Evolution, Behavior, and Ecology

Sample Exam Questions

Some instructions will appear at the beginning of the exam:

The multiple choice questions are worth two points each (50 points total). There is only one correct answer per question; indicate your choice in the space provided. The essay questions are of variable point value, stated with each question. There are six "definitions" (18 points total), two 6 point essays, one 8 point essay, and one 12 point essay. Please write clearly and concisely, with specific and pertinent information, using proper scientific vocabulary in a logical sequence of statements. Each essay requires you to make specific points for full credit.

Multiple choice questions will be like this:

_____1) Selection that acts in favor of individuals that deviate in one direction from the norm of the population, and against individuals that deviate in the other direction, is called

    A) directional selection
    B) stabilizing selection
    C) conservative selection
    D) diversifying selection
    E) limiting selection

_____2) The "founder effect" refers to

    A) natural selection acting rapidly on a small isolated population
    B) changes in gene frequencies in a small isolated population due to genetic drift
    C) changes in gene frequencies in a population due to mutation
    D) colonization of volcanic islands from nearby islands
    E) separation of a large population into smaller populations by a geographic barrier

Occasionally like this:

_____3) An animal whose coloration is dark above and light below is said to exhibit

    A) warning coloration   E) A and C
    B) cryptic coloration   F) B and D
    C) disruptive coloration   G) C and D

D) countershading

Definitions will be like this (when we have them, which may not be on every exam):

4) Briefly discuss the meaning of A and B and any three of the remaining five terms below.
(3 points each)

A) population

B) speciation

C) biotic environment

D) ecological community

E) adaptive radiation

F) exploitation competition

G) resource partitioning

Essays will be like this:

5) Briefly describe the process of "allopolyploid speciation". Be sure to describe the steps and their consequences for the result of this speciation process. (8 points)

6) Using an illustrative example of your choice (except for giraffes and peppered moths), discuss the action of natural selection in the evolution of adaptation. Your example may be speculative (need not be supported by data) but should be biologically plausible. Please state explicitly, using appropriate vocabulary, the necessary conditions for natural selection to operate, and what the result of natural selection is. (12 points)