

Foundational Concepts in Advanced Biology

Biology · Practice Test · 15 Questions

1. What is the primary function of mitochondria within a eukaryotic cell?

- A) Protein synthesis
- B) Energy production (ATP generation)
- C) Waste removal
- D) Genetic material storage

2. Which molecule carries the genetic instructions for the development, functioning, growth, and reproduction of all known organisms?

- A) RNA
- B) Protein
- C) DNA
- D) Lipid

3. Photosynthesis is the process by which plants convert light energy into chemical energy. What gas is consumed during photosynthesis?

- A) Oxygen
- B) Nitrogen
- C) Carbon Dioxide
- D) Methane

4. The theory of evolution by natural selection was most famously proposed by which scientist?

- A) Gregor Mendel
- B) Louis Pasteur
- C) Charles Darwin
- D) James Watson

5. What is the basic unit of heredity that is passed from parents to offspring?

- A) Chromosome
- B) Mitochondrion
- C) Gene
- D) Ribosome

6. Which type of cell lacks a true nucleus and membrane-bound organelles?

- A) Eukaryotic cell
- B) Plant cell
- C) Animal cell
- D) Prokaryotic cell

7. What is the term for the process by which organisms change over time through inherited traits?

- A) Adaptation
- B) Mutation
- C) Metamorphosis
- D) Evolution

8. Which part of a plant cell is responsible for photosynthesis?

- A) Nucleus
- B) Vacuole
- C) Cell wall
- D) Chloroplast

9. What is the primary role of enzymes in biological systems?

- A) Storing energy
- B) Building cell structures
- C) Catalyzing biochemical reactions
- D) Transporting molecules

10. The study of the interactions between living organisms and their environment is called:

- A) Genetics
- B) Ecology
- C) Physiology
- D) Zoology

11. Which of the following is a fundamental component of proteins?

- A) Nucleotides
- B) Fatty acids
- C) Amino acids
- D) Monosaccharides

12. What is the process by which a cell divides into two identical daughter cells?

- A) Meiosis
- B) Fertilization
- C) Mitosis
- D) Transcription

13. Which kingdom includes organisms like bacteria and archaea?

- A) Plantae
- B) Fungi
- C) Protista
- D) Monera

14. What is the primary function of red blood cells in vertebrates?

- A) Fighting infection
- B) Transporting oxygen
- C) Clotting blood
- D) Producing antibodies

15. The process by which plants absorb water and minerals from the soil is called:

- A) Transpiration
- B) Germination
- C) Absorption
- D) Respiration