

# Answer Key

## Chapter Test A

### Multiple Choice

1. b
2. c
3. a
4. b
5. a
6. c
7. c
8. d
9. a
10. c
11. b
12. a
13. d
14. c
15. a

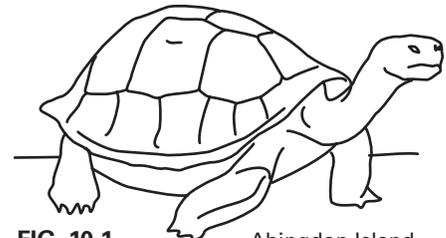
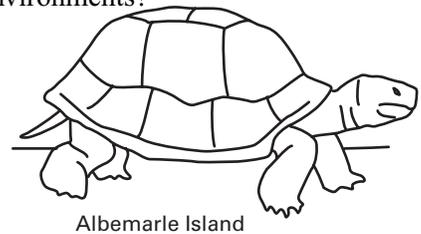
### Short Answer

16. homologous structures
17. Structure A is a human arm, which is used for lifting and carrying items. Structure B is the fin of a whale and is used for swimming. Structure C is the wing of a bat and is used for flying.
18. They share a common ancestor.
19. the wing of a flying insect
20. The three forelimbs are adapted for different functions, but they are formed from similar bones. All three forelimbs have a similar structure. This indicates that the organisms share a common ancestor.
21. the lamprey
22. the Rhesus monkey
23. After the lamprey, the frog's hemoglobin shares the fewest amino acids with that of humans.
24. The Rhesus monkey and humans have the most similar amino acids in the hemoglobin protein. This shows that they share a more recent common ancestor than the other organisms do.
25. Humans and lampreys; this is because they have the greatest difference in the amino acids of the hemoglobin protein.

**CHAPTER  
10**
**PRINCIPLES OF EVOLUTION  
Chapter Test A**
**Multiple Choice**

Choose the letter of the best answer. (15 credits)

- \_\_\_\_\_ 1. What is the term for a feature that allows an organism to survive better in its environment?
- variation
  - adaptation
  - homologous structure
  - vestigial structure
- \_\_\_\_\_ 2. All the individuals of a species that live in a particular area are called a
- variation.
  - fossil.
  - population.
  - group.
- \_\_\_\_\_ 3. The remnant of an organ that had a function in an early ancestor is known as a(n)
- vestigial structure.
  - analogous structure.
  - homologous structure.
  - fossil structure.
- \_\_\_\_\_ 4. What observations did Charles Darwin make about finches in the Galápagos Islands?
- The same species of finches lived on all the islands.
  - Different species of finches lived on different islands.
  - Various species of finches lived on just one of the islands.
  - Identical species of finches lived in South America.
- \_\_\_\_\_ 5. Which scientist developed a classification system for organisms?
- Carolus Linnaeus
  - Charles Darwin
  - Jean-Baptiste Lamarck
  - Georges L.L. de Buffon
- \_\_\_\_\_ 6. The tortoise from Abingdon Island, shown in Figure 10.1, would likely be better adapted than the Albermarle Island tortoise to which of the following environments?


**FIG. 10.1**

- areas with short plants and mosses
  - areas with no plants and sand dunes
  - areas with lots of taller plants
  - areas with only tall trees
- \_\_\_\_\_ 7. Which theory states that floods and earthquakes have occurred often in Earth's history?
- uniformitarianism
  - natural selection
  - catastrophism
  - artificial selection

## CHAPTER TEST A, CONTINUED

- \_\_\_\_\_ 8. The hind leg bones shown in the whale in Figure 10.2 are examples of

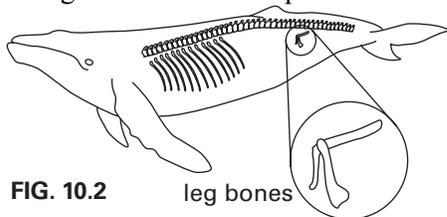


FIG. 10.2

leg bones

- a. homologous structures.  
b. analogous structures.  
c. fossil structures.  
d. vestigial structures.
- \_\_\_\_\_ 9. Charles Darwin found fossils that looked like ancient versions of living species. From this evidence Darwin suggested that Earth was
- a. much more than 6000 years old.  
b. less than 6000 years old.  
c. only 6000 years old.  
d. about 1000 years old.
- \_\_\_\_\_ 10. What is the process in which humans breed organisms for certain traits?
- a. natural selection  
b. inheritance of acquired characteristics  
c. artificial selection  
d. descent without modification
- \_\_\_\_\_ 11. Individuals that are well adapted to their environment will survive and produce
- a. fewer mutations.  
b. more offspring.  
c. stronger genes.  
d. better traits.
- \_\_\_\_\_ 12. Natural selection results in change over time by acting on traits that are
- a. heritable.  
b. new.  
c. mutated.  
d. better.
- \_\_\_\_\_ 13. What is the study of the distribution of organisms around the world?
- a. paleontology  
b. geography  
c. geology  
d. biogeography
- \_\_\_\_\_ 14. Fossil evidence shows that structures considered vestigial in living organisms
- a. are not found in ancient organisms.  
b. have always been vestigial.  
c. were useful to their ancestors.  
d. do not fill gaps in the fossil record.
- \_\_\_\_\_ 15. Which theory ties the fields of biology and geology together?
- a. evolution  
b. uniformitarianism  
c. catastrophism  
d. gradualism

## CHAPTER TEST A, CONTINUED

**Short Answer** Use the diagram below to answer items 16–20. (5 credits)

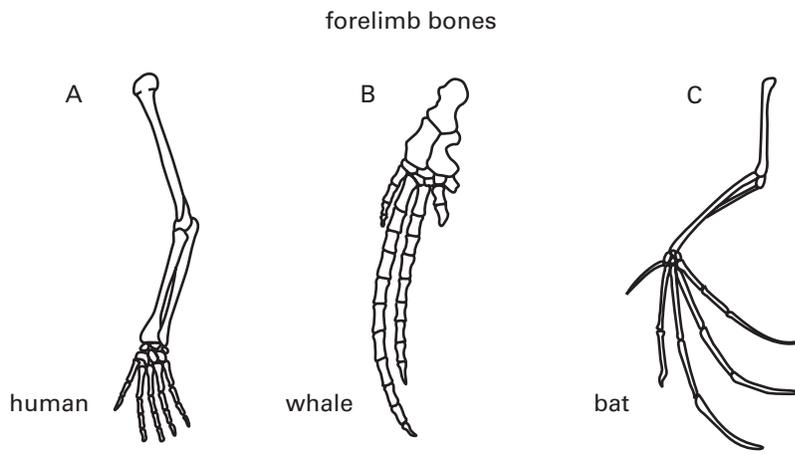


FIG.10.3

**16.** The forelimbs of the organisms in Figure 10.3 are examples of what type of structures?

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**17.** What are the functions of the three forelimbs in Figure 10.3?

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**18.** What do these structures indicate about the evolution of the three organisms?

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**19.** What would be an example of a structure analogous to structure C?

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**20.** How does the anatomy of the forelimbs show an evolutionary pattern?

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## CHAPTER TEST A, CONTINUED

Use the table below to answer items 21–25. (5 credits)

**FIG. 10.4 EVOLUTIONARY RELATIONSHIP OF VERTEBRATES**

Species	Number of amino acids that differ from those in a human hemoglobin protein chain (total chain length = 146 amino acids)
Human	0
Rhesus monkey	8
Mouse	27
Chicken	45
Frog	67
Lamprey	125

**21.** Which species from Figure 10.4 has the most amino acids that are different from those of humans?

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**22.** Which species has the most amino acids in common with humans?

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**23.** What does this molecular fingerprinting reveal about the frog?

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**24.** How does the data in Figure 10.4 indicate that humans and Rhesus monkeys share the most recent common ancestor?

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**25.** Which organisms in Figure 10.4 share the most distant common ancestors? Explain.

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