

Foundations of Biology

Biology · Answer Key · 12 Questions

1. Which organelle is primarily responsible for the synthesis of adenosine triphosphate (ATP) during aerobic respiration?

- A) Nucleus
- B) Mitochondrion**
- C) Ribosome
- D) Golgi apparatus

2. According to the cell theory, which of the following statements is correct?

- A) All cells contain a membrane-bound nucleus.
- B) Cells are formed by spontaneous generation.
- C) All living organisms are composed of one or more cells.**
- D) Only eukaryotic cells perform metabolic processes.

3. In the hierarchical classification system, which taxonomic rank is the most inclusive?

- A) Family
- B) Genus
- C) Order
- D) Phylum**

4. Which nitrogenous base is found in RNA but not in DNA?

- A) Uracil**
- B) Thymine
- C) Adenine
- D) Cytosine

5. What is the primary function of the rough endoplasmic reticulum?

- A) Lipid synthesis
- B) Protein synthesis and transport**
- C) DNA replication
- D) Waste decomposition

6. During which phase of mitosis do chromosomes align at the cell's equatorial plane?

- A) Prophase
- B) Anaphase
- C) Telophase
- D) Metaphase**

7. Which biological molecule is classified as a polymer of amino acids?

- A) Starch
- B) Polynucleotide

C) Protein

- D) Triglyceride

8. What is the role of enzymes in chemical reactions within a cell?

- A) To consume energy for every reaction
- B) To increase the activation energy

C) To act as a biological catalyst to lower activation energy

- D) To serve as the final product of metabolic pathways

9. Which process describes the movement of water molecules across a semi-permeable membrane from an area of higher water concentration to lower water concentration?

- A) Active transport

B) Osmosis

- C) Facilitated diffusion
- D) Exocytosis

10. What is the primary product of photosynthesis in green plants?

A) Glucose

- B) Carbon dioxide
- C) Nitrogen
- D) ATP

11. Which part of the eukaryotic cell contains the majority of the genetic material?

- A) Cytoplasm

B) Nucleus

- C) Vacuole
- D) Cell wall

12. Which component of the cell membrane helps maintain its fluidity and stability?

A) Cholesterol

- B) Phospholipid head
- C) Integral protein
- D) Peripheral protein