Evolution

Name: ________________________________ Date: ________________

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 an environment, barriers prevent an organism from entering other environments. This phenomenon illustrates the concept of

A. punctuated equilibrium  B. geographic isolation
C. genetic variation  D. natural selection

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. The study of living organisms and fossils suggests that organisms have undergone slow and continuous change since they first appeared on Earth. Based on the rate of change, this concept is known as

A. gradualism  B. punctuated equilibrium
C. intermediate inheritance  D. cell theory

7. 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.
Evolution

8. 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

9. According to modern evolution theory, which factor favors speciation?

A. asexual reproduction
B. geographic isolation
C. gene pool stability
D. use and disuse

10. Geographic isolation of a small population from a main group may contribute to the development of new species. This speciation is more likely to happen if the members of the geographically isolated population, compared to the members of the main group, have

A. an inability to survive environmental conditions
B. the ability to resist genetic mutations
C. different environmental factors acting on them
D. the same initial gene frequencies
11. The diagrams shown illustrate three homologous structures. The structural similarities represented in the diagrams are considered supporting evidence for

A. the heterotroph hypothesis
B. a common ancestry
C. use and disuse
D. geographic isolation

12. The special characteristics that make an organism particularly well suited to its environment are known as

A. abiotic factors  B. aggregates  C. biotic factors  D. adaptations

13. What will most likely happen to a trait that has a high survival value in a population?

A. The trait will increase in frequency.
B. The trait will decrease in frequency.
C. The trait will not be inherited.
D. The gene for the trait will mutate.
Evolution

14. 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

15. In most populations, the individuals that produce the greatest number of offspring are

A. always the strongest
B. usually the best adapted
C. those that have only recessive traits
D. those that are the most intelligent
16. Which inference can best be made based on the diagram?

A. Acquired adaptations for living in trees are inherited.
B. Humans and apes have a common ancestor.
C. The embryos of monkeys and apes are identical.
D. The period of maturation is similar in most primates.

17. 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
18. According to this information, the closest evolutionary relationship most likely exists between the

A. human and the chimpanzee
B. human and the gorilla
C. chimpanzee and the gorilla
D. horse and the zebra

<table>
<thead>
<tr>
<th>Species</th>
<th>Sequence of amino acids in the same part of the hemoglobin molecules</th>
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</thead>
<tbody>
<tr>
<td>Human</td>
<td>Lys-Glu-His-Iso</td>
</tr>
<tr>
<td>Horse</td>
<td>Arg-Lys-His-Lys</td>
</tr>
<tr>
<td>Gorilla</td>
<td>Lys-Glu-His-Lys</td>
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<tr>
<td>Chimpanzee</td>
<td>Lys-Glu-His-Iso</td>
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<tr>
<td>Zebra</td>
<td>Arg-Lys-His-Arg</td>
</tr>
</tbody>
</table>
1. Answer: A
2. Answer: A
3. Answer: B
4. Answer: D
5. Answer: C
6. Answer: A
7. Answer: B
8. Answer: D
9. Answer: B
10. Answer: C
11. Answer: B
12. Answer: D
13. Answer: A
14. Answer: A
15. Answer: B
16. Answer: B
17. Answer: A
18. Answer: A