Name: _____

Self-study Problems #1: Evolution

1. Give a brief definition of evolution (in the sense of an observable fact).

2. Give an example of evolution that has actually been observed.

3. Define catastrophism.

4. Define uniformitarianism.

5. Is Darwin's theory of evolution catastrophist, or uniformitarian? Why?

6. List the three conditions ("postulates") that underlie Darwin's theory of evolution.

7. If Darwin's three conditions or postulates are true, what happens?

8. Imagine a study of a population of a certain species of flea living in a container in a lab. The researchers make every measurement and observation imaginable of every individual flea over 500 generations, and absolutely nothing about the population of fleas changes over time.

    a. Did evolution occur?

    b. Did natural selection occur? Explain.

9. If living things reproduced only by making *exact* clones of themselves, would they evolve? Explain.

10. If we find a watch, we can justifiably infer a watchmaker. What is so different about living things that we don't necessarily have to infer a designer? Explain briefly.

11. Imagine that while studying mythical Malawi marsh mice, Dr. Smith observes that adult mice with longer-than-average tails have twice as many babies as do mice with average or shorter tails. On the other hand, their principle predator usually catches the mice by their tails, so mice with shorter-than-average tails are 10% more likely to survive to adulthood. Dr. Smith is planning to collect detailed census data of these mice for the next twenty years.

    a. Assuming that no other factors come into play, should Dr. Smith expect the average length of the mice's tails to stay the same, get longer, or get shorter?

    b. Why?

    c. Assuming that no other factors come into play, by the end of the project, should Dr. Smith expect the mice to be better adapted to avoid predation, or less well adapted?

12. Complete this sentence: Natural selection acts on _____,

    potentially causing changes in _____

    _____.