Fundamentals of Biochemistry

Biochemistry · Answer Key · 20 Questions

1. What is the primary function of enzymes in biological systems?

A) To store genetic information
B) To transport oxygen
C) To speed up chemical reactions
D) To provide structural support

2. Which of the following is a major class of biological macromolecules essential for energy storage and cell membrane structure?

A) Nucleic acids
B) Proteins
C) Carbohydrates
D) Lipids

3. What is the main energy currency of the cell?

A) Glucose
B) DNA
C) ATP
D) RNA

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

A) ATP
B) RNA
C) Proteins
D) DNA

5. What are the building blocks of proteins?

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

6. What process do plants use to convert light energy into chemical energy in the form of glucose?

A) Respiration
B) Fermentation
C) Photosynthesis
D) Digestion

7. Which element is central to the structure of all organic molecules?

A) Oxygen
B) Nitrogen
C) Sulfur
D) Carbon

8. What is the primary function of carbohydrates in living organisms?

A) Catalysis of reactions
B) Energy source and structural components
C) Information storage
D) Defense against pathogens

9. Which type of molecule is responsible for catalyzing biochemical reactions?

A) Lipids
B) Carbohydrates
C) Nucleic acids
D) Enzymes

10. What are the basic units that make up nucleic acids like DNA and RNA?

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

11. A molecule that donates a hydrogen ion (H+) in solution is called:

A) A base
B) A salt
C) An acid
D) A buffer

12. What is the primary role of lipids in the body?

A) Building muscle tissue
B) Transporting oxygen
C) Long-term energy storage and forming cell membranes
D) Carrying genetic information

13. Which of the following is NOT one of the four major classes of biological macromolecules?

A) Proteins
B) Carbohydrates
C) Minerals
D) Lipids

14. The sequence of amino acids in a protein determines its:

A) Energy storage capacity
B) Solubility in water
C) 3D structure and function
D) Rate of replication

15. What is the process by which cells break down glucose to produce ATP and other energy molecules?

A) Photosynthesis
B) DNA replication
C) Cellular respiration
D) Protein synthesis

16. Water is often called the 'universal solvent' because:

A) It is a very strong acid
B) It can dissolve many different substances
C) It is a gas at room temperature
D) It is primarily made of carbon

17. What is the term for a molecule that is a direct product of a metabolic pathway and is then used as a substrate for another metabolic pathway?

A) Enzyme
B) Hormone
C) Metabolite
D) Antibody

18. Which type of bond holds together the two strands of a DNA molecule?

A) Covalent bonds
B) Ionic bonds
C) Hydrogen bonds
D) Peptide bonds

19. Which of these is a common monosaccharide?

A) Sucrose
B) Starch
C) Fructose
D) Cellulose

20. What is the process called when RNA is synthesized from a DNA template?

A) Translation
B) Replication
C) Transcription
D) Mutation