

Chapter Test A

Answer Key

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
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.

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.

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?

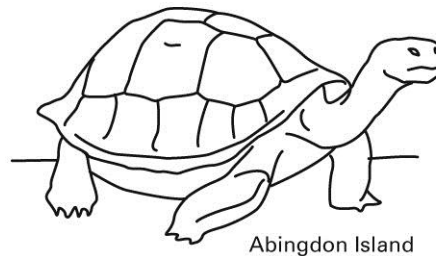
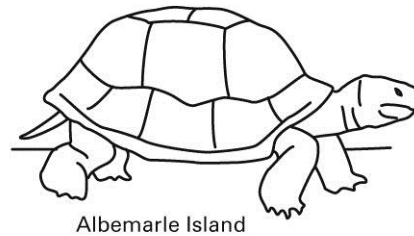


FIG. 10.1

- areas with short plants and mosses
- areas with no plants and sand dunes
- areas with lots of taller plants
- areas with only tall trees

Chapter Test A, *continued*

- _____ 7. Which theory states that floods and earthquakes have occurred often in Earth's history?
- uniformitarianism
 - natural selection
 - catastrophism
 - artificial selection

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

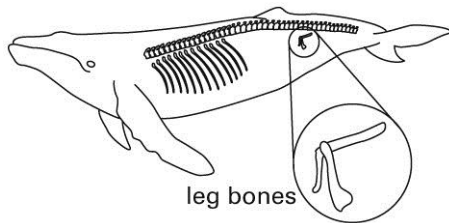


FIG. 10.2

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

Chapter Test A, *continued*

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

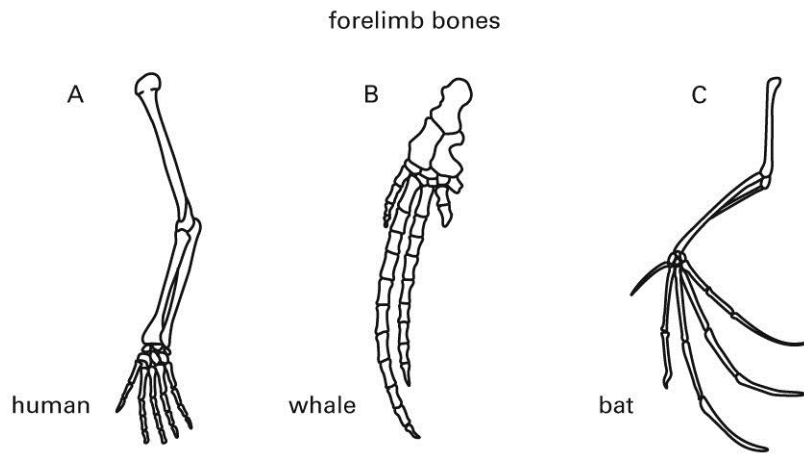


FIG. 10.3

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

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

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

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

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

Chapter Test A, *continued*

Use the diagram 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?

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

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

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

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

