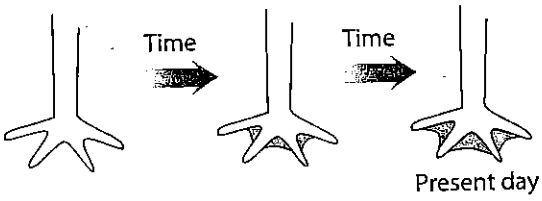
Review

1. Which statement is basic to the theory of evolution by natural selection? (A) In general, living organisms maintain a constant population from generation to generation. (B) Changes in living organisms are almost completely the result of mutations. (C) Natural variations are inherited. (D) There is little competition between species.

2. Which statement is *not* included as part of our modern understanding of evolution? (A) Sexual reproduction and mutations provide variation among offspring. (B) Traits are transmitted by genes and chromosomes. (C) More offspring are produced than can possibly survive. (D) New organs are formed when organisms need them.

3. The changes in the foot structure in a bird population over many generations are shown in the following diagram.



These changes can best be explained by the concept of (A) natural selection (B) extinction (C) stable gene frequencies (D) cloning

4. Which pair of structures are homologous? (A) wing of an insect and wing of a bird (B) tentacle of a hydra and flipper of a whale (C) front leg of an insect and bones in the leg of a human (D) bones in the front leg of a dog and bones in the wing of a bat

5. Sexual reproduction is related to evolution because sexual reproduction (A) occurs only in more recently evolved forms of animal life (B) increases the chances of extinction of different species (C) increases the chances for variations to occur (D) is the more usual kind of reproduction

6. Evolution could not occur without genetic variations. These variations will not be acted upon by natural selection unless they (A) produce unfavorable characteristics (B) produce favorable characteristics (C) are found in the fossil record (D) affect the organisms' appearance or functioning

7. Mutations can be transmitted to the next generation if they are present in (A) hormones (B) gametes (C) body cells (D) muscle cells

8. 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 inheritable traits (D) those that are the most intelligent

9. The presence of some similar structures in all vertebrates suggests that these vertebrates (A) all develop at the same rate (B) evolved from different animals that appeared on Earth at the same time (C) all develop internally and rely on nutrients supplied by the mother (D) may have an evolutionary relationship

10. Which of the following is produced by mutation and is essential for evolution to occur? (A) stability in the genetic code of organisms (B) additional DNA in an organism (C) a struggle for existence (D) variations in organisms

11. Which two factors provide the genetic basis for variation within many species? (A) asexual reproduction and meiosis (B) mutations and sexual reproduction (C) competition and the synthesis of proteins (D) ecological succession and mitosis

12. The sudden appearance of a light-colored moth in a large population of dark-colored moths was probably the result of (A) a mutation (B) random mating (C) non-random mating (D) isolation of the moth population

13. Which of the following could be used as evidence to show that two different species of organisms most likely developed from a single common ancestor? (A) They eat the same types of food. (B) They have different digestive enzymes (C) They lived during the same time period. (D) They contain similar amino acid sequences.

14. Many animal species in danger of extinction have small populations and therefore lack genetic diversity because of the inbreeding that results. Explain how the lack of genetic diversity found in such populations might hinder the survival of these species.

- Explain why inbreeding reduces the genetic diversity of offspring.
- Describe the importance of genetic diversity to the survival of a species in a changing environment.