

Chapter 24 Worksheet -- The Origin of Species (20 pts.)

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(Due in class Wednesday 2/3)

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Which of the following statements is consistent with the punctuated equilibrium interpretation of speciation? 1) _____
A) Rapid speciation is caused by population explosions.
B) Long periods of minor change are interrupted by short bursts of significant change.
C) Evolution proceeds at a slow, steady pace.
D) There is an equilibrium between living and extinct species.
E) Large populations evolve more quickly than small ones.
- 2) If two species are able to interbreed but produce sterile hybrids, their species integrity is maintained by 2) _____
A) a prezygotic barrier.
B) introgression.
C) gametic isolation.
D) hybrid inviability.
E) a postzygotic barrier.
- 3) The reproductive barrier that maintains the species boundary between horses and donkeys is 3) _____
A) mechanical isolation.
B) gametic isolation.
C) hybrid inviability.
D) hybrid breakdown.
E) hybrid sterility.
- 4) The biological species concept would be inadequate for grouping 4) _____
A) bacteria B) mammals C) plants D) amphibians E) reptiles
- 5) The Hawaiian Islands are a great showcase of evolution because of intense 5) _____
A) ecological isolation and parapatric speciation.
B) hybrid vigor and allopatric speciation.
C) allopolyploidy and sympatric speciation.
D) adaptive radiation and allopatric speciation.
E) cross-specific mating and reinforcement.
- 6) Which of the following reproductive isolating mechanisms is postzygotic? 6) _____
A) behavioral isolation
B) gamete incompatibility
C) hybrid sterility
D) temporal isolation
E) habitat isolation

- 7) Races of humans are unlikely to evolve extensive differences in the future for which of the following reasons? 7) _____
- I. The environment is unlikely to change.
 - II. Humans are essentially perfect.
 - III. The human races are incompletely isolated.
- A) I and II only
 - B) I only
 - C) I, II, and III
 - D) III only
 - E) II and III only
- 8) Dog breeders perpetuate breeds of dogs by controlling mating. This is analogous to which of the following natural isolating mechanisms? 8) _____
- A) hybrid breakdown
 - B) mechanical isolation
 - C) reduced hybrid fertility
 - D) gametic isolation
 - E) habitat isolation
- 9) Which of the following would be an example of macroevolution? 9) _____
- A) evolution of antibiotic resistance in bacteria
 - B) evolution of polymorphism in *Papilio dardanus*, with each morph mimicking a different protected butterfly
 - C) evolution of modern man, *Homo sapiens*, from australopithecine ancestors
 - D) populations of peppered moths in England shifting from a predominantly white form that was cryptic on lichen-covered tree trunks to a black, melanistic form that was less visible on darkened, soot-covered tree trunks following the pollution-producing Industrial Revolution
 - E) evolution of insecticide resistance in populations of insect pests treated through the years with DDT
- 10) A biologist discovers two populations of wolf spiders whose members appear identical. Members of one population are found in the leaf litter deep within a woods. Members of the other population are found in the grass at the edge of the woods. The biologist decides to designate the members of the two populations as two separate species. Which species concept is this biologist most closely utilizing? 10) _____
- A) geneological
 - B) ecological
 - C) morphological
 - D) biological
- 11) You are confronted with a box of pinned (preserved) grasshoppers of various species that are undescribed (new to science). Your assignment is to separate them into what you think are species. The specimens have no information with them as to where or when they were collected. Which species concept will you have to use? 11) _____
- A) morphological
 - B) biological
 - C) ecological
 - D) pluralistic

VOCABULARY. Define each term or phrase in the space provided or on a separate sheet of paper.

12) anagenesis

13) sympatric speciation

14) ecological species concept

15) biological species concept

16) autopolyploid

ESSAY. Write your answer in the space provided. (2 pts. each)

17) List three prezygotic barriers to evolution, and give a brief description of each.

18) Give the three steps that take place that lead "fringe" populations to eventually become new species.