1. Which concept is part of the modern evolutionary theory, but not Darwin’s original theory?

A. Variations in traits are caused by mutation and recombination.
B. Species tend to produce more offspring than can survive.
C. Better adapted individuals survive to produce offspring.
D. The environment is responsible for eliminating less fit individuals.

2. “It is likely that ducks developed webbed feet because ducks need webbed feet for efficient swimming.” This attempt to explain the development of webbed feet in ducks most nearly matches the theory of evolution proposed by

A. Jean Lamarck  B. Charles Darwin
C. Gregor Mendel  D. Francis Crick

3. In areas of heavy use of the insecticide DDT, fly populations may show marked resistance to the DDT over a period of time. Someone who accepts the evolutionary theory of Lamarck would most likely explain this observation using the concept of

A. natural selection
B. inheritance of acquired characteristics
C. overproduction of a species
D. a change in the gene frequencies

4. Structural physiological changes within a species occur over an extended period of time. These changes appear to be the product of the natural selection of favorable traits within that species. These statements best describe the concept of

A. spontaneous mutation
B. reproductive isolation
C. homeostasis
D. evolution

5. A bird’s developmental stages resemble those of a reptile. This observation is often used to illustrate the probable common ancestry of these organisms through the study of

A. comparative biochemistry
B. punctuated equilibrium
C. comparative embryology
D. natural selection

6. Which theory is best illustrated by the flow chart shown?

A. cell theory
B. theory of acquired characteristics
C. use and disuse theory
D. theory of natural selection
7. Organic evolution is best described as
   A. a process of change through time
   B. a process by which an organism becomes extinct
   C. the movement of large landmasses
   D. the spontaneous formation of all species

8. The leg structures of many different vertebrates are quite similar in number and location of bones. Most scientists would probably explain this on the basis of
   A. needs of the organism
   B. common ancestry
   C. chance occurrence
   D. inheritance of acquired traits

9. An idea that was an original part of Darwin’s theory of natural selection is that
   A. gene mutations provide the basis for variation
   B. more offspring are produced than can survive
   C. organs evolve as a result of need
   D. gene pools of a population tend to remain stable

10. The introduction of new genes into the gene pool of a population occurs through the process of
    A. survival of the fittest
    B. competition between organisms
    C. mutation
    D. overproduction

11. The diagram shown represents a section of undisturbed layers of sedimentary rock in New York State and shows the location of fossils of several closely related species. According to currently accepted evolutionary theory, which is the most probable assumption about species A, B and C?

   A. Species B is more abundant than species C.
   B. Species C existed before species B.
   C. Species A and B are genetically identical.
   D. Species B descended from species A.

12. Evidence of the changes in a species’ physical characteristics over long geological periods can best be shown through a study of
    A. the homologous structures of present-day species
    B. comparative biochemistry
    C. the fossil record
    D. comparative embryology

13. According to Darwin’s theory of natural selection, the individuals that tend to survive are those that have
    A. characteristics their parents acquired by use and disuse
    B. undergone mutations
    C. the smallest number of offspring
    D. variations best suited to the environment
14. “The giraffe is obliged to browse on trees and continually is forced to stretch upwards. This habit, maintained over long periods of time, has resulted in the forelimbs becoming longer than the hind ones, and the neck so elongated that the giraffe can raise its head to a height of 18 feet without taking his forelimbs off the ground.”

Which scientist would most likely have written these statements?

A. Darwin  B. Lamarck  C. Mendel  D. Weismann

15. The diagrams represent the forelimbs of three different organisms. These structures are classified as homologous because they

A. demonstrate the law of use and disuse  B. are identical in function  C. represent acquired characteristics  D. are similar in structure and origin

16. The diagram shown illustrates one possible scheme of evolution among various groups of organisms.

Which two groups of organisms in the diagram are shown to be most closely related?

A. Porifera and Echinodermata  B. Chordata and Platyhelminthes  C. Mollusca and Annelida  D. Arthropoda and Coelenterata

17. Which scientists proposed theories that attempted to explain the evolution of organisms?

A. Miller and Linnaeus  B. Watson and Crick  C. Darwin and Lamarck  D. Morgan and Mendel
18. The diagram represents some stages in the development of the modern horse, according to evolutionary theory. The diagram is based on the

A. examination of homologous fossilized structures of primitive horses
B. biochemical analysis of growth hormones of primitive horses
C. examination of the embryological structures of the modern horse
D. biochemical analysis of the DNA structure of the modern horse

19. Several thousand years ago a large flock of migrating hawks was driven from its normal route by a severe storm. The birds scattered and found refuge on two distant islands, as shown on the map. The environment of island A is very similar to the hawk’s original nesting ground. The environment of island B is very different from that of island A. The hawks have survived on these islands to the present day with no migration between the populations. Which statement most accurately predicts the present-day condition of these island hawk populations?

A. The hawks that landed on island A have evolved more than those on island B.
B. The hawks that landed on island B have evolved more than those on island A.
C. The population on islands A and B have identical mutant genes.
D. Hawks on island A have undergone extensive speciation.

20. The changes in foot structure in a bird population over many generations are shown in the diagram. These changes can best be explained by the concept of

A. evolution
B. extinction
C. stable gene frequencies
D. use and disuse
21. In the diagram shown, B, C, and D represent organisms that exist in the present time and show a striking similarity to each other in their bone structure. In the diagram, letter A most likely represents

A. homologous structures
B. a common ancestor
C. an acquired characteristic
D. geographic distribution

22. In some members of a species, inherited adaptations are combined in a way that makes these members more likely to survive than other members of the species. This statement is most closely associated with a theory of evolution proposed by

A. Darwin  B. Lamarck
C. Mendel  D. Miller

23. The diagram represents jars containing all the nutrients necessary for the growth and reproduction of fruit flies. A strip of sticky flypaper was suspended from the top of the experimental jar. Some fruit flies with wings and some fruit flies that lacked wings were placed in both jars. After a week, only the wingless flies were alive in the experimental jar, while in the control jar, both varieties of flies were still alive, as indicated in the diagram.

Which is the best conclusion to be drawn from this investigation?

A. Winglessness is an advantage in the experimental jar.
B. Winglessness is a disadvantage in the control jar.
C. The winged trait is an advantage in the experimental jar.
D. The winged trait is a disadvantage in the control jar.

24. A cat hiding in bushes near a robin’s nest observed the mother robin encouraging her offspring to make their first flight. The first young bird flew straight from the nest to a nearby tree. The next three were able to fly to the tree, although they took more time. The last young bird moved its wings too slowly and fell to the ground, where the cat swiftly captured it. This situation illustrates part of the theory of evolution proposed by

A. Lamarck  B. Darwin
C. Weismann  D. Miller
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