

Evolution Study Questions

True/False Questions: Answer the following questions True (T) or False (F).

1. ____ Evolution is a scientifically valid theory
2. ____ Organisms existing today are the result of evolutionary processes that have occurred over millions of years.
3. ____ The theory of evolution is based on speculation and not valid scientific observation and testing.
4. ____ Modern humans are the product of evolutionary processes which have occurred over millions of years.
5. ____ There is a considerable body of data which supports evolutionary theory.
6. ____ Most scientists accept evolutionary theory to be a scientifically valid theory.
7. ____ The theory of evolution is capable of being scientifically tested.
8. ____ The theory of evolution cannot be correct since it disagrees with the Biblical account of creation.
9. ____ With few exceptions organisms on earth came into existence at about the same time.
10. ____ The age of the earth is less than 20,000 years.
11. ____ The theory of evolution brings meaning to the diverse characteristics and behaviors observed in living things.
12. ____ Evolutionary theory generates testable predictions with respect to the characteristics of life.
13. ____ Organisms exist today in essentially the same form in which they always have.
14. ____ Evolution is not a scientifically valid theory.
15. ____ Much of the scientific community doubts if evolution occurs.
16. ____ Current evolutionary theory is the result of sound scientific research and methodology.
17. ____ Evolutionary theory is supported by factual, historical, and laboratory data.
18. ____ Humans exist today in the same form in which they always have.
19. ____ The age of the earth is approximately 4-5 billion years.
20. ____ The available evidence is ambiguous as to whether evolution actually occurs.

Multiple Choice: Circle the correct response

1. The evolutionary theory proposed by Charles Darwin was:
 - A. Change in populations through time as a result of mutations
 - B. The spontaneous generation of new organisms
 - C. The passing on of genes from one generation to the next
 - D. Change in populations through time as a response to environmental change
 - E. The development of characteristics by organisms in response to need
2. The wing of the bat and the fore-limb of the dog are said to be homologous structures. This indicates that:
 - A. They have the same function
 - B. Bats evolved from a lineage of dogs
 - C. They are structures which are similar due to common ancestry
 - D. The limb bones of each are anatomically identical
 - E. They have a different ancestry but a common function
3. Using radioactive dating techniques, the first life seems to have appeared on the earth about:
 - A. 10 thousand years ago
 - B. 270 million years ago
 - C. 3.3 billion years ago
 - D. 4.5 million years ago
 - E. 10 billion years ago

4. Which of the following phrases best describes the process of evolution?
 - A. The development of man from monkey-like ancestors
 - B. The change of simple to complex organisms
 - C. The development of characteristics in response to need
 - D. Change of populations through time
 - E. The change of populations solely in response to natural selection

5. Marine mammals have many structural characteristics in common with fishes. The explanation that evolutionary theory would give for this similarity is:
 - A. Fish and mammals are closely related
 - B. Fish evolved structures similar to those already existing in mammals
 - C. Marine mammals evolved directly from the fishes
 - D. Marine mammals never developed use of limbs
 - E. Marine mammals adapted to an environment similar to that of the fishes

6. An alternation in the arrangement of nucleotides in a chromosome, possibly resulting in either a structural or physiological change in the organism, is called:
 - A. Genetic drift
 - B. Gene flow
 - C. A mutation
 - D. Natural selection
 - E. A recessive gene

7. It is thought that there was a rapid evolutionary rate once animal life invaded land from the oceans. The explanation given for this rapid evolution is:
 - A. There were many potential habitats for new forms to fill
 - B. The land was a perfect haven for life
 - C. There were many climatic changes occurring at that time
 - D. Radiation from the sun caused many mutations
 - E. The ocean was too stable and limited to allow for evolution to occur

8. The first animals to settle on land probably had which one of the following characteristics?
 - A. They were quite mobile to escape from predators
 - B. They were partially dependent upon water for survival
 - C. They were capable of completely adapting to the terrestrial environment in their life span
 - D. They had wings for flight from one habitat to another
 - E. They were quite adept at feeding on specific terrestrial plants

9. Two islands are found in the middle of the Pacific Ocean, isolated from any other land mass. These two islands were at one time connected by a land bridge and are of recent origin. They have identical plant and animal life and are separated by 50 miles of ocean. Assuming different selection pressures, which of these island populations would be most likely to be reproductively isolated, possibly allowing for species divergence?
 - A. Dandelions, with airborne seeds
 - B. Coconuts with floating seeds
 - C. Birds
 - D. Butterflies
 - E. Mice

10. The population of Florida panthers has been drastically reduced by the actions of man. Which of the following most likely threatens their ability to continue to evolve in response to the pressures of their environment?
 - A. There is no longer the prospect of over-reproduction
 - B. There is no longer the prospect of a struggle for limited resources
 - C. There is a lack of genetic variation for selection to act upon
 - D. There is no longer the prospect of a trait conferring a reproductive advantage
 - E. There is no longer the prospect of genetic drift occurring

11. A sudden major climatic change would most likely initially result in:
 - A. A rapid increase in adaptive radiation
 - B. A rapid increase in extinction rates
 - C. A sharp increase in numbers of species
 - D. An increase in mutation rates
 - E. Plants and animals developing new characteristics in order to cope with environmental changes

12. The most compelling evidence for large-scale evolutionary change or macroevolution is:
 - A. Kettlewell's release-recapture experiment with peppered moths
 - B. The fossil record
 - C. The occurrence of mass extinctions
 - D. Domestication of plants and animals
 - E. The observed increase of mutation rates across all species

13. When first proposed, Darwin's theory of natural selection did not fully explain how evolution could occur. This was due to:
 - A. Darwin's failure to recognize the tendency for organisms to over-reproduce
 - B. Darwin's initial overemphasis of the significance of genetic drift
 - C. The fact that accurate mechanisms explaining genetic inheritance were not widely known
 - D. The absence of accurate descriptions of the embryological development of most plants and animals
 - E. The absence of biochemical techniques to determine the genetic similarities between species

14. The presence of tropical rain forest fossil forms in Canada can best be explained by:
 - A. A shifting of environmental requirements by these types of species
 - B. A major climatic shift on the earth
 - C. A drifting of continents in a northward direction
 - D. An uplifting of lowland areas
 - E. A long term constancy of climate

15. Individuals within a species tend to be genetically different. The primary mechanism generating this individual variability is:
 - A. meiosis
 - B. mitosis
 - C. polyploidy
 - D. duplications
 - E. asexual reproduction

16. The extinct species *Archaeopteryx* had characteristics of both birds and reptiles. This is an example of a(n):
 - A. convergent species
 - B. trace fossil
 - C. archetype
 - D. intermediate form
 - E. polymorphic species

17. The earliest fossils found in the geologic record are:
 - A. fungi
 - B. bacteria
 - C. small photosynthesizing plants
 - D. seed plants
 - E. protozoa

18. Radiometric dating techniques rely on the fact that:
- A. The bony portions of organisms decompose at a known rate
 - B. Organisms which lived earlier in time will tend to be found in sediments below organisms which lived more recently
 - C. The magnetic field of the earth has reversed its polarity at known time intervals in geological time
 - D. The earth contains elements which change into other elements at a constant known rate
 - E. During the decomposition process organic matter is converted into radioactive elements at a known rate
19. Which of the following best represents Lamarck's ideas on the evolutionary process?
- A. Survival of the fittest
 - B. Inheritance of acquired characteristics
 - C. Neutral drift
 - D. Punctuated equilibrium
 - E. Assortive mating
20. Which of the following is *not* a part of Darwin's theory of natural selection?
- A. Individuals of a population vary
 - B. Organisms tend to over-reproduce themselves
 - C. There are limited resources for which individuals compete
 - D. Modifications an organism acquires during its lifetime can be passed to its offspring
 - E. Variations possessed by individuals of a population are heritable
21. The life histories of five birds of the same species are listed below. The most evolutionally successful bird is the one that:
- A. Lives 5 years, lays 12 eggs in a lifetime, 4 hatch
 - B. Lives 2 years, lays 8 eggs in a lifetime, 5 hatch
 - C. Lives 6 years, lays 2 eggs in a lifetime, 2 hatch
 - D. Lives 4 years, lays 7 eggs in a lifetime, 6 hatch
 - E. Lives 5 years, lays 4 eggs in a lifetime, 3 hatch