

Name: _____

30 points

Short-Answer Section (18 points total)

1. What is endosymbiosis and how was it important in the diversification of the eukaryotes? 6 points

2. Choose either the plant kingdom or the animal kingdom, and discuss two of the principal adaptations that characterize major branches of the kingdom. 4 points

3. Describe how genetic drift could affect the genetic diversity of a small population. 4 points

4. List two critical ecosystem services provided by prokaryotes. 4 points

Multiple Choice Section (1 point each; 4 points total). Indicate the one correct answer for each question.

1. Which one of the following features is not characteristic of prokaryotes?

a. single-celled

b. one circular chromosome with 1,000-2,000 genes

c. one copy of each gene present throughout the life cycle

d. two to many linear chromosomes in a nucleus

e. no compartmentalization within the cell

2. _____ are the different forms of the same gene.
- ___ a. homozygotes
 - ___ b. chromosomes
 - ___ c. alleles
 - ___ d. populations
 - ___ e. DNA spacers
3. Which one of the following statements about fungi is false?
- ___ a. Known fungal species diversity is a relatively small portion of estimated fungal diversity.
 - ___ b. According to genetic data, fungi are more closely related to animals than to plants.
 - ___ c. Fungi provide food and antibiotics, and also have a negative economic impact as pathogens.
 - ___ d. With regard to ecological roles, fungi act as producers, pathogens, and symbionts.
 - ___ e. Sexual reproduction in fungi occurs through the formation of spores.
4. Which one of the following adaptations was not important in the evolutionary success of the arthropods?
- ___ a. spinal column
 - ___ b. cephalization
 - ___ c. body segmentation
 - ___ d. exoskeleton
 - ___ e. jointed appendages

True-False Section (1 point each; 8 points total)

If a statement is true, mark "T" next to it. If the statement is false, mark an "F" next to it and then indicate how you would correct it to make it true.

Example: F Pammel Woods is an example of a ~~tall grass prairie~~ ^{temperate deciduous forest} community.

1. Mutations are the ultimate source of all genetic variation.
2. Mycorrhizae are a symbiosis between algae and plant roots.

3. When ecologists say that a population has high genetic diversity, this can refer to low levels of heterozygosity.
4. Natural selection acts as an undirected filter of genetic variation that allows the best-adapted individuals to survive and produce more offspring over time.
5. If you wanted to protect as much higher level (phylum level) animal diversity as possible, you would focus on preserving terrestrial habitats.
6. Only the single-celled eukaryotes are considered to be microorganisms.
7. A gene is a length of DNA on a chromosome that codes for a protein or RNA.
8. Insects account for about half of the 1.5 million described species on Earth.