

## B.Sc. II - PAPER - IIIA,

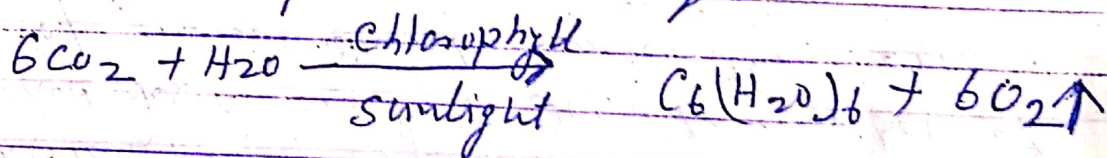
### Classification and nomenclature of carbohydrates.

Carbohydrates are composed of mainly carbon, hydrogen and oxygen. Hydrogen and oxygen

are in ratio of 2:1 as in  $H_2O$ . It is represented as general formula  $C_x(H_2O)_y$ , where 'x' and 'y' may be same or different. Examples are glucose ( $C_6H_{12}O_6$ ) as  $C_6(H_2O)_6$  and sucrose  $C_{12}H_{22}O_{11}$  as  $C_{12}(H_2O)_{11}$ .

The carbohydrates are polyfunctional group compounds. They contain hydroxyl group and carbonyl group (aldehyde and ketone).

In nature carbohydrates are formed in plant by photosynthesis in presence of sunlight and chlorophyll as catalyst.



**Nomenclature** - The name of most of carbohydrates are characterised by ending "-ose". Thus we have name as glucose, fructose, cellulose and so on.

The carbohydrates are divided into three major classes depending upon whether or not undergo hydrolysis and if they do, on the number of products formed.



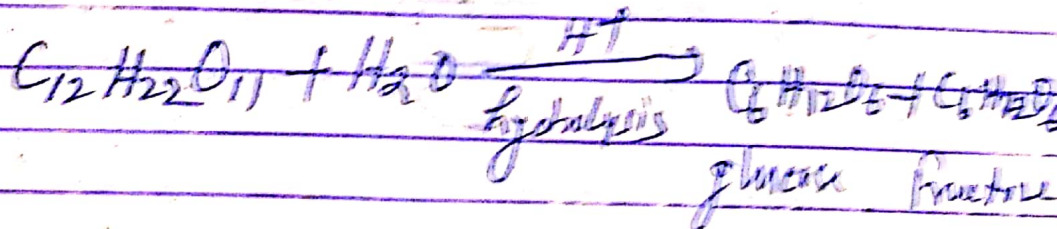
1. Monosaccharides - They are polyhydroxy aldehyde or polyhydroxy ketones which does not give hydrolysis.

Example are glucose and Fructose having formulae

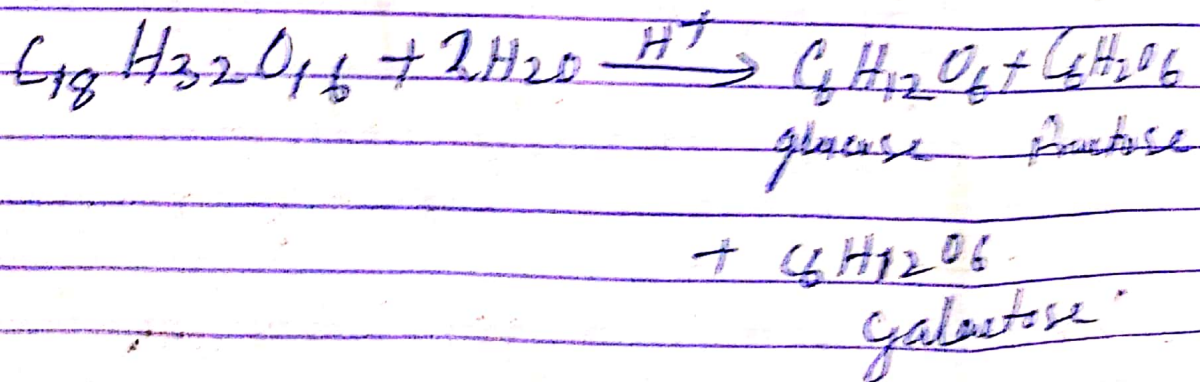


2. Oligosaccharides - The oligosaccharides are carbohydrates which gives definite number of (2-9) of monosaccharides molecules on

hydrolysis. They include disaccharide. Disaccharide yields two monosaccharides molecules on hydrolysis. Examples are sucrose, maltose, and lactose. Having molecular formulae

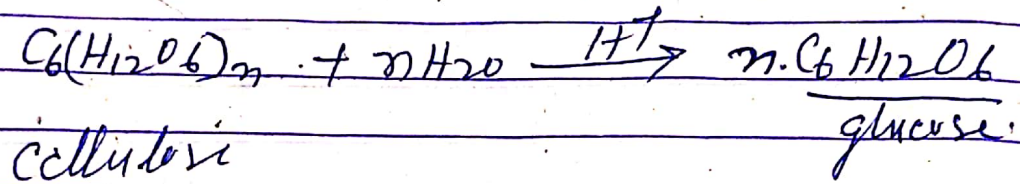


Trisaccharide gives three molecules of monosaccharides.





3. Polysaccharides — They give many monosaccharides on hydrolysis. They are high molecular weight compounds. Examples are starch and cellulose.



Note → Monosaccharides or oligosaccharides are crystalline solids soluble in water and are sweet in taste whereas polysaccharides are known as eg sugar.

Polysaccharides are amorphous and insoluble in water and tasteless and called non-sugars.

