomenon.
   c. is an explanatory idea that is broad in scope and supported by a large body of evidence.
   d. is a widely accepted idea about a phenomenon.
   e. none of the above.

2. The tree in your backyard is home to two cardinals, a colony of ants, a wasp’s nest, two squirrels, and millions of bacteria. Together, all these organisms are
   a. a species.
   b. a community.
   c. a population.
   d. an ecosystem.
   e. both b and c.

3. Which of the following is (are) properties of life?
   a. a precise structural organization.
   b. the ability to take in energy and use it.
   c. the ability to respond to stimuli from the environment.
   d. the ability to reproduce.
   e. all of the above.

4. A scientist performs a controlled experiment. This means that
   a. the experiment is repeated many times to ensure that the results are accurate.
   b. the experiment proceeds at a slow pace to guarantee that the scientist can carefully observe all
      reactions and process all experimental data.
   c. two experiments are conducted, one differing from the other by only a single variable.
   d. two experiments are conducted, one differing from the other by two or more variables.
   e. one experiment is performed, but the scientist controls the variables.

5. Which of the following is (are) properties of life?
   a. a complex organization
   b. the ability to take in energy and use it
   c. the ability to respond to stimuli from the environment
   d. the ability to reproduce
   e. all of the above

6. Which of the following observations would provide the strongest evidence that the many different
   plants we call orchids are actually related to one another?
   a. The flowers have the same shape of petals.
   b. They all produce small seeds.
   c. None of them can grow without the presence of a specific type of fungus.
   d. They all have the same common ancestor.
   e. They all attract insect pollinators.
7. Evolution by natural selection requires
a. heritable variation.
b. certain individuals to produce more offspring than other individuals of the same population.
c. that organisms evolve in response to their environment.
d. that those individuals least well adapted to their environment produce the most offspring.
e. both a and b

8. The ultimate source of energy flowing into nearly all ecosystems is
a. wind
b. sunlight
c. electricity
d. geothermal vents
e. radioactivity

9. Which of the following statements is (are) true?
   a. Global warming is related to the destruction of forests.
   b. Understanding carbon and water cycling is an important aid in the understanding of global climate patterns.
   c. Ecosystems interact; thus it is possible for events occurring in tropical rain forests to influence North American weather patterns.
   d. CO₂ emission is an important contributor to global warming.
   e. All of the above are true.

10. Which of the following is not true? Living systems
a. are composed of one or more cells.
b. maintain a relatively consistent internal environment.
c. respond to changes in the environment.
d. encode their genetic information in DNA.
e. violate the second law of thermodynamics.