

### Evolution Study Guide

1. Where does life come from according to your textbook? Can life arise from non-living things (abiogenesis)? Arose from non living materials inorganic compounds were exposed to electric spark and made components of life.

2. According to your textbook, how is life thought to have begun on Earth? What came first, second, etc.? What important element was necessary for life as we know it? Inorganic compounds formed organic compounds, microspheres, DNA/RNA, single celled photosynthetic org. evolved, single celled eukaryotes, multi cellular, (O<sub>2</sub>)

3. What scientific theory did Charles Darwin propose? Describe its basic elements: Evolution by Natural Selection  
 ① Struggle for existence  
 ② Descent w/ mods - each species descends from others w/ changes  
 ③ Compete for resources, ④ survival of fittest (best adaptations survive)

4. What is Evolution? What is Natural Selection? How does natural selection lead to evolution? Change over time, Nature chooses the successful traits due to what is best suited to the environment. Those that survive best reproduce & pass on.  
 5. What is the difference in Natural Selection and Artificial Selection (Selective Breeding)? Natural - Nature chooses what survives genes  
 Artificial - people choose to breed favorable traits

6. What creates Variation in organisms? How do variations benefit populations of organisms? What are two sources of variation in organisms? Variation in genes creates variety, some differences help organism survive better, mutations, gene shuffling

7. What evidence or patterns can be found on Earth, and in modern day organisms, that suggest that organisms change over time? Your discussion should focus on:

1. Fossil Record Can see fossil evidence of different organisms existence can see how organisms have changed structurally thru time ② you can see how one type of organism in an area can change from an ancestral organism (ex Darwin's finches, turtles)
  2. Adaptive Radiation
  3. Vestigial Structures
  4. Biochemical (DNA) Similarities
- ③ You can find useless organs & structures indicating a past use  
 ④ You can see how organisms are related by similarities in DNA

8. How are Evolutionary Relationships determined when two organisms are compared? Include the following in your discussion: You can determine how related organisms are using DNA analysis the more bases they have in common the more closely related they are. ① Having similar # of bones & similar arrangement & development may indicate a common ancestor ③ looking at how similar 2 organisms are in their embryological development can help you determine relatedness, the longer they look the same = the more closely related.

- ① DNA Analysis
- ② Homologous Structures
- ③ Embryological Development