

## Biomolecules Quiz Answer Key PDF

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**Which level of protein structure involves the sequence of amino acids?**

- A. Primary ✓**
- B. Secondary
- C. Tertiary
- D. Quaternary

**Which of the following is a disaccharide?**

- A. Glucose
- B. Fructose
- C. Sucrose ✓**
- D. Starch

**Discuss the impact of protein misfolds on human health, providing an example.**

**Protein misfolds significantly impact human health by causing diseases such as Alzheimer's, where misfolds of amyloid-beta lead to plaque formation in the brain, resulting in neurodegeneration and cognitive decline.**

**Which of the following is a component of nucleic acids?**

- A. Amino acids
- B. Fatty acids
- C. Nucleotides ✓**
- D. Monosaccharides

**How do enzymes lower the activation energy of biochemical reactions?**

**Enzymes lower the activation energy by binding to substrates and stabilizing the transition state, making it easier for the reaction to occur.**

**Which molecule is known as the "energy currency" of the cell?**

- A. DNA
- B. ATP ✓**
- C. RNA
- D. Glucose

**Which of the following is NOT a function of proteins?**

- A. Catalysis
- B. Energy storage ✓**
- C. Transport
- D. Immune response

**Explain the role of ATP in cellular metabolism.**

**ATP (adenosine triphosphate) plays a crucial role in cellular metabolism by providing the energy required for biochemical reactions, including synthesis of macromolecules, muscle contraction, and active transport across membranes.**

**Which processes are involved in gene expression? (Select all that apply)**

- A. Transcription ✓**
- B. Translation ✓**
- C. Replication
- D. Glycolysis

**Describe the central dogma of molecular biology and its significance.**

**The central dogma of molecular biology states that genetic information flows from DNA to RNA through transcription, and from RNA to protein through translation, which is essential for cellular function and gene expression.**

**Which of the following are functions of lipids? (Select all that apply)**

- A. Energy storage ✓**
- B. Genetic information storage
- C. Membrane structure ✓**
- D. Hormone production ✓**

**Which factors can affect enzyme activity? (Select all that apply)**

- A. Temperature ✓**
- B. pH ✓**
- C. Substrate concentration ✓**
- D. Light intensity

**Which of the following are structural components of proteins? (Select all that apply)**

- A. Amino acids ✓**
- B. Nucleotides
- C. Peptide bonds ✓**
- D. Fatty acids

**What is the primary function of carbohydrates in the body?**

- A. Energy storage ✓**
- B. Genetic information storage
- C. Catalysis
- D. Hormone production

**Which type of biomolecule is primarily responsible for catalyzing biochemical reactions?**

- A. Carbohydrates
- B. Lipids
- C. Proteins ✓**
- D. Nucleic acids

**What is the main structural component of cell membranes?**

- A. Proteins
- B. Phospholipids ✓**

- C. Carbohydrates
- D. Nucleic acids

**Explain how the structure of the phospholipid bilayer contributes to its function in the cell membrane.**

The structure of the phospholipid bilayer, consisting of hydrophilic phosphate heads and hydrophobic fatty acid tails, allows it to form a stable barrier that separates the internal environment of the cell from the external environment, facilitating selective permeability and fluidity.

**Which of the following are components of the cell membrane? (Select all that apply)**

- A. Phospholipids ✓**
- B. Proteins ✓**
- C. Nucleotides
- D. Cholesterol ✓**

**Which of the following are types of RNA? (Select all that apply)**

- A. mRNA ✓**
- B. tRNA ✓**
- C. rRNA ✓**
- D. dRNA

**What are the structural differences between DNA and RNA, and how do these differences relate to their functions?**

The structural differences between DNA and RNA include DNA being double-stranded with deoxyribose sugar and RNA being single-stranded with ribose sugar. These differences relate to their functions, with DNA serving as the long-term storage of genetic information and RNA being involved in translating that information into proteins.