

Homework #4      Geology 1020 Section 002

Name: \_\_\_\_\_ **KEY** \_\_\_\_\_

(For full credit, you **must** hand this in **before class** on Thursday & **WRITE CLEARLY**)

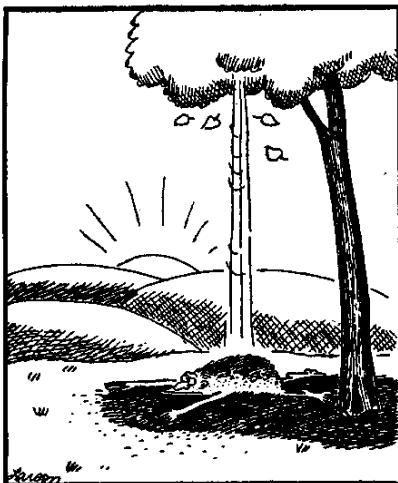
1. Which combination of the following factors influences the process of natural selection? (Circle A, B, C, or D)
  1. Greater ability to resist disease
  2. Ability to bear large numbers of offspring
  3. Greater ability to avoid enemies
  4. Ability to survive in a wide range of environments
  5. Mutations induced by laboratory cloning

A. 1,2,5  
**B. 1,2,3,4**  
C. 2,4  
D. 1,2,3,5
  
2. A major problem that Darwin encountered in trying to gain support from other naturalists for his theory of Natural Selection was: (circle one)
  - A. His observations were limited to terrestrial plants and animals
  - B. There was no paleontological record to test his theories against.
  - C. His observations were limited to the Galapagos Islands.
  - D. Most naturalists still adhered to Mendel's theory instead.
  - E. Modern genetics had not yet been discovered.**
  
3. Although animals and plants have been abundant throughout much of the latter part of Earth's history (the Phanerozoic), briefly state at least *three* reasons that fossils of many (if not most) species that have ever existed have yet to be found.
  - A. Fossils can be easily destroyed by normal geological processes like weathering, metamorphism, etc.**
  - B. Most rocks are buried, so the fossils have not yet been found.**
  - C. Some organisms lived in environments unsuitable for fossilization.**
  
4. When high burial rates of isotopically light organic material occur in the oceans, the Earth's levels of atmospheric O<sub>2</sub> (circle one)
  - A. Decrease
  - B. Increase**
  - C. Are tied up more readily in the production of CaCO<sub>3</sub>
  - D. All of the above

5. "When in balance, the photosynthesis-respiration cycle has little effect on the isotopic ratio of CO<sub>2</sub> in the Earth's atmosphere."

*Explain WHY this may be the case (use the space below)*

The answer to this question is in the statement "when in balance." Since the system is balanced, it means that the input is equal to the output and therefore the size of the reservoir does not change. Isotopic ratios are used to track the size of various reservoirs, so in a balanced system, the isotopic ratios of <sup>13</sup>C/<sup>12</sup>C in CO<sub>2</sub> tend not to change.



The Dawn of Man