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19/MHS01/116 MBBS

1 CLASSIFICATION OF ALCOHOLS :- Alcohols are classified into

2 major ways. They are :-

a Number of Hydrogen present on the carbon carrying the functional group [OH].

i Primary Alcohol [1°] :- They have two or three hydrogen present. eg  $\text{CH}_3\text{CH}_2\text{OH}$

ii Secondary Alcohol [2°] :- They have just 1 hydrogen on the carbon containing the functional group. eg  
$$\begin{array}{c} \text{CH}_3 \text{ CH } \text{CH}_3 \\ | \\ \text{OH} \end{array}$$

iii Tertiary Alcohol [3°] :- Have no hydrogen on the carbon carrying the functional group. eg  $(\text{CH}_3)_3\text{C-OH}$ .

b Number of OH [functional group] present in the compound

i Monohydric Alcohol :- It has just one [OH]

eg:-  $\text{C}_2\text{H}_5\text{OH}$  - Ethanol

ii Dihydric Alcohol or Diols :- Has just 2 [OH]. Example  
 $\text{HOCH}_2\text{CH}_2\text{OH}$  - Ethane-1,2-diol.

iii Trihydric Alcohol or Triol :- Has 3 [OH] present in the compound. eg  $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$  - Propane-1,2,3-triol

iv Polyhydric Alcohol or Polyols :- Have more than 3 [OH]

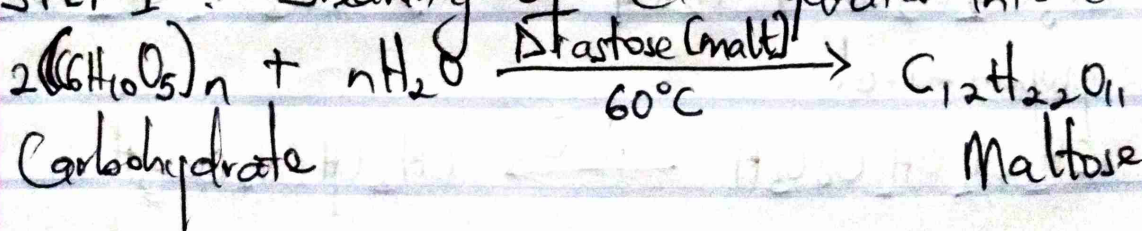
present in the compound. eg ~~CH<sub>3</sub>CH(OH)CH(OH)CH(OH)CH(OH)CH(OH)CH<sub>3</sub>~~  
CH<sub>3</sub>CH(OH)CH(OH)CH(OH)CH(OH)CH(OH)CH<sub>3</sub> -  
Heptane -2,3,4,5,6-pentaol.

2. Solubility of Alcohols in Water :- Alcohols are soluble in water due to hydrogen bonding. This only applies to alcohols with low molecular mass (up to 3 carbon atoms) because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increase in relative molecular mass.

i Solubility of Alcohols in Organic Solvents :- All monhydric alcohols are soluble in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

### 3 Industrial Manufacture of Ethanol [fermentation]

- STEP I :- Breaking of carbohydrates into disaccharides

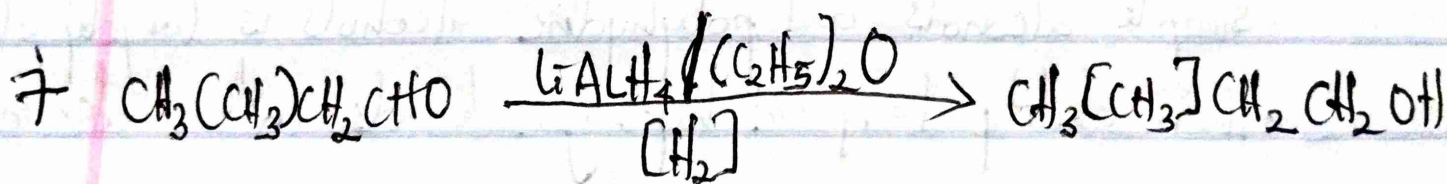
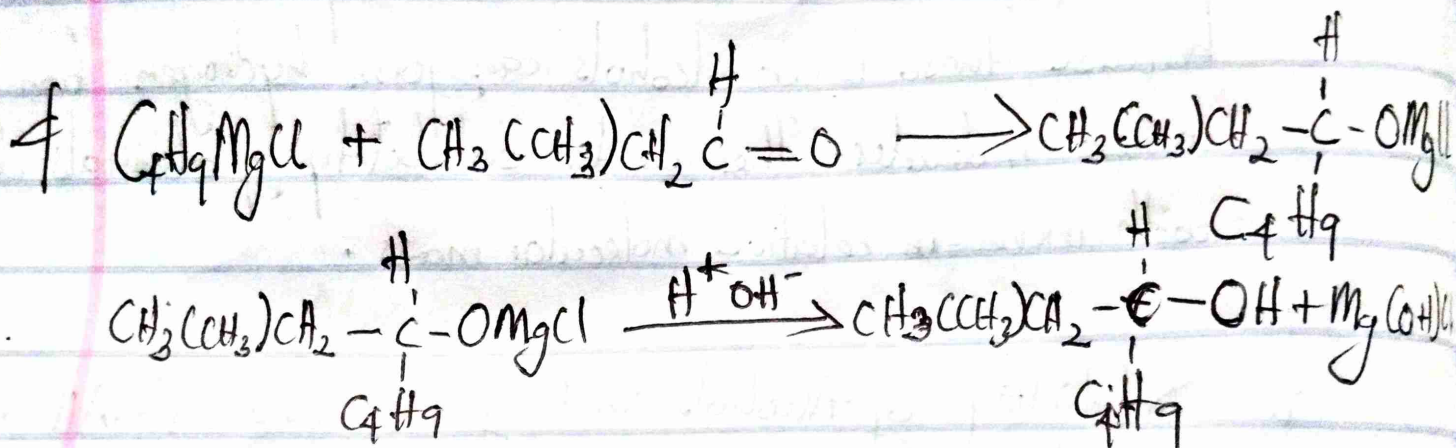
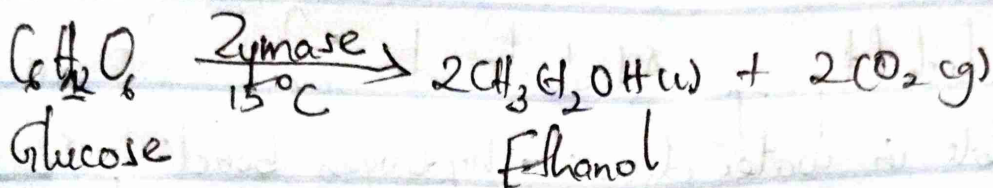


- STEP 2 :- Breaking of Disaccharide into monosaccharide

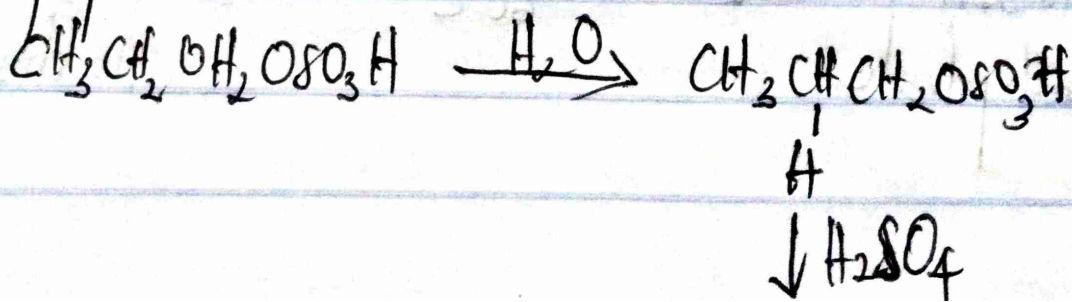
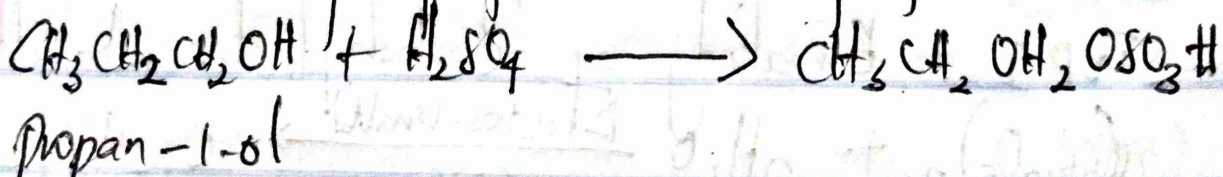
$$\text{C}_{12}\text{H}_{22}\text{O}_{11} + \text{H}_2\text{O} \xrightarrow[15^\circ\text{C}]{\text{Maltase}} 2 \text{C}_6\text{H}_{12}\text{O}_6$$

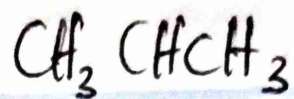
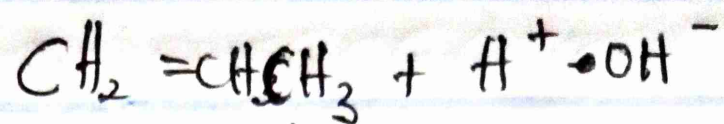
Maltose  Glucose

- STEP 3 :- Breaking down of monosaccharide [Glucose] into Ethanol.



8. Conversion of propan-1-ol to propan-2-ol.





propan-2-ol.