TEXT PAGES COVERED

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VOCABULARY

- evolution
- microevolution
- macroevolution
- fossil
- law of succession
- catastrophism
- uniformitarianism
- gradualism
- perpetual change
- common descent
- multiplication of species
- natural selection
- superposition
- transitional fossil
- homology
- analogy
- vestigial structure
- extinction
- phylogeny
- taxon (taxa)
- adaptation
- artificial selection
- Natural Theology
- radiometric dating
- Darwinian fitness
- heritability
- preadaptation
- blending inheritance
- speciation
- allopatic speciation
- plate tectonics
- DNA
- mutation
- genetic recombination
- relative dating
- absolute dating

STUDY QUESTIONS

1. According to Ernst Mayr, Darwin’s theory of evolution really consisted of five distinct theories: perpetual change, common descent, multiplication of species, natural selection, and gradualism. Define each of these theories. Provide examples that illustrate each of these theories.

2. Contrast the catastrophism with uniformitarianism. How does modern geology view earth history in light of these opposing views?

3. Explain natural selection in terms of observations and the conclusions drawn from these observations. Provide examples and evidence supporting these conclusions.

4. Discuss the lines of evidence supporting evolution and natural selection: the fossil record, morphological homology, developmental homology, molecular homology, and actual observations of change.

5. What is the significance of gaps in the fossil record? What possible explanations, consistent with evolutionary theory, are there for these gaps? Are there any examples of intermediate fossil forms?

6. What is a fossil? Discuss how fossils are formed in layers of sedimentary rock. How can the distribution of fossils in these rock be used to provide information regarding the evolution of life (hint: think about the concept of superposition).

7. What facts regarding the fossil record demonstrate the occurrence of evolution? Provide examples to support your discussion.

8. Contrast homology and analogy. How are these concepts used to understand evolutionary history?
9. Discuss the characteristics of Natural Selection theory in terms of what the theory can tell us. What are the limitations of the theory?

10. Your text identifies four postulates presented by Charles Darwin. What are these postulates and what kinds of tests confirm them?

11. What were the things about evolution that Darwin could not account for? What discoveries have been made since Darwin and how have these discoveries supported to and added to his theories?

12. Contrast relative dating with absolute dating via radiometric dating procedures. Describe the basic principles of radiometric dating.