

# CARBOHYDRATES

1.

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Degree-II (Hons. & Sub.)

Paper-IV  
Chapter-3  
Group-'B'

Chapter-3  
Group-'C'

## CARBOHYDRATES

Composed of mainly :- Carbon, Hydrogen and oxygen, with the Hydrogen and oxygen in the ratio 2:1.

General formula :-  $C_x(H_2O)_y$

$x$  and  $y$  may be same or different.

ex -  $C_6H_{12}O_6$  as  $C_6(H_2O)_6$  (Glucose)

$C_{12}H_{22}O_{11}$  as  $C_{12}(H_2O)_{11}$  (sucrose)

\* Carbohydrate were considered to be hydrates of carbon.

\* carbohydrate contain two types of functional group, the hydroxyl group ( $-OH$ ) and the carbonyl group.

\* They are polyhydroxy aldehydes or polyhydroxy ketones or compounds which are converted to these on hydrolysis.

# CLASSIFICATION & NOMENCLATURE OF CARBOHYDRATES<sup>2</sup>

The name of most of carbohydrates are characterized by the ending '-ose'.

Thus we have glucose, fructose,

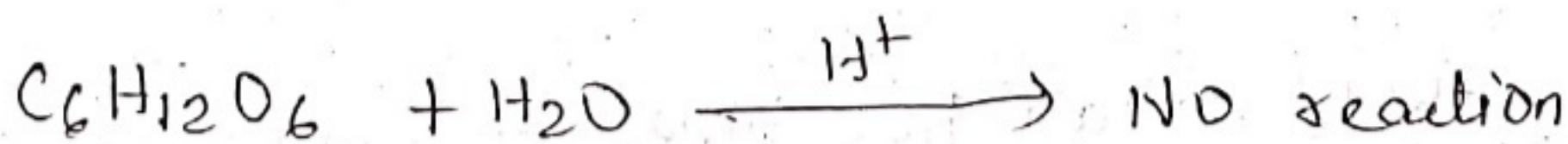
Sucrose, cellulose and so on.....

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

## 1. MONOSACCHARIDES

These are polyhydroxy aldehyde or polyhydroxy ketones which cannot be decomposed by hydrolysis to give simpler carbohydrates.

eg; glucose, fructose etc.



## 2. OLIGOSACCHARIDES

carbohydrates which yield a definite number (2-9) of monosaccharides molecules on hydrolysis.

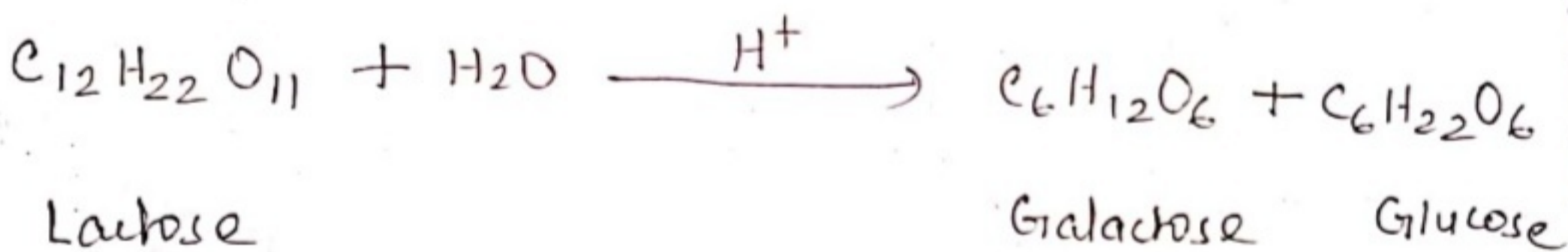
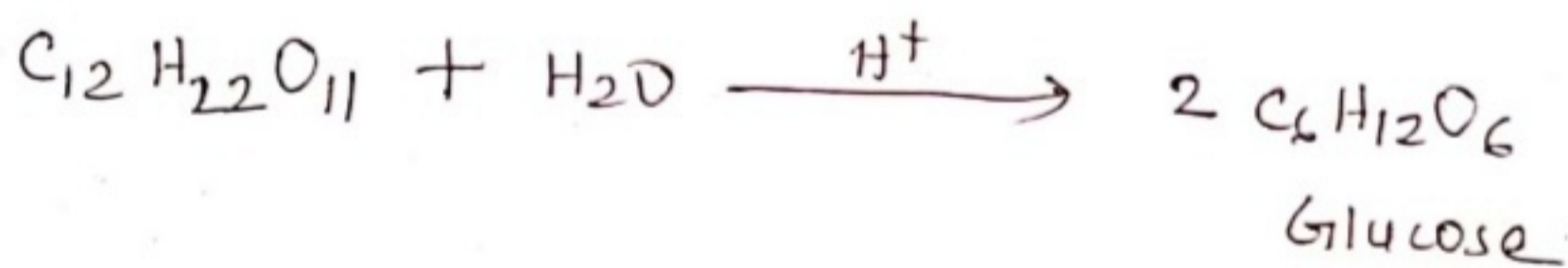
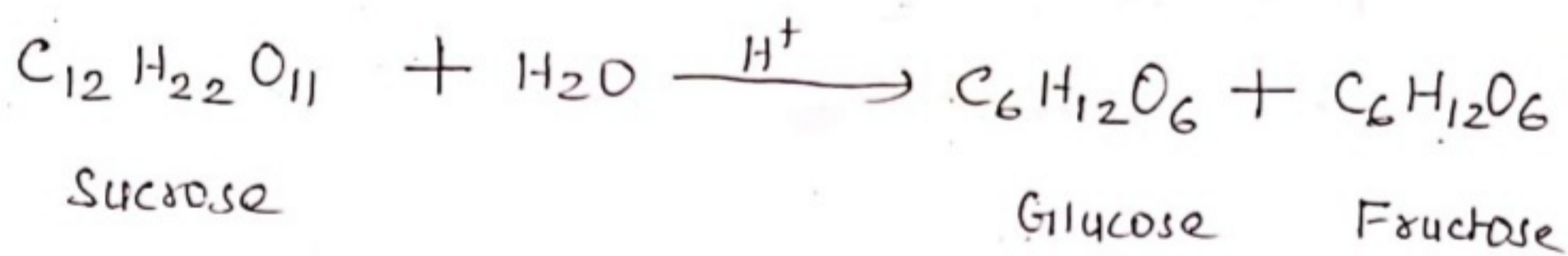
They includes :-

3.

## A. DISACCHARIDES :-

Which yields two monosaccharide molecules on hydrolysis.

eg; sucrose, maltose, Lactose each have molecular formula,  $C_{12}H_{22}O_{11}$



## B. TRISACCHARIDES :-

Which yields three monosaccharides molecule on hydrolysis.

eg; Raffinose, which has molecular formula  $C_{18}H_{32}O_{16}$

To be continued in next lecture...