

Advanced Life Science Knowledge Test

Life Science · Answer Key · 10 Questions

1. Which organelle is responsible for the synthesis of steroid hormones and detoxification of harmful substances in eukaryotic cells?

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

2. The process by which prokaryotic cells divide into two identical daughter cells is known as:

- A) Mitosis
- B) Meiosis
- C) Binary fission**
- D) Budding

3. What is the primary function of telomeres in eukaryotic chromosomes?

- A) Initiating DNA replication
- B) Protecting chromosome ends from degradation**
- C) Attaching spindle fibers during mitosis
- D) Organizing nucleosomes into chromatin

4. Which of the following is a characteristic feature of archaea, distinguishing them from bacteria?

- A) Presence of a nucleus
- B) Use of peptidoglycan in cell walls
- C) Unique lipid composition in their cell membranes**
- D) Sensitivity to streptomycin

5. The enzyme reverse transcriptase, crucial for retroviruses, performs what primary function?

- A) Replicates viral RNA into DNA**
- B) Synthesizes viral proteins
- C) Integrates viral DNA into host DNA
- D) Transcribes viral DNA into RNA

6. In plant physiology, the movement of water across a semipermeable membrane from an area of high water potential to an area of low water potential is called:

- A) Transpiration
- B) Guttation
- C) Osmosis**
- D) Active transport

7. Which class of biomolecules is primarily responsible for catalyzing biochemical reactions in living organisms?

- A) Lipids
- B) Carbohydrates
- C) Nucleic acids
- D) Proteins (enzymes)**

8. What is the term for a symbiotic relationship where one organism benefits and the other is harmed?

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

9. The process by which nitrogen gas (N₂) from the atmosphere is converted into ammonia (NH₃) is called:

- A) Nitrification
- B) Denitrification
- C) Assimilation
- D) Nitrogen fixation**

10. Which part of the mammalian nephron is primarily responsible for reabsorbing water and concentrating urine under the influence of ADH?

- A) Proximal convoluted tubule
- B) Loop of Henle
- C) Distal convoluted tubule
- D) Collecting duct**