

Macromolecules Assignment – Teacher Edition

I. Identify the specific molecule from each description.

1. _____ are used as an energy storage molecule in animals.
2. _____ are used as an energy storage molecule in plants.
3. _____ speeds up chemical reactions by lowering activation energy.
4. _____ regulates how the organism looks and acts.
5. _____ are the monomers of protein.

II. Classify each of the following compound as a carbohydrate, protein, nucleic acid or lipid.

1. Starch: _____
2. Insulin: _____
3. Steroids: _____
4. Amylase: _____
5. Unsaturated fatty acid: _____
6. Messenger RNA: _____
7. Ribose: _____

III. Describe the similarities and differences between the polysaccharides, starch, glycogen and cellulose.

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IV. List three functions of lipids in the cell.

V. Define the terms polymer and monomer and describe how polymers are formed from monomers.

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Answers

I. Identify the specific molecule from each description.

1. **Lipids** are used as an energy storage molecule in animals.
2. **Carbohydrates** are used as an energy storage molecule in plants.
3. **Proteins (enzymes)** speeds up chemical reactions by lowering activation energy.
4. **DNA** regulates how the organism looks and acts.
5. **Amino acids** are the monomers of protein.

II. Classify each of the following compounds as a carbohydrate, protein, nucleic acid or lipid.

1. Starch: **carbohydrate**
2. Insulin: **protein**
3. Steroids: **lipid**
4. Amylase: **protein**
5. Unsaturated fatty acid: **lipid**
6. Messenger RNA: **nucleic acid**
7. Ribose: **carbohydrate**

III. Describe the similarities and differences between the polysaccharides, starch, glycogen and cellulose.

Similarities: Starch, cellulose and glycogen are all polymers that are made up of glucose monomers.

Differences: The starch molecule consists of branched chains of glucose molecules and is used as energy storage form in plants.

Glycogen is a highly branched glucose polymer that functions as an energy store molecule in the mammal's liver.

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Cellulose is an unbranched glucose polymer that is typically found in plant cell walls. It provides structural support.

IV. List three functions of lipids in the cell

List any three functions from the following

1. Store energy
2. Insulation
3. Forming cell membranes
4. Providing building blocks for hormones

V. Define the terms polymer and monomer and describe how polymers are formed from monomers.

Polymers are large biomolecules that can be defined as long chains of repeating subunits or smaller molecules that are called monomers.

Polymers are synthesized by a chemical reaction that called a condensation reaction in which the water is released and a covalent bond is formed between the monomers.