

Name: _____ Date: _____ Period: _____

Homework: Biomes and Natural Selection Review

Answer the following questions about adaptations to biomes and natural selection.

1. A scientist observed two populations of birds of the same species. One population lives in a warm climate, and the other population lives in a cold climate. The birds in the two populations look very different. The birds in the cold climate are larger than the birds in the warm climate and have smaller wingspans. Which statement explains why these two populations have different adaptations?

- A Birds in warm climates fly more often than birds in cold climates.
- B Birds in warm climates eat more food than birds in cold climates.
- C Birds in cold climates need to grow more slowly than birds in warm climates.
- D Birds in cold climates need to conserve more body heat than birds in warm climates.

2. Prairies are a form of grassland. For which of the following reasons would grasses found in a prairie have long roots?

- A to absorb the maximum amount of water
- B to prevent trees from depleting CO₂ levels
- C to expedite the erosion of topsoil
- D to prevent water loss by transpiration

3. Plants that live next to a marine ecosystem, like the ocean, are most likely to have adaptations allowing them to tolerate which of the following?

- A low light conditions
- B very salty water
- C extremely high temperatures
- D long periods of drought

4. Reptiles are unable to maintain their own body temperature like mammals or birds. This is what makes them ectothermic or "cold-blooded" animals. This inability to adequately warm themselves would prevent reptiles from thriving in which of the following biomes?

- A desert
- B grassland
- C tundra
- D forest

5. Some mammals that live in biomes where snowfall is common in winter change the color of their coats. In the summer, their fur is brown or a similar dark shade while in winter their fur is white. What advantage does this adaptation give to these animals?

- A It makes them less visible to predators.
- B It helps them sneak up on plants.
- C It helps them to attract mates.
- D It increases the rate of mutation.

6. Which of the following adaptations would allow a plant living in low light at the bottom of a temperate forest to perform the greatest amount of photosynthesis?

- A broad leaves
- B thick cuticles
- C red flowers
- D wide roots

7. Two populations of the same species can be separated and forced to adapt to different biomes. When populations are separated from each other, natural selection helps to –

- A remove predators from the ecosystem
- B provide reliable food sources
- C decrease the number of offspring
- D increase the diversity of the species

8. Which of the following biomes contains the greatest amount of biodiversity?

- A desert
- B grassland
- C tundra
- D rainforest

Two populations of squirrel became separated by a large canyon. When scientists introduced members of one population into the other, they would no longer interbreed. Because of this, the squirrels were classified as two different species.

9. Based on the description above, these two populations have undergone the process of –
A succession **B** speciation **C** biomagnification **D** genetic engineering

10. A population of birds lives on an island and contains genetic variations that result in different beak shapes. Some of the birds have short, wide beaks that allow birds to crush seeds. Other birds have longer, more pointed beaks that allow birds to pull seeds out of plants. What would happen within this population if a hurricane destroyed all of the plants that could have their seeds removed by a pointed beak?

- A** The frequency of alleles for pointed beaks would increase in individual birds.
- B** The frequency of the alleles for pointed beaks would decrease in the population.
- C** The number of genes that code for beak shape would be reduced in this species.
- D** The percentage of birds with short, wide beaks would remain constant in the population.

11. Does natural selection change *individuals* or *populations*? _____

12. Antibiotics are commonly used to treat bacterial infections. However, some bacteria can no longer be effectively controlled by some antibiotics that were originally useful. This change in the effectiveness of antibiotics on certain species of bacteria is a result of –

- A** the creation of nuclear membranes within the cells of these bacteria.
- C** bacteria becoming more infectious to compete with viral diseases.
- B** bacteria that were resistant to the drug surviving to reproduce.
- D** antibiotics losing their potency once they pass their expiration date.

13. Male peacocks have brilliant displays of feathers while female peacocks are much less colorful and have no elaborate displays. This adaptation in male peacocks allows them to –

- A** generate more warmth during winter.
- B** absorb more light for photosynthesis.
- C** defend themselves against predators.
- D** attract mates more successfully.



14. Only mutations that affect an organism's *phenotype* (physical appearance) are acted upon by the process of natural selection. This is because changes to an organism's phenotype –

- A** can affect how an organism interacts with its environment.
- B** always occur when there is a change to an organism's DNA.
- C** are harder to detect than changes to an organism's genotype.
- D** always make it easier for organisms to survive and reproduce.

15. When a beneficial allele is produced within an organism as a result of a mutation in a gamete cell, which of the following is most likely to occur?

- A** The frequency of this allele will increase in the population.
- B** The frequency of every allele will increase in the individual.
- C** The rate at which mutations occur will increase in the population.
- D** The carrying capacity of the population will be drastically reduced.