**Evolution**

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. A species is a group of similar organisms that

|  |  |
| --- | --- |
| a. | can mate with each other and produce fertile offspring. |
| b. | can live together on an island. |
| c. | can migrate to an island from the mainland. |
| d. | all have exactly the same traits. |

\_\_\_\_ 2. What did Darwin infer from his observations of organisms in South America and the Galápagos Islands?

|  |  |
| --- | --- |
| a. | The organisms on the Galápagos Islands were virtually identical to mainland organisms. |
| b. | A small number of different plant and animal species had come to the mainland from the Galápagos Islands. |
| c. | The organisms on the Galápagos Islands were completely unrelated to mainland organisms. |
| d. | A small number of different plant and animal species had come to the Galápagos Islands from the mainland. |

\_\_\_\_ 3. What did Darwin observe about finches in the Galápagos Islands?

|  |  |
| --- | --- |
| a. | Their feathers were adapted to match their environment. |
| b. | Their beaks were adaptations related to the foods the finches ate. |
| c. | They had identical phenotypes in all locations. |
| d. | They had identical genotypes in all locations. |

\_\_\_\_ 4. A trait that helps an organism survive and reproduce is called a(n)

|  |  |
| --- | --- |
| a. | mutation. |
| b. | selection. |
| c. | adaptation. |
| d. | variation. |

\_\_\_\_ 5. The gradual change in a species over time is called

|  |  |
| --- | --- |
| a. | mutation. |
| b. | evolution. |
| c. | migration. |
| d. | variation. |

\_\_\_\_ 6. Darwin concluded that organisms on the Galápagos Islands

|  |  |
| --- | --- |
| a. | had changed over time. |
| b. | had remained the same. |
| c. | were the result of selective breeding. |
| d. | had no variations. |

\_\_\_\_ 7. Differences between members of the same species are called

|  |  |
| --- | --- |
| a. | predators. |
| b. | selections. |
| c. | traits. |
| d. | variations. |

\_\_\_\_ 8. What is the role of genes in evolution?

|  |  |
| --- | --- |
| a. | Only genes can be acted on by natural selection. |
| b. | Parents with recessive genes die from overproduction. |
| c. | The genes of most surviving parents have only dominant alleles. |
| d. | Only traits that are controlled by genes can be acted on by natural selection. |

\_\_\_\_ 9. The marbled murrelet, an endangered seabird in California, is dependent upon sequoia forests and trees for survival. What might happen to the marbled murrelet population if the sequoia population went extinct?

|  |  |
| --- | --- |
| a. | The population of marbled murrelet would remain the same. |
| b. | The population of marbled murrelet would increase. |
| c. | The marbled murrelet would go extinct. |
| d. | The marbled murrelet would be placed on the threatened species list. |

\_\_\_\_ 10. Which term refers to a species creating more offspring than can possibly survive?

|  |  |
| --- | --- |
| a. | natural selection |
| b. | overproduction |
| c. | evolution |
| d. | variation |

\_\_\_\_ 11. How does natural selection lead to evolution?

|  |  |
| --- | --- |
| a. | Stronger offspring kill weaker members of the species. |
| b. | Helpful variations accumulate among surviving members of the species. |
| c. | Overproduction provides food for stronger members of the species. |
| d. | Environmental changes favor weaker members of the species. |

\_\_\_\_ 12. Which term refers to similar structures that related species have inherited from a common ancestor?

|  |  |
| --- | --- |
| a. | DNA sequences |
| b. | developmental organisms |
| c. | homologous structures |
| d. | punctuated equilibria |

\_\_\_\_ 13. If two organisms look very similar during their early stages of development, this is evidence that the organisms

|  |  |
| --- | --- |
| a. | are not related. |
| b. | evolved from different ancestors. |
| c. | have exactly the same DNA. |
| d. | evolved from a common ancestor. |

\_\_\_\_ 14. How do most fossils form?

|  |  |
| --- | --- |
| a. | An insect becomes trapped in amber. |
| b. | An entire organism becomes frozen in ice. |
| c. | A dead organism becomes buried in sediment. |
| d. | A dead organism becomes buried in tar. |

\_\_\_\_ 15. How do remains become petrified fossils?

|  |  |
| --- | --- |
| a. | A sedimentary rock becomes a cast. |
| b. | Molds and casts fill with sediment. |
| c. | Minerals replace all or part of an organism. |
| d. | Sediment replaces all or part of an organism. |

\_\_\_\_ 16. Which of the following is most likely to become preserved as a fossil?

|  |  |
| --- | --- |
| a. | a leaf |
| b. | a worm |
| c. | a jellyfish |
| d. | a clam shell |

\_\_\_\_ 17. Which of these is LEAST likely to be learned by studying animal fossils?

|  |  |
| --- | --- |
| a. | the approximate age of the fossils |
| b. | how the animals changed over time |
| c. | what type of skin the animals had when they were living |
| d. | whether the animals were invertebrates or vertebrates |

\_\_\_\_ 18. Which of these is one of the main ways that a new species forms?

|  |  |
| --- | --- |
| a. | Cross-breeding occurs within the species. |
| b. | A group is separated from the rest of the species. |
| c. | Competition occurs between members of the species. |
| d. | Mutations occur in the alleles of members of the species. |

\_\_\_\_ 19. A branching tree is

|  |  |
| --- | --- |
| a. | a diagram showing how scientists think different groups of organisms are related. |
| b. | a species of tree that is not closely related to other tree species. |
| c. | a drawing that shows where different animals live in a tree. |
| d. | a homologous structure that many plants have. |

\_\_\_\_ 20. Scientists combine evidence from fossils, body structures, early development, DNA, and protein structures to

|  |  |
| --- | --- |
| a. | determine what bones an animal has in its forelimbs. |
| b. | determine the evolutionary relationships among species. |
| c. | decide which fossils are older than others. |
| d. | determine whether an organism will have gills during its early development. |

\_\_\_\_ 21. Why do scientists think related species have similar body structures and development patterns?

|  |  |
| --- | --- |
| a. | The species inherited many of the same genes from each other. |
| b. | The species inherited many of the same proteins from each other. |
| c. | The species inherited all of the same genes from a common ancestor. |
| d. | The species inherited many of the same genes from a common ancestor. |

\_\_\_\_ 22. What is taxonomy?

|  |  |
| --- | --- |
| a. | the scientific study of how living things are classified |
| b. | the name of Aristotle’s classification system |
| c. | the process used by geologists to classify rocks |
| d. | the process of observing an organism’s behavior |

\_\_\_\_ 23. Why do scientists organize living things into groups?

|  |  |
| --- | --- |
| a. | so they can find them in the wild more easily |
| b. | so that the organisms are easier to study |
| c. | so they can make sense of the variety of rocks on Earth |
| d. | so products from living things can be easily found in groceries |

\_\_\_\_ 24. An organism’s scientific name consists of

|  |  |
| --- | --- |
| a. | its class name and its family name. |
| b. | its kingdom name and its phylum name. |
| c. | its genus name and its species name. |
| d. | its phylum name and its species name. |

\_\_\_\_ 25. The more classification levels that two organisms share,

|  |  |
| --- | --- |
| a. | the closer together on Earth they live. |
| b. | the easier it is to tell them apart. |
| c. | the more characteristics they have in common. |
| d. | the more distantly related they are. |

\_\_\_\_ 26. Which group of organisms includes only multicellular heterotrophs?

|  |  |
| --- | --- |
| a. | protists |
| b. | bacteria |
| c. | plants |
| d. | animals |

\_\_\_\_ 27. Which domain(s) include(s) only prokaryotes?

|  |  |
| --- | --- |
| a. | Bacteria and Archaea |
| b. | Bacteria only |
| c. | Archaea only |
| d. | Eukarya only |

\_\_\_\_ 28. Which kingdoms include both unicellular and multicellular organisms?

|  |  |
| --- | --- |
| a. | fungi and plants |
| b. | fungi and protists |
| c. | protists and animals |
| d. | protists and plants |

\_\_\_\_ 29. What are fossils?

|  |  |
| --- | --- |
| a. | molds and casts of organisms that live today |
| b. | drawings of ancient animals and other organisms |
| c. | footprints or burrows of small animals that live today |
| d. | the preserved remains or traces of organisms that lived in the past |

\_\_\_\_ 30. The two most important factors contributing to the diversity of species are

|  |  |
| --- | --- |
| a. | genetic diversity and different environments. |
| b. | genetic diversity and extinction. |
| c. | punctuated equilibria and genetic similarities. |
| d. | diverse DNA proteins and fossils. |

**Modified True/False**

*Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.*

\_\_\_\_ 31. Gradual change in a species over time is called adaptation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 32. Through natural selection, harmful variations gradually accumulate in a species. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 33. An empty space called a cast is formed when an organism buried in sediments dissolves. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 34. Fossils in lower layers of rock are usually older than fossils in higher layers. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 35. When some members of a species become isolated, they are less likely to form a new species. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 36. The more similar the DNA sequences of two species are, the more closely related the species are. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 37. If a disease were introduced into the cheetah population, it could threaten the survival of the species because they have genetic diversity. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 38. In the name *Acer rubrum*, the word *rubrum* designates the species. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 39. Each genus of organisms is divided into classes. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 40. Archaea and Bacteria are two domains of eukaryotes. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Completion**

*Complete each statement.*

41. Organisms belonging to the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can usually mate and produce fertile offspring.

42. The harmless viceroy butterfly looks like the poisonous monarch butterfly. This \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enables the viceroy butterfly to survive.

43. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a well-tested concept that explains a wide range of observations.

44. In the process of natural selection, the organisms that are best suited to their environments are most likely to survive and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

45. Natural selection is affected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or traits that are different in members of the same species.

46. The only traits that can be acted upon by natural selection are those that are controlled by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

47. The forelimbs of a bird and a mammal are examples of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structures.

48. Similarities in the early development of chickens and opossums suggest that these animals share a common \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

49. Most fossils are found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rock.

50. When minerals replace bone, a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fossil forms.

51. Proteins can be used to determine how closely related organisms are because amino acid sequences are determined by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that makes up an organism’s genes.

52. The process of grouping things based on similarities is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

53. The scientific names of the puma (*Felis concolor)*, house cat (*Felis domesticus)*, and marbled cat (*Felis marmorata)* indicate that they all belong to the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

54. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ developed a naming system that grouped organisms on the basis of their observable features.

55. In the modern classification system used by biologists, the broadest level of organization is called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

56. An owl and a bat share the same kingdom and phylum; an owl and a robin share the same kingdom, phylum, and class. The owl and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have more characteristics in common.

57. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ kingdom is the only kingdom of eukaryotes that contains both autotrophs and heterotrophs and both unicellular and multicellular organisms.

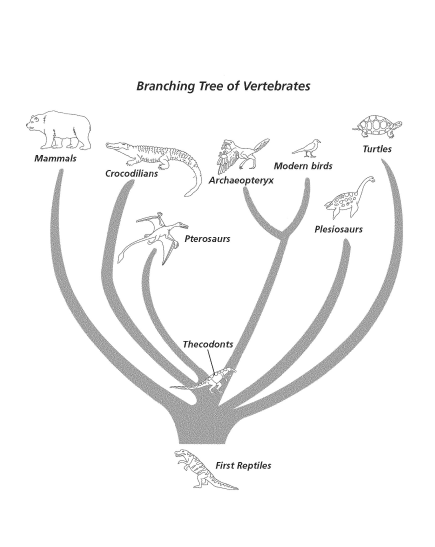
58. A new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can form when a group of individuals become isolated from the main group.

59. Scientists show how groups of organisms may be related by placing them on a diagram called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

60. The theory of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ states that species evolve quickly over a relatively short time.

**Short Answer**

*Use the diagram to answer each question*.



61. Did birds evolve from the gliding reptiles called pterosaurs? Explain your reasoning.

62. Are modern birds more closely related to *Archaeopteryx* or to the first reptiles?

63. Would you expect the DNA of crocodilians to be more similar to the DNA of modern birds or the DNA of turtles? Explain your reasoning.

64. Are pterosaurs more closely related to turtles or to crocodilians? Explain your answer.

65. Name the common ancestor of pterosaurs and crocodilians.

66. List two ancestors of *Archaeopteryx*.

*Use the diagram to answer each question*.

***Table of Classification Labels***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Classification Level** | **Aardwolf** | **Gray Wolf** | **Coyote** | **Lion** | **Blue Whale** |
| **Kingdom** | Animalia | Animalia | Animalia | Animalia | Animalia |
| **Phylum** | Chordata | Chordata | Chordata | Chordata | Chordata |
| **Class** | Mammalia | Mammalia | Mammalia | Mammalia | Mammalia |
| **Order** | Carnivora | Carnivora | Carnivora | Carnivora | Cetacea |
| **Family** | Hyaenidae | Canidae | Canidae | Felidae | Balenopteridae |
| **Genus** | *Proteles* | *Canis* | *Canis* | *Panthera* | *Balaenoptera* |
| **Species** | *Proteles cristatus* | *Canis lupus* | *Canis latrans* | *Panthera leo* | *Balaenoptera musculus* |

67. What classification groups do all of the organisms in the table have in common?

68. Which of the organisms in the table is least similar to the others? Explain.

69. Which of the organisms in the table is (are) most similar to a tiger (*Panthera tigris*)? Explain.

70. In what two ways are the organisms in the table similar to organisms in the plant kingdom?

71. Based on their kingdoms, what are the shared characteristics of the organisms in the table?

72. Which two species in this table are most similar to each other?

**Essay**

73. A horse and a donkey can mate with each other. Their offspring, called a mule, is not fertile. Do horses and donkeys belong to the same species? Explain your answer.

74. How did studying selective breeding help Darwin develop his theory of evolution?

75. A scientist collects wild rabbits that live at sea level and moves them to the mountains. One year later, the scientist discovers that the same rabbits have larger lungs, which help them breathe the thin mountain air. The scientist returns the rabbits to sea level. Will the offspring of the rabbits have larger-than-normal lungs? Explain.

76. Explain how a group of organisms that is separated from the rest of its species can evolve different traits.

77. Species A and species B are shown on the same branch of a branching tree. Species C is shown on a separate branch. All three species came from a common ancestor. What can you state about the similarities of the DNA of species A, B, and C?

78. Use an example to explain why the common names of organisms are sometimes confusing. How can using scientific names help avoid the confusion?

79. A person tells you that two organisms belong to the same family but to different classes. Can that information be correct? Explain.

80. Suppose a species lived in an environment that changed very little over millions of years. Which theory about how fast evolution occurs would most likely explain the evolution of that species? Explain your answer.

**Evolution**

**Answer Section**

**MULTIPLE CHOICE**

1. ANS: A PTS: 1 DIF: L1

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3 BLM: knowledge

2. ANS: D PTS: 1 DIF: L1

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.b BLM: knowledge

3. ANS: B PTS: 1 DIF: L2

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.b BLM: comprehension

4. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.a BLM: knowledge

5. ANS: B PTS: 1 DIF: L1

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.a BLM: knowledge

6. ANS: A PTS: 1 DIF: L2

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.b BLM: comprehension

7. ANS: D PTS: 1 DIF: L1

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: knowledge

8. ANS: D PTS: 1 DIF: L1

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: knowledge

9. ANS: C PTS: 1 DIF: L3

OBJ: CaLS.7.3.4 Explain what causes the extinction of species. STA: S 7.3.a

BLM: synthesis

10. ANS: B PTS: 1 DIF: L2

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: comprehension

11. ANS: B PTS: 1 DIF: L1

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: knowledge

12. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.

STA: S 7.3.c BLM: knowledge

13. ANS: D PTS: 1 DIF: L2

OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.

STA: S 7.3.c BLM: comprehension

14. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e

BLM: knowledge

15. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e

BLM: knowledge

16. ANS: D PTS: 1 DIF: L2

OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e

BLM: application

17. ANS: C PTS: 1 DIF: L2

OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e

BLM: comprehension

18. ANS: B PTS: 1 DIF: L2

OBJ: CaLS.7.3.2 Explain how new species form. STA: S 7.3.a

BLM: comprehension

19. ANS: A PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: comprehension

20. ANS: B PTS: 1 DIF: L1

OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.

STA: S 7.3.b BLM: knowledge

21. ANS: D PTS: 1 DIF: L2

OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.

STA: S 7.3.b BLM: comprehension

22. ANS: A PTS: 1 DIF: L1

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: knowledge

23. ANS: B PTS: 1 DIF: L1

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: knowledge

24. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: knowledge

25. ANS: C PTS: 1 DIF: L1

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: knowledge

26. ANS: D PTS: 1 DIF: L1

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: knowledge

27. ANS: A PTS: 1 DIF: L1

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: knowledge

28. ANS: B PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: comprehension

29. ANS: D PTS: 1 DIF: L1

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.4.e BLM: knowledge

30. ANS: A PTS: 1 DIF: L2

OBJ: CaLS.7.3.1 Identify factors that have contributed to the diversity of species.

STA: S 7.3.a BLM: comprehension

**MODIFIED TRUE/FALSE**

31. ANS: F, evolution

PTS: 1 DIF: L1

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.b BLM: knowledge

32. ANS: F, helpful

PTS: 1 DIF: L2

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: comprehension

33. ANS: F, mold

PTS: 1 DIF: L2 OBJ: CaLS.7.2.2 Describe how fossils form.

STA: S 7.3.a BLM: comprehension

34. ANS: T PTS: 1 DIF: L1

OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e

BLM: knowledge

35. ANS: F, more

PTS: 1 DIF: L1 OBJ: CaLS.7.3.2 Explain how new species form.

STA: S 7.3.a BLM: knowledge

36. ANS: T PTS: 1 DIF: L1

OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.

STA: S 7.3.a BLM: knowledge

37. ANS: F, lack

PTS: 1 DIF: L3

OBJ: CaLS.7.3.1 Identify factors that have contributed to the diversity of species.

STA: S 7.3.d BLM: application

38. ANS: T PTS: 1 DIF: L2

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: application

39. ANS: F, phylum

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: comprehension

40. ANS: F, prokaryotes

PTS: 1 DIF: L1

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: knowledge

**COMPLETION**

41. ANS: species

PTS: 1 DIF: L1

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.a BLM: knowledge

42. ANS: adaptation

PTS: 1 DIF: L2

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.a BLM: application

43. ANS: scientific theory

PTS: 1 DIF: L1

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.b BLM: knowledge

44. ANS: reproduce

PTS: 1 DIF: L1

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: knowledge

45. ANS: variations

PTS: 1 DIF: L1

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: knowledge

46. ANS: genes

PTS: 1 DIF: L2

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: comprehension

47. ANS: homologous

PTS: 1 DIF: L2

OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.

STA: S 7.3.c BLM: comprehension

48. ANS: ancestor

PTS: 1 DIF: L2

OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.

STA: S 7.3.c BLM: application

49. ANS: sedimentary

PTS: 1 DIF: L2 OBJ: CaLS.7.2.2 Describe how fossils form.

STA: S 7.4.e BLM: comprehension

50. ANS: petrified

PTS: 1 DIF: L1 OBJ: CaLS.7.2.2 Describe how fossils form.

STA: S 7.4.e BLM: knowledge

51. ANS: DNA

PTS: 1 DIF: L2

OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.

STA: S 7.3.a BLM: comprehension

52. ANS: classification

PTS: 1 DIF: L1

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: knowledge

53. ANS: genus

PTS: 1 DIF: L2

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: application

54. ANS: Linnaeus

PTS: 1 DIF: L1

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: knowledge

55. ANS: domain

PTS: 1 DIF: L1

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: knowledge

56. ANS: robin

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: application

57. ANS: protist

PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: knowledge

58. ANS: species

PTS: 1 DIF: L2 OBJ: CaLS.7.3.2 Explain how new species form.

STA: S 7.3.a BLM: comprehension

59. ANS: branching tree

PTS: 1 DIF: L1

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: knowledge

60. ANS: punctuated equilibria

PTS: 1 DIF: L2

OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.3.a

BLM: comprehension

**SHORT ANSWER**

61. ANS:

No, birds did not evolve from pterosaurs. Birds and pterosaurs are on different branches of the branching tree.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

62. ANS:

Modern birds are more closely related to *Archaeopteryx* than to the first reptiles.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

63. ANS:

The DNA of crocodilians should be more similar to the DNA of modern birds. The diagram indicates that the common ancestor of crocodilians and modern birds was more recent than the common ancestor of crocodilians and turtles.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

64. ANS:

Pterosaurs are more closely related to crocodilians. They share a more recent common ancestor than do pterosaurs and turtles.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

65. ANS:

Thecodonts were the common ancestor of pterosaurs and crocodilians.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

66. ANS:

The ancestors were thecodonts and the first reptiles.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: analysis

67. ANS:

The groups in common are kingdom, phylum, and class.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: analysis

68. ANS:

The blue whale is least similar. All of the others are in the same order, but the blue whale is in a different order.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: analysis

69. ANS:

The lion is most similar to a tiger, because both are members of the same genus. The gray wolf and coyote belong to different genera, the aardwolf belongs to a different family, and the whale belongs to a different order.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: analysis

70. ANS:

All are multicellular and eukaryotes.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: analysis

71. ANS:

All of the organisms are heterotrophs and multicellular.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: analysis

72. ANS:

The coyote (*Canis latrans)* and the gray wolf (*Canis lupus)* are the most similar species in the table.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: analysis

**ESSAY**

73. ANS:

No, horses and donkeys do not belong to the same species. Two organisms belong to the same species only if they can mate and produce fertile offspring.

PTS: 1 DIF: L2

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.a BLM: application

74. ANS:

Darwin observed that animals with a desired characteristic could be produced by allowing only those individuals with the characteristic to mate. He thought that a process similar to selective breeding might occur in nature.

PTS: 1 DIF: L2

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.b BLM: comprehension

75. ANS:

The offspring probably will not have larger lungs. Their environment, not their genes, produced the larger lungs of the rabbits kept in the mountains. Only traits that are controlled by genes can be acted upon by natural selection and passed on to offspring. (If the larger-lung trait were controlled by genes, the rabbits would have shown the trait before being moved to the mountains.)

PTS: 1 DIF: L3

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: application

76. ANS:

The organisms are not able to mate with members of the rest of the species. The longer they remain isolated, the more likely they are to evolve different traits.

PTS: 1 DIF: L2 OBJ: CaLS.7.3.2 Explain how new species form.

STA: S 7.3.a BLM: comprehension

77. ANS:

All three species have similar DNA because they came from a common ancestor. The DNA of A and B is more similar than the DNA of A and C or the DNA of B and C.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: application

78. ANS:

The same organism may have different common names in different areas. For example, the same animal may be called a woodchuck, groundhog, or whistlepig. An organism has only one scientific name, though, so all scientists will use the same name for it.

PTS: 1 DIF: L3

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: synthesis

79. ANS:

No, that information cannot be correct. A family is a subgroup of one order, and an order is a subgroup of one class. Therefore, any two organisms that belong to the same family must also belong to the same class.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: application

80. ANS:

Gradualism would most likely explain the evolution of that species. If the environment changed very little, a species that was already adapted to the environment would not feel much pressure from natural selection to evolve. Therefore, its evolution would be slow and gradual.

PTS: 1 DIF: L2

OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e

BLM: application