

Sample Exam 1

- 1) Selective breeding to reduce the frequency of an undesirable rare recessive trait in domestic species is very difficult unless:
 - a) The chromosomal location of the gene has been identified.
 - b) Heterozygotes can be identified.
 - c) Phenotypic evidence of the trait can be surgically removed.
 - d) Artificial insemination is widespread.

- 2) The oldest known eukaryote fossils occur in the:
 - a) Cambrian
 - b) Cenozoic
 - c) Paleozoic
 - d) Mesozoic
 - e) Precambrian

- 3) An adaptive radiation produces:
 - a) sterile hybrids.
 - b) unfilled ecological niches.
 - c) a group of closely related but distinct evolutionary lineages.
 - d) unoccupied habitats.
 - e) a reduction in the rate of evolutionary change.

- 4) If an isolated human population is at Hardy Weinberg equilibrium and 10% **OF MALES** are color-blind (a sex-linked recessive trait found on the X chromosome in humans), what proportion of the population **AS A WHOLE** would you expect to be color-blind? (Assume a 50:50 sex ratio).
 - a) 1 %
 - b) 5 %
 - c) 5.5 %
 - d) 7.5 %
 - e) 10 %

- 5) If a gene is described as polymorphic, how many alleles does it have?
 - a) One
 - b) Two
 - c) Three
 - d) Two or more

- 6) A true story: A female hummingbird normally lays exactly two eggs each time she nests. Occasionally, a nest with three eggs is found, but the usual result is the loss of all three nestlings because the nest, built for two, breaks apart as they grow larger. Of course females that lay only one egg, which also occurs from time to time, raise only one young. Assuming egg number is inherited, this pattern is an example of:
- directional selection
 - disruptive selection
 - stabilizing selection
- 7) Which of the following populations is in Hardy Weinberg equilibrium?
- | | | | |
|-----|--------|--------|--------|
| I | 25% AA | 50% Aa | 25% aa |
| II | 64% AA | 32% Aa | 4% aa |
| III | 81% AA | 18% Aa | 1% aa |
- I only
 - II only
 - III only
 - I and II only
 - I, II and III
- 8) Because of differences in breeding times, two species of frog do not mate at the same time and so do not produce interspecific hybrids. The isolating mechanism is:
- behavioral
 - mechanical
 - temporal
 - hybrid breakdown

Use the following information to answer questions 9)-10). An X-linked recessive gene produces a red-green color-blindness in humans. A woman with normal vision whose father was color-blind has children with a color-blind man.

- 9) What is the probability that the first child from this mating will be a color-blind boy?
- 0
 - 0.25
 - 0.5
 - 0.75
 - 1
- 10) Of the girls produced by these parents, what percentage can be expected to be color-blind?
- 0%
 - 25%
 - 50%
 - 75%
 - 100%