

Advanced Principles of Genetics

Genetics · Answer Key · 9 Questions

1. Which principle states that the alleles for different traits separate independently of one another during the formation of gametes?

- A) Law of Segregation
- B) Law of Independent Assortment**
- C) Law of Dominance
- D) Hardy-Weinberg Principle

2. How many hydrogen bonds form between a Guanine-Cytosine base pair in a DNA double helix?

- A) One
- B) Two
- C) Three**
- D) Four

3. Which of the following nitrogenous bases is classified as a pyrimidine?

- A) Thymine**
- B) Adenine
- C) Guanine
- D) Hypoxanthine

4. Which enzyme is primarily responsible for unwinding the DNA double helix during replication?

- A) DNA Polymerase
- B) Topoisomerase
- C) DNA Ligase
- D) Helicase**

5. From which parent is mitochondrial DNA (mtDNA) almost exclusively inherited in humans?

- A) The father
- B) The mother**
- C) Both parents equally
- D) It alternates every generation

6. What is the chromosomal configuration characteristic of Turner Syndrome?

- A) 47, XXY
- B) 45, X**
- C) 47, XY+21
- D) 46, XX, 5p-

7. Which of the following is one of the three universal stop codons in the genetic code?

- A) AUG
- B) UAG**
- C) UGG
- D) GUA

8. Which non-coding sequences are removed from a pre-mRNA transcript during the process of splicing?

- A) Exons
- B) Introns**
- C) Promoters
- D) Enhancers

9. On which strand of replicating DNA are Okazaki fragments synthesized?

- A) Leading strand
- B) Lagging strand**
- C) Template strand
- D) Coding strand