

Assignments - I Classification and Types of Carbohydrates
/ Proteins and Fats

Definitions / characteristics and examples.

Classification of Carbohydrates:

They are classified into simple carbohydrates
and complex carbohydrates.

Simple Carbohydrates: Simple carbohydrates are
monosaccharides and oligosaccharides.

1 - Monosaccharides are the simplest sugars,
which cannot be hydrolyzed. Their general formula
is $C_n(H_2O)_n$.

Examples of Monosaccharides:

1 - Glucose.

2 - Galactose.

3 - Fructose.

Draw the structures as well.

2 - oligosaccharides: They are compound sugars. on hydrolysis, they yield two to ten molecules of the same or different monosaccharides.

General formula is $C_n(H_2O)_{n-1}$.

Examples:

Sucrose,

Lactose.

maltose.

2 - Complex Carbohydrates:

Polysaccharides are complex sugars that yield more than ten molecules of monosaccharides on hydrolysis.

General formula is $(C_6H_{10}O_5)_n$.

They are further classified into homo-polysaccharides and hetero-polysaccharides.

Examples: Starches, Fibers, glycogen.

→ Definition of Carbohydrates:-

Carbohydrates are organic compounds made up of Carbon, hydrogen, and oxygen atoms.

They are a primary source of energy for the body and are found in foods like bread, pasta, fruits and vegetables.

→ It is a group of organic compounds occurring in living tissues and foods in the form of starch, cellulose and sugars.

Q: 2 Definition of proteins and its classification with examples.

Proteins are very large molecules composed of basic units called amino acids.

Proteins contain carbon, hydrogen, oxygen, nitrogen and sulphur.

Classification of proteins.

Protein molecules are large, complex molecules formed by one or more twisted and folded strands of amino acids.

1 - Primary (First Level) - Protein structure is a sequence of amino acids in a chain.

2 - Secondary: Protein structure is formed by folding and twisting of the amino acid chain.

3 - Tertiary: Protein structure is formed when twists & folds of secondary structure fold again.

START FROM HERE

to form a larger three dimensional structure.

4- Quaternary (Fourth level):

It is a protein structure consisting of more than one folded amino acid chains.

Q:3 Definition of fats and its classification with examples.

Fats, also known as lipids are made up of fatty acids and glycerol monomers.

The monomers are composed of hydrogen, oxygen and carbon molecules. Fats contain more molecules of carbon and hydrogen than the oxygens.

Fats are very essential for the proper functioning of our bodies. It helps to keep our body warm. It supplies more energy than carbohydrates and protein.

Types of Fats:

1 - Saturated Fats: The fat molecules that have no double bonds between their carbon atoms are known as saturated fat molecules. This is also known as bad fats because saturated fats increase the amount of bad cholesterol.

Examples: Various animal products.

→ Plants products -

- meat, Butter, ghee, cheese, ice cream.

2 - Trans Fat :- These are unsaturated fatty acids. It increases the bad cholesterol level of our body and increases the risk of stroke & heart attack.

Examples: beef, milk, cream, cheese, cookies, baked food items.

3 - Unsaturated Fats: These are fat molecules that contain at least one double bond between their carbon atoms. These fats are "good fats".