

Chapter 1 Origins of Evolutionary Thought

1. What was the result of the Scopes Monkey Trial?
 - a. Scopes was found guilty of teaching evolution and lost his job.
 - b. The state of Tennessee was forced to allow the teaching of evolution.
 - c. Evolution was disproved.
 - d. Scopes was found innocent.

(Answer a; page 14)

2. Today, federal courts uphold the idea that _____.
 - a. evolution should not be taught in public schools.
 - b. the Old Testament is the most accurate source of information about the Earth's past.
 - c. evolution is the unifying principle of the life sciences.
 - d. none of these

(Answer c; page 14)

3. Science is a(n) _____, not a _____.
 - a. result, process
 - b. process, method
 - c. process, result
 - d. observation, hypothesis

(Answer c; page 15)

4. Science is a perfect process, because data are always interpreted the same way.
 - a. True
 - b. False

(Answer b; page 15)

5. Which of the following is an element of the scientific method?

- a. experimentation
- b. observation
- c. hypothesis
- d. all of these

(Answer d; page 15)

6. In science, a preliminary explanation is known as a(n) _____.

- a. experiment
- b. hypothesis
- c. datum
- d. paradigm

(Answer b; page 15)

7. Scientific hypotheses are _____.

- a. derived from a non-empirical process.
- b. rarely tested.
- c. always assumed to be true.
- d. falsifiable.

(Answer d; page 16)

8. To say that a hypothesis is falsifiable is to say that it is _____.

- a. testable
- b. false
- c. proven
- d. simple

(Answer a; page 16)

9. Which of the following best characterizes Aristotle's view of nature?

- a. Natural forms may change as they adapt to environmental conditions.
- b. Each living form possesses a fixed essence that cannot be altered.
- c. Life forms change in constant yet unpredictable ways.
- d. Animals transform over time, but plants do not.

(Answer b; page 16)

10. Aristotle believed in the "immutability of species." This means he felt that species _____.

- a. are always changing
- b. change only when it is
- c. are fixed
- d. change sporadically and unpredictably

(Answer c; page 16)

11. Early natural philosophers like Aristotle and Plato considered themselves the first real scientists.

- a. True
- b. False

(Answer b; page 16)

12. Which of the following is *inconsistent* with Aristotle's ideas about nature?

- a. life-forms are always changing
- b. humans are at the top of a "Great Chain of Being"
- c. all life is arranged in an orderly and hierarchical fashion
- d. all of these

(Answer a; page 16)

13. During the Middle Ages, the idea of fixity of species was finally abandoned.

- a. True
- b. False

(Answer b; page 16)

14. The dominant paradigm during the European Middle Ages was based on _____.

- a. science
- b. falsifiability
- c. theology
- d. empirical experimentation

(Answer c; page 18)

15. The foundation was laid for the establishment of an academic discipline devoted to a scientific understanding of the human condition during the _____.

- a. Middle Ages
- b. late nineteenth century
- c. Renaissance
- d. early twentieth century

(Answer c; page 16)

16. Through their “rediscovery” ancient Greek and Roman thinkers, Renaissance scholars developed a strong sense of _____.

- a. time and cultural variation
- b. the fixity of species
- c. human’s superiority in nature
- d. monogenism

(Answer a; page 16)

17. _____ was probably the first true scientist in the modern sense,

- a. Darwin
- b. Galen
- c. Aristotle
- d. Da Vinci

(Answer d; page 17)

18. The main contribution of Renaissance scientist/artists Leonardo da Vinci and Andreas Vesalius was their _____.

- a. study of the stars and planets
- b. discovery of the New World
- c. idea of polygenism
- d. anatomical drawings

(Answer d; page 17)

19. The discovery of the New World provided Renaissance scholars their first look at _____.

- a. many exotic plant species
- b. a greater range of human biological variation
- c. a greater range of human cultural variation
- d. all of these

(Answer d; page 17)

20. In 1537, Pope Paul III declared the New World Natives as “nonhuman.”

- a. True
- b. False

(Answer b; page 17)

21. Sixteenth century scholars who argued for polygenism were _____.

- a. rewarded by the Church
- b. ignored
- c. imprisoned or burned
- d. celebrated

(Answer c; page 17)

22. The idea that there is a single, divine origin of humanity is called _____.

- a. monogenism
- b. polygenism
- c. evolution
- d. fixity of species

(Answer a; page 17)

23. Which is more aligned with the view of nature common to the Middle Ages?

- a. polygenism
- b. monogenism

(Answer b; page 17)

24. Archbishop James Ussher calculated the age of the Earth using _____.

- a. geologic evidence including stratigraphy
- b. astronomical data
- c. the Old Testament of the Bible
- d. ancient Greek and Roman texts

(Answer c; page 17)

25. During the seventeenth and eighteenth centuries, classification took precedence over questions of origins.

- a. True
- b. False

(Answer a; page 18)

26. Scientists in the seventeenth and eighteenth centuries were mostly interested in _____.

- a. evolution
- b. polygenism
- c. classification
- d. chemistry

(Answer c; page 18)

27. In *The Starry Messenger*, Galileo _____.

- a. proved Church doctrine
- b. supported the theory of evolution
- c. supported the idea that the earth is at the center of the universe
- d. proved Copernicus' sun-centered theory of a century earlier

(Answer d; pages 18)

28. Despite evidence from Galileo, Newton, and Kepler, the Church has never changed its position on the Earth's position at the center of the universe.

- a. True
- b. False

(Answer b; page 18)

29. The first naturalist to employ the terms *genus* and *species* was _____.

- a. John Ray
- b. Carolus Linnaeus
- c. Charles Darwin
- d. Edward Tyson

(Answer a; page 18)

30. _____ is the science of classifying and naming living things.

- a. Monogenesis
- b. Evolution
- c. Taxonomy
- d. Natural selection

(Answer c; page 18)

31. Who is most associated with the taxonomy used by scientists today?

- a. Carolus Linnaeus
- b. Georges Cuvier
- c. Comte de Buffon
- d. Geoffroy Saint-Hilaire

(Answer a; page 18)

32. A taxonomy is made up of discrete units called _____.

- a. species
- b. nomenclatures
- c. particles
- d. taxons

(Answer d; page 18)

33. The use of the two-level genus-species labels is known as “binomial nomenclature.”

- a. True
- b. False

(Answer a; page 18)

34. Comte de Buffon _____.

- a. invented binomial nomenclature
- b. accepted the notion of biological change
- c. offered several theories about the mechanisms of biological change
- d. all of these

(Answer b; page 19)

35. Which of the following naturalists is associated with the idea of catastrophism?

- a. Lamarck
- b. Cuvier
- c. de Buffon
- d. Lyell

(Answer b; page 19)

36. Which of the following is most consistent with the idea of catastrophism?

- a. animals inheriting transformations from their parents
- b. the reproduction of well adapted variations
- c. a disaster wiping out the dinosaurs
- d. life forms slowly transforming through time in reaction to changing environmental conditions

(Answer c; page 20)

37. Who among the following naturalists was NOT a supporter of evolutionary change?

- a. Geoffroy Saint-Hilaire
- b. Jean Baptiste Lamarck
- c. Comte de Buffon
- d. George Cuvier

(Answer d; page 19)

38. Lamarckianism holds that _____.

- a. creatures transform and their offspring inherit those transformations
- b. all species are fixed
- c. random mutations provide a variation pool from which nature selects
- d. allele pairs correlate due to necessity

(Answer a; page 19)

39. Lamarck's ideas are generally accepted by biologists today.

- a. True
- b. False

(Answer b; page 20)

40. Trofim Lysenko pioneered the failed Soviet attempt to apply _____ ideas to real-life agricultural practices.

- a. Darwin's
- b. Cuvier's
- c. Lamarck's
- d. Ray's

(Answer c; page 20)

41. James Hutton is associated with _____.

- a. Lysenkoism
- b. catastrophism
- c. uniformitarianism
- d. adaptive radiation

(Answer c; page 21)

42. Which of the following statements best defines the idea of uniformitarianism?

- a. All species are fixed and unchanging.
- b. The world is periodically destroyed by divine catastrophes.
- c. The geologic processes that drive the world today have always done so.
- d. Creatures transform and their offspring inherit those transformations.

(Answer c; page 21)

43. While geological uniformitarianism was introduced by _____, it was greatly popularized by _____.

- a. Lyell, Darwin
- b. Hutton, Lyell
- c. Lamarck, Lyell
- d. Ray, Hutton

(Answer b; page 21)

44. Despite his association with uniformitarianism, Lyell was still an ardent creationist.

- a. True
- b. False

(Answer a; page 21)

45. Charles Darwin was a lackluster student who considered joining the ministry of the Church of England.

- a. True
- b. False

(Answer a; page 21)

46. Darwin's role aboard the *HMS Beagle* was _____.

- a. cook
- b. captain
- c. steward
- d. naturalist

(Answer d; page 22)

47. Darwin's ideas fell into place while contemplating _____.

- a. horses from Patagonia
- b. eagles from the Andes
- c. finches from the Galapagos Islands
- d. giant tortoises from the African coast

(Answer c; page 24)

48. Who is responsible for the discovery of differing bill shapes among Darwin's finches?

- a. Darwin himself
- b. John Gould
- c. Lamarck
- d. Wallace

(Answer b; page 24)

49. Which of the following best defines adaptive radiation?

- a. creatures transform and their offspring inherit those transformations
- b. survival of the fittest
- c. a process by which many species result from one ancient one
- d. none of these define adaptive radiation

(Answer c; page 24)

50. What is the main difference between natural and artificial selection?

- a. there is no difference
- b. natural selection has no foresight
- c. artificial selection doesn't work
- d. natural selection only selects the strongest creatures

(Answer b; page 28)

51. In the years following his journey on the *Beagle*, Darwin pursued his ideas of evolution by studying _____.

- a. artificial selection
- b. animals he found on subsequent journeys
- c. the works of Alfred Russel Wallace
- d. all of these

(Answer a; page 25)

52. In what ways did Wallace differ from Darwin?

- a. Wallace was from a working class family
- b. Wallace collected specimens for wealthy patrons rather than for himself
- c. Wallace left school at an early age
- d. all of these

(Answer d; page 27)

53. Wallace's ideas differ from Darwin's in that Wallace _____.

- a. rejected artificial selection as analogous to natural selection
- b. insisted on the fixity of species
- c. supported Lamarckian ideas
- d. rejected evolution

(Answer a; page 28)

54. When Darwin presented his ideas to the Linnean Society, he _____.

- a. also presented Wallace's ideas in a joint paper
- b. never mentioned Wallace
- c. described Wallace's ideas as better than his own
- d. revealed that he got all his own ideas from Wallace's letter

(Answer a; page 28)

55. Upon its first publication, Darwin's *On the Origins of Species* _____.

- a. was not widely read
- b. quickly sold out
- c. was written only for a scientific audience
- d. was not popular with scientists

(Answer b; page 27)

56. Which of the following is NOT an observation associated with natural selection?

- a. all organisms have the potential for explosive population growth
- b. populations tend to be stable
- c. nature is full of variation
- d. creatures can will their own transformations

(Answer d; page 27)

57. Darwin deduced that, despite the potential for exponential population growth, many creatures don't reach adulthood.

- a. True
- b. False

(Answer a; page 27)

58. Central to Darwin's ideas is the observation that _____.

- a. populations have limited potential for growth
- b. creatures within a species all tend to look the same
- c. nature is full of variation
- d. artificial selection bears no resemblance to natural selection

(Answer c; page 27)

59. Natural selection can be summarized by which statement?

- a. all species are fixed
- b. organisms transform and pass these transformations on to their offspring
- c. a divine creator creates all species according to an unknowable plan
- d. within a population, some variations are favored by environmental conditions and others are not

(Answer d; pages 27)

60. When discussing natural selection, the term "fitness" is best thought of as _____.

- a. a reference to physical fitness
- b. reproductive success
- c. strength
- d. none of these

(Answer b; page 29)

61. An organism's fitness can be best measured by observing its _____.

- a. strength
- b. size
- c. number of offspring
- d. color

(Answer c; page 29)

62. In order for evolution by natural selection to occur, _____.

- a. the trait in question must be inherited
- b. the trait in question must vary between individuals
- c. there must be environmental pressure
- d. all of these

(Answer d; page 30)

63. Whereas evolution happens at the level of the _____, natural selection occurs at the level of _____.

- a. population, individual organism
- b. mutation, population
- c. individual organism, population
- d. mutation, DNA

(Answer a; page 30)

64. All scientists immediately accepted Darwin's revolutionary ideas.

- a. True
- b. False

(Answer b; pages 30)

65. All creationists believe that _____.

- a. species are fixed
- b. the world is only 4,000 years old
- c. a single divine creator made the world
- d. today's geology is the result of Noah's flood

(Answer c; pages 31, 31)

66. The Bible is not considered scientific evidence because _____.

- a. its contents are not testable
- b. it is so old
- c. no one takes it literally
- d. all of these

(Answer a; page 33)

67. "Creation science" seeks to _____.

- a. prove Darwin correct by using Biblical evidence
- b. exploit gaps in the fossil record to dispute evolution
- c. exclude religious instruction from science classes
- d. disprove evolution by pointing to examples of 'irreducible complexity'.

(Answer b; page 33)

68. Pope John Paul II has stated that evolution is false and only a literal translation of the Genesis story is acceptable.

- a. True
- b. False

(Answer b; page 33)

69. “Intelligent Design” creationists such as Michael Behe use examples of _____ to support their views on creation.

- a. flood geology
- b. gaps in the fossil record
- c. evidence for irreducible complexity
- d. Lamarckian ideas

(Answer c; page 32)

70. Intelligent Design creationism is unscientific because it does not offer rational explanations.

- a. True
- b. False

(Answer a; page 32)

Short Essays

71. Describe the famous Scopes Monkey Trial. What are some reasons people have trouble accepting evolution by natural selection?

72. Explain the mechanics of the scientific method in detail.

73. What does it mean to say that science is *self-correcting*? Be sure to include the terms data, falsifiable, and paradigm in your discussion.

74. What does *fixity of species* mean? Explain the history of this idea from Aristotle to the Renaissance.

75. Explain the artistic, scientific, and social developments in the Renaissance that contributed to our modern understanding of the world.

76. Explain the influence of the Church on the natural sciences from the Renaissance through the Sir Isaac Newton.

77. Describe the contributions of Linnaeus, de Buffon, and Cuvier. In what ways did their ideas pave the way for the “Darwinian revolution”?

78. Describe *Lamarckianism*. What was *Lysenkoism*?

79. What is uniformitarianism?

80. What was it that Darwin observed while abroad on the *Beagle*? In what ways did Darwin use what he learned on the Galapagos Islands?
81. Outline Darwin's three observations and two deductions.
82. Explain what is meant by "fitness" in terms of natural selection.
83. Describe the preconditions that must be met for natural selection to work.
84. Explain the religious right's response to Darwin's ideas. Why does the author not consider "Creation Science" and "Intelligent Design" scientific?