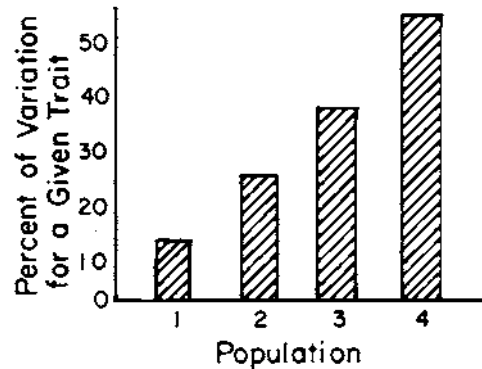


1. Which factor has the greatest effect on the rate of evolution of animals?

- (1) **environmental changes**
- (2) use and disuse
- (3) asexual reproduction
- (4) vegetative propagation

2. The graph below represents the percent of variation for a given trait in four different populations of the same species. These populations are of equal size and inhabit similar environments.



In which population is the greatest number of individuals most likely to survive significant environmental changes related to this trait?

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

3. Certain insects resemble the twigs of trees on which they live. The most probable explanation for this resemblance is that

- (1) the trees caused a mutation to occur
- (2) no mutations have taken place
- (3) **natural selection has favored this trait**
- (4) the insects needed to camouflage themselves

4. In an attempt to explain the diversity of living things, Darwin's theory of natural selection

- (1) proved evolution took place
- (2) described how mutations produced variations
- (3) showed that only the largest animals survive
- (4) **described how evolution could have occurred**

5. 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.

6. Darwin was unable to explain completely his theory of evolution because he lacked knowledge of

- (1) natural selection
- (2) overproduction
- (3) survival of the fittest
- (4) **the source of variations**

7. Certain strains of bacteria that were susceptible to penicillin in the past have now become resistant. The probable explanation for this is that

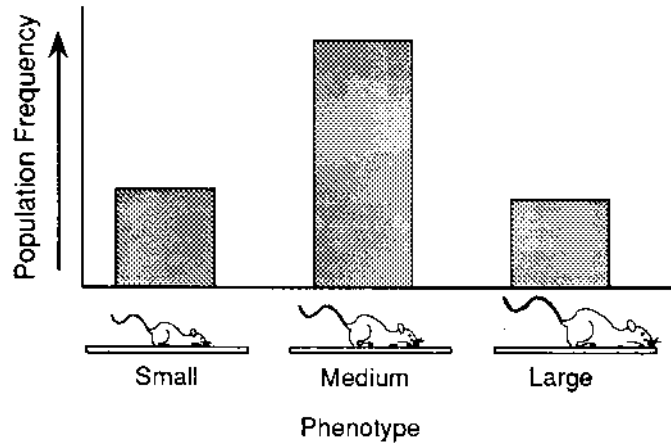
- (1) the mutation rate must have increased naturally
- (2) the strains have become resistant because they needed to do so for survival
- (3) **a mutation was retained and passed on to succeeding generations because it had high survival value**
- (4) the principal forces influencing the pattern of survival in a population are isolation and mating

-
8. Natural selection can best be defined as
- (1) survival of the strongest organisms
 - (2) elimination of the smallest organisms by the largest organisms
 - (3) survival of those organisms genetically best adapted to the environment**
 - (4) survival and reproduction of those organisms that occupy the largest area in an environment
9. Many modern evolutionists have accepted much of Darwin's theory of evolution, but have added genetic information that gives a scientific explanation of
- (1) overproduction
 - (2) the struggle for existence
 - (3) the survival of the fittest
 - (4) variations**
10. In areas of the American Southwest, certain insect species are quickly becoming resistant to continuous applications of chemical insecticides. The increase in the number of insecticide-resistant species is due to
- (1) inheritance of acquired traits
 - (2) variability through asexual reproduction
 - (3) geographic isolation
 - (4) natural selection**
11. Which statement about the individuals within a population that survive to reproductive age is consistent with Darwin's theory of natural selection?
- (1) They transmit characteristics acquired by use and disuse to their offspring.
 - (2) They tend to produce fewer offspring than those that do not survive.
 - (3) They are the ones best adapted to exist in their environment.**
 - (4) They will perpetuate unfavorable changes in the species.
12. Which concept was *not* included by Darwin in his theory of evolution?
- (1) overproduction in a population
 - (2) struggle for existence
 - (3) genetic basis for variations**
 - (4) survival of the fittest
13. The special characteristics that make an organism particularly well suited to its environment are known as
- (1) abiotic factors
 - (2) aggregates
 - (3) biotic factors
 - (4) adaptations**
14. Certain insects resemble the twigs of trees. Based on modern evolutionary theory, the most probable explanation for this is that
- (1) a single gene mutation caused the resemblance
 - (2) the insects changed because they ate the wood of the trees
 - (3) genes were transferred from the trees to the insects
 - (4) natural selections of many variations had occurred**
15. After the Industrial Revolution, dark-colored moths outnumbered light-colored moths in certain regions of England. Within the past 40 years, factories in these regions have added scrubbers and air purifiers to their smokestacks, and the relative number of light-colored moths has increased. The probable reason for this increase is that
- (1) the allele for light color became dominant over the allele for dark color
 - (2) the environment favored the survival of light-colored moths over dark-colored moths**
 - (3) dark-colored moths turned light because they needed to survive
 - (4) overpopulation occurred and most of the light-colored moths died, leaving only dark-colored moths to reproduce

16. Charles Darwin proposed that organisms produce many more offspring than can possibly survive on the limited amount of resources available to them. According to Darwin, the offspring most likely to survive are those that

- (1) are born first and grow fastest
- (2) are largest and most aggressive
- (3) **are best adapted to the environment**
- (4) have no natural predators

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



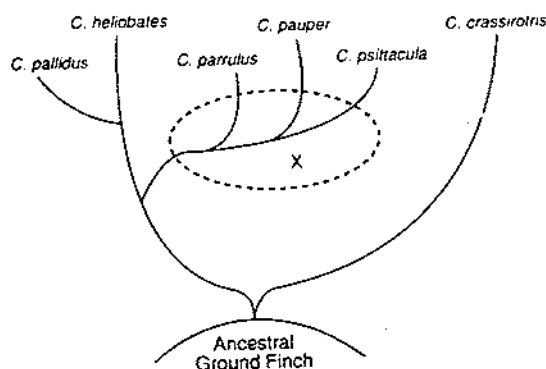
This graph was most likely developed from data involving a study of the

- (1) transmission of acquired characteristics
- (2) concept of punctuated equilibrium
- (3) concept of gradualism
- (4) **variation within a species**

18. Which concept about variations is included in the modern theory of evolution?

- (1) Variations occur in animals, but not in plants.
- (2) Variations are acquired and will appear in the offspring.
- (3) Variations are the result of overproduction.
- (4) **Variations influence the survival of the individual.**

19. 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**