

## Assignment

i) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If two or three hydrogen atoms are attached, it is called a primary alcohol ( $1^\circ$ ), if only one it is a secondary alcohol ( $2^\circ$ ) and if none, it is a tertiary alcohol ( $3^\circ$ ). e.g.  $\text{CH}_3\text{OH}$  - Methanol ( $1^\circ$ )

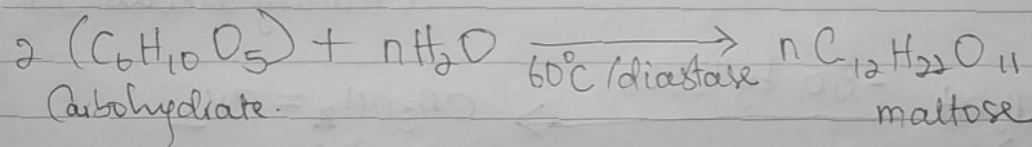
ii) Based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present, dihydric alcohols (glycols) have 2, trihydric alcohols (trials) have 3 and polyhydric alcohols (polyols) have more than 3 hydroxyl groups. e.g.  $\text{HOCH}_2\text{CH}_2\text{OH}$  Ethane-1,2-diol (Dihydric)

2) In water, lower alcohols with up to three carbon atoms in their molecules are soluble in water because these alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative molecular mass.

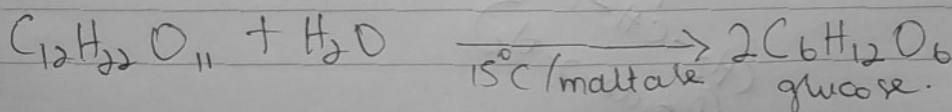
All monohydric alcohols are soluble in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

3) Industrial manufacture of Alcohol (Fermentation)

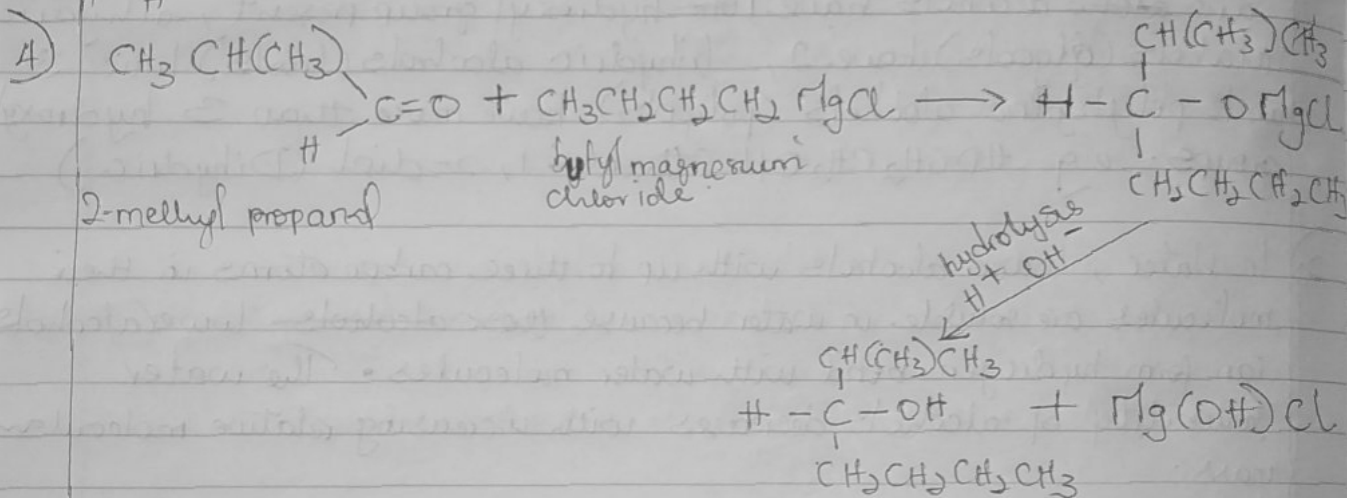
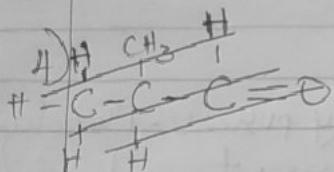
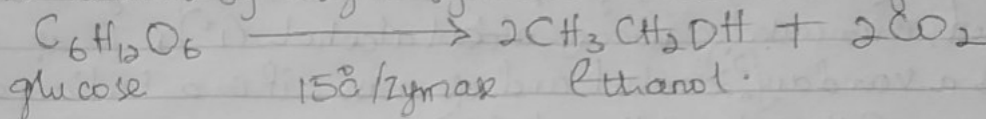
Starch containing materials are converted to maltose on warming with malt at  $60^\circ\text{C}$  by enzyme diastase in malt.



The maltose is broken down into glucose in addition of yeast which contains the enzyme maltase at a temperature of  $15^\circ\text{C}$



The glucose at constant temperature of  $15^{\circ}\text{C}$  is then converted into alcohol by enzyme zymase contained in the yeast.



7) Note  $\rightarrow$  reduction is

