

Advanced Biology Knowledge Challenge

Biology · Answer Key · 10 Questions

1. Which of the following enzymes is primarily responsible for the synthesis of RNA from a DNA template during transcription?

- A) DNA polymerase
- B) RNA polymerase**
- C) Reverse transcriptase
- D) Topoisomerase

2. In cellular respiration, the majority of ATP is generated during which process?

- A) Glycolysis
- B) Pyruvate oxidation
- C) Oxidative phosphorylation**
- D) Krebs cycle

3. What is the term for the symbiotic relationship where both organisms benefit and neither can survive without the other?

- A) Commensalism
- B) Parasitism
- C) Mutualism**
- D) Predation

4. Which organelle is responsible for the detoxification of drugs and poisons in eukaryotic cells, particularly abundant in liver cells?

- A) Lysosome
- B) Peroxisome
- C) Golgi apparatus
- D) Smooth endoplasmic reticulum**

5. The Hardy-Weinberg principle describes a theoretical population that is not evolving. Which of the following conditions must be met for this principle to apply?

- A) Allele and genotype frequencies change from generation to generation.
- B) There is gene flow between populations.
- C) There is no mutation, gene flow, genetic drift, non-random mating, or natural selection.**
- D) Random mating occurs with preference for specific genotypes.

6. What is the primary function of myelin sheath in the nervous system?

- A) To transmit neurotransmitters across synapses.
- B) To provide structural support to neurons.
- C) To insulate axons and increase the speed of nerve impulse conduction.**
- D) To synthesize proteins required for neuronal repair.

7. Which plant hormone is primarily involved in promoting cell elongation, root formation, and fruit development?

- A) Absciscic acid
- B) Cytokinin
- C) Ethylene

D) Auxin

8. The Calvin cycle, a part of photosynthesis, occurs in which part of the chloroplast?

- A) Thylakoid membrane
- B) Outer membrane
- C) Inner membrane

D) Stroma

9. What is the mechanism by which cells engulf large particles or other cells from their environment?

- A) Pinocytosis
- B) Exocytosis
- C) Facilitated diffusion

D) Phagocytosis

10. Which layer of the vertebrate skin is avascular and primarily composed of keratinocytes and melanocytes?

- A) Dermis
- B) Hypodermis

C) Epidermis

D) Stratum corneum