

QUIZ - THE EVOLUTION OF POPULATIONS

Part I — Multiple Choice

1. Which statement best describes biological evolution at the population level?

- A. Individual organisms change their genes because they need to survive.
- B. The inherited characteristics of a population change over generations.
- C. All organisms in a population become identical over time.
- D. An organism changes its behavior during its lifetime.

2. Which process introduces new alleles into a population by changing DNA?

- A. Mutation
- B. Natural selection
- C. Genetic drift
- D. Gene flow

3. A small group of individuals leaves a large population and starts a new population on an island. The new population has allele frequencies that differ from the original population because the founders were not genetically representative. Which process is this?

- A. Bottleneck effect
- B. Founder effect
- C. Directional selection
- D. Gene flow

4. Which situation is the clearest example of genetic drift?

- A. A drought randomly kills many individuals in a population, leaving survivors with different allele frequencies.
- B. Birds with larger beaks obtain more food and produce more offspring.
- C. New individuals migrate into a population and reproduce.
- D. A DNA change produces a new allele.

5. A population contains individuals with different inherited traits. Over many generations, individuals with one trait consistently leave more offspring than individuals with another trait. What is the most likely result?

- A. The advantageous allele may become more common.
- B. All alleles will immediately become equally common.
- C. The population will stop having mutations.
- D. Every individual will develop the advantageous trait during its lifetime.

6. Which statement about genetic variation is most accurate?

- A. Genetic variation can result from mutation and recombination.
- B. Genetic variation prevents populations from evolving.
- C. Genetic variation only occurs when organisms intentionally change their DNA.
- D. Every population has exactly the same amount of genetic variation.

7. Which condition is required for natural selection to produce evolutionary change?

- A. All individuals must have identical traits.
- B. Some heritable variation must affect reproductive success.
- C. Every mutation must be beneficial.
- D. Individuals must consciously choose advantageous traits.

Part II — Multiple Answer

Directions: Select ALL answers that are correct.

8. Which processes can change allele frequencies in a population?

- A. Natural selection
- B. Genetic drift
- C. Gene flow
- D. An organism growing taller during its lifetime

Part III — True or False

Directions: Write **T** or **F**

9. Natural selection acts on individuals, but evolutionary change is measured as changes in inherited traits or allele frequencies within populations over generations.

Answer: _____

10. Gene flow generally occurs when individuals or reproductive cells move between populations and contribute alleles to the receiving population.

Answer: _____
