

ORGANISMAL BIOLOGY
SAMPLE FREE-FORMAT QUESTIONS for the FIRST EXAM

Name (please print): _____

These questions have appeared on previous years' exams, and may well appear again.

PART IV. LONGER ANSWERS. In the space below, clearly answer **ANY TWO** of the following.

Drawings may help in some cases. Extra paper is available if needed.

1. Explain what the peppered moths (*Biston betularia*) of England demonstrate
2. Explain the example of the Dunkers and what they show about evolution.
3. Explain what evidence was used to support "natural theology"
4. Explain how "La Marche de la Nature" differed from earlier ideas.
5. Explain the meaning of stabilizing (centripetal) selection and give an example.
6. Explain what impressed Darwin about South American mammals.
7. Explain what impressed Darwin when he compared the animals of the Galapagos Islands with those of the Cape Verde islands.
8. Explain what was important about Lyell's geology, and how it helped Darwin.
9. Explain what Darwin meant by "far higher workmanship," and whom he was criticizing.
10. Define a fossil and distinguish at least five different types of fossils.
11. Describe the geographic (allopatric) model of speciation, and at least one type of speciation that does not readily fit this model.
12. Explain why both sibling species and dimorphic species demonstrate the differences between the morphological and biological species definitions.
13. How do we know that geographic variation within a species can be adaptive? Explain at least two separate lines of evidence.
14. In parallel columns, list the differences of thought that characterized the controversy between geneticists and naturalists from about 1900 to 1940.
15. Explain the difference between monophyletic and polyphyletic groups, and how scientists try to reflect this distinction when making classifications.