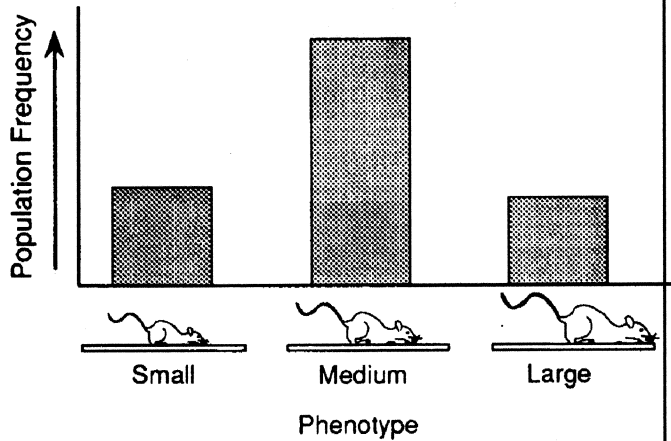


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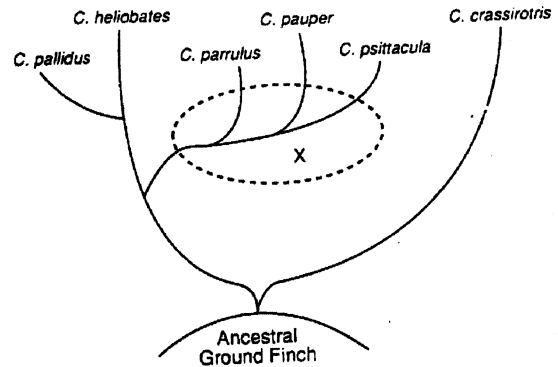
1. The graph below shows the results of an investigation related to evolution.



This graph was most likely developed from data involving a study of the

- (1) transmission of acquired characteristics
 - (2) concept of punctuated equilibrium
 - (3) concept of gradualism
 - (4) variation within a species
2. In a certain area, DDT-resistant mosquitoes now exist in greater numbers than ten years ago. What is the most probable explanation for this increase in numbers?
- (1) Genetic differences permitted some mosquitoes to survive DDT use.
 - (2) Mosquito eggs were most likely to have been fertilized-when exposed to DDT.
 - (3) DDT acted as a reproductive hormone for previous generations of mosquitoes.
 - (4) DDT serves as a new source of nutrition.
3. Organisms with favorable variations reproduce more successfully than organisms with less favorable variations. This statement best describes the concept of
- (1) overproduction
 - (2) use and disuse
 - (3) inheritance of acquired characteristics
 - (4) survival of the fittest

4. The diagram below represents a taxonomic tree showing the possible evolution of six species of finches.



The most likely explanation for the branching pattern seen in the circled region labeled X is that

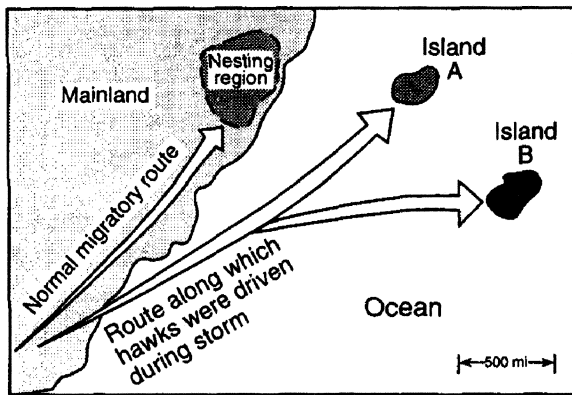
- (1) environmental changes resulted in extinction
 - (2) speciation occurred as a result of inbreeding
 - (3) no speciation occurred during this time
 - (4) environmental changes influenced speciation
5. Even though the environment changes, a population that occupies a given geographic area will most likely continue to be found in this area if the
- (1) variations in the population decrease over time
 - (2) members of the population decrease in number
 - (3) members of the population exceed the carrying capacity
 - (4) population passes on those genes that result in favorable adaptations
6. Which statement would most likely have used by Lamarck to explain the development of the long trunk in elephants?
- (1) Elephants stretched their trunks to reach food supply, and this longer trunk was left on.
 - (2) A mutation occurred and its frequently increased in later generations.
 - (3) Elephants with longer trunks had a higher survival rate and the longer trunk was passed on
 - (4) Elephants with short trunks were mostly sterile.

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7. Characteristics of a species that make its members better able to live and reproduce in their environment are known as

- (1) favorable adaptations
- (2) homologous structures
- (3) abiotic factors
- (4) biotic factors

8. Thousands of years ago, a large flock of hawks was driven from its normal migratory route by a severe storm. The birds scattered and found shelter on two distant islands, as shown on the map below. The environment of island A is very similar to the hawk's original nesting region. 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?

- (1) The hawks that landed on island B have evolved more than those on island A.
- (2) The hawks that landed on island A have evolved more than those on island B.
- (3) The populations on islands A and B have undergone identical mutations.
- (4) The hawks on island A have given rise to many new species.

9. A large population of wildcats is broken up into several small groups as a result of geographic isolation. Over a long period of time, these groups will most likely become

- (1) reproductively isolated
- (2) identical in genotypes
- (3) identical in phenotypes
- (4) artificially selected

10. The species of finches that Darwin found on the Galapagos Islands displayed different structural and behavioral adaptations. These adaptations differed among the species according to the birds' varying habitats. Such adaptations most likely evolved as a result of

- (1) use and disuse
- (2) transmission of acquired characteristics
- (3) reproductive isolation
- (4) geographic isolation

11. Since variations between offspring are important in the process of natural selection, evolution would be expected to occur more rapidly in species that reproduce by the process of

- (1) budding
- (2) asexual reproduction
- (3) sexual reproduction
- (4) sporulation

12. Early stages in the embryo of a fish are similar to the early stages of human and pig embryos. An explanation for this similarity is that the

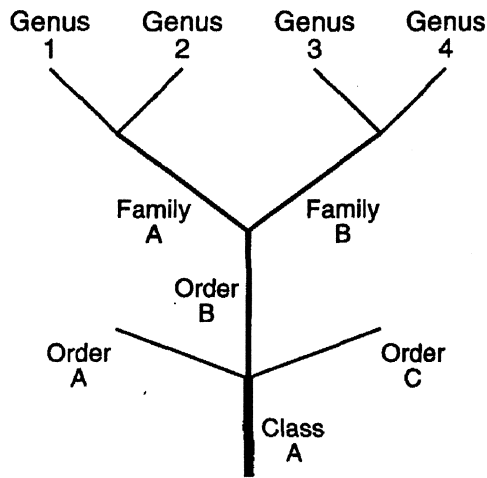
- (1) pig and the human occupy the same habitat, while the fish occupies a different habitat
- (2) pig and the human are more closely related to each other than to the fish
- (3) pig, human, and fish evolved from a common ancestor
- (4) pig, human, and fish had no ancestral species in common

13. A scientist studying fossils in undisturbed layers of rock identified a species that, he concluded, changed little over the years. Which observation probably would have led him to this conclusion?

- (1) The simplest fossil organisms appeared only in the oldest rocks.
- (2) The simplest fossil organisms appeared only in the newest rocks.
- (3) The same kind of fossil organisms appeared in old and new rocks.
- (4) No fossil organisms of any kind appeared in the newest rocks.

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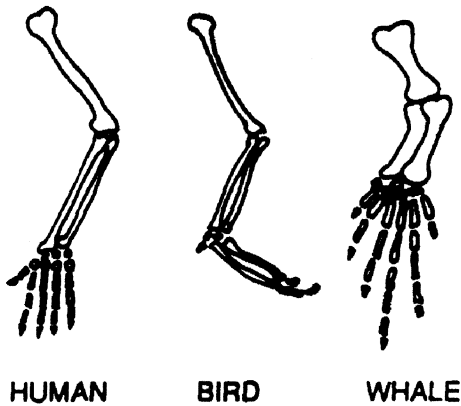
14. The diagram below shows the evolutionary relationships between several groups of organisms.



Organisms with the greatest biochemical similarities would most likely be found in which pair of genera?

- (1) 1 and 3
- (2) 2 and 3
- (3) 3 and 4
- (4) 1 and 4

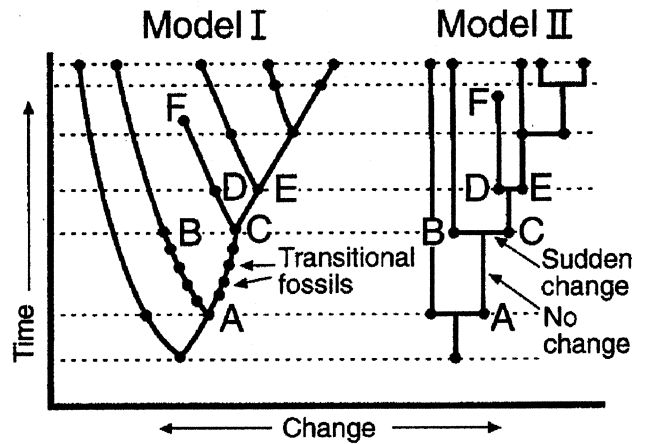
15. The diagrams below represent the forelimbs of three different organisms.



These structures are classified as homologous because they

- (1) demonstrate the law of use and disuse
- (2) are identical in function
- (3) represent acquired characteristics
- (4) are similar in structure and origin

16. Models I and II in the graph below show two different evolutionary pathways.

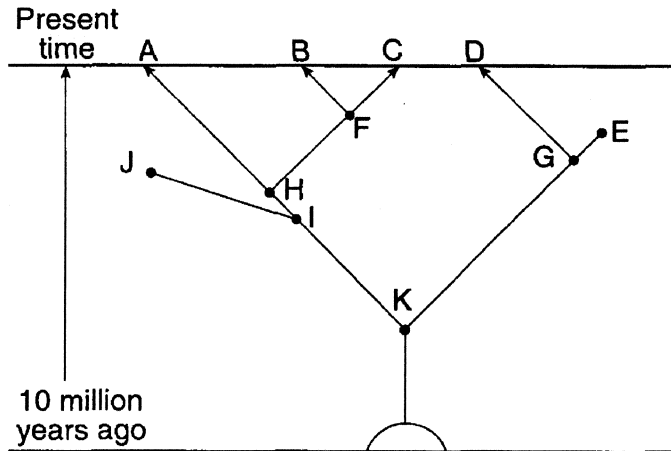


Which evolutionary concepts are best represented by model I and model II?

- (1) Model I represents gradualism; model II represents punctuated equilibrium.
- (2) Model I represents punctuated equilibrium; model II represents gradualism.
- (3) Model I represents speciation; model II represents acquired characteristics.
- (4) Model I represents acquired characteristics; model II represents speciation.

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Base your answers to questions 17 and 18 on the diagram below. The diagram shows an interpretation of relationships based on evolutionary theory. The letters represent different species.



17. The diagram indicates that a common ancestor for species C and E is species
(1) F (2) G (3) H (4) K
18. Which species are *least* likely to be vital parts of a present-day ecosystem?
(1) A and E (2) C and D (3) E and J (4) B and F