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Alcohols are very important Organic compounds. Discuss briefly their classifications and give one example each.

CLASSIFICATION OF ALCOHOLS

This is based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group is three or two, it is called primary alcohol (1°). If it is one hydrogen atom, it is called secondary alcohol (2°) and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol (3°). Examples are CH_3OH methanol, $\text{C}_2\text{H}_5\text{OH}$ (ethanol) (1°) & c.

This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called glycols have two hydroxyl groups present in the alcohol structure while trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols have more than three hydroxyl groups. Example are: $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ (propyl) (monohydric alcohol).

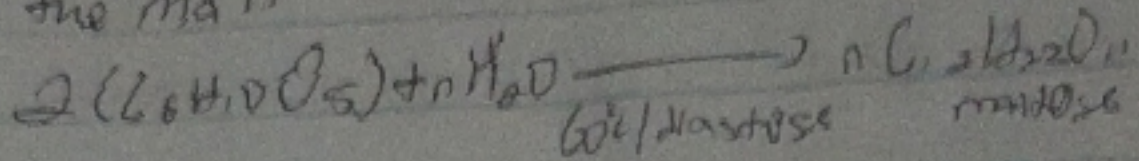
Discuss the solubility of alcohols in water, organic solvent & other alcohols. Alcohols up to three carbon atoms in their molecules are soluble in water because these low molecular weight alcohols can form hydrogen bonds with water molecules. The water solubility of alcohols decreases with increasing 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.

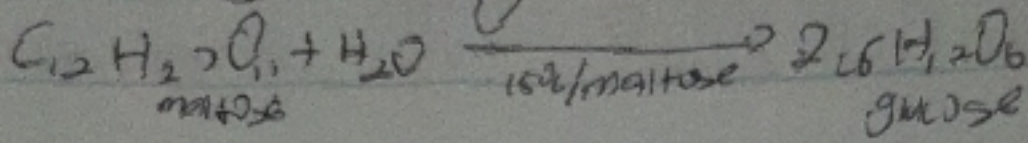
② Show the 3 steps in the industrial manufacture of ethanol. Equations and reactions are mandatory

Reaction are mandatory

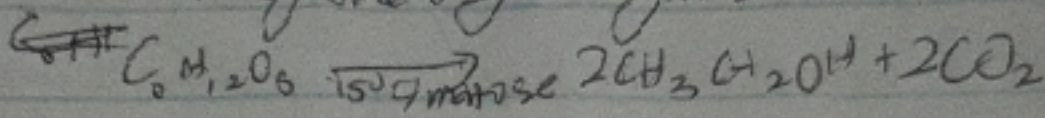
The starch containing materials include molasses, potatoes, cereals etc. On heating with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt



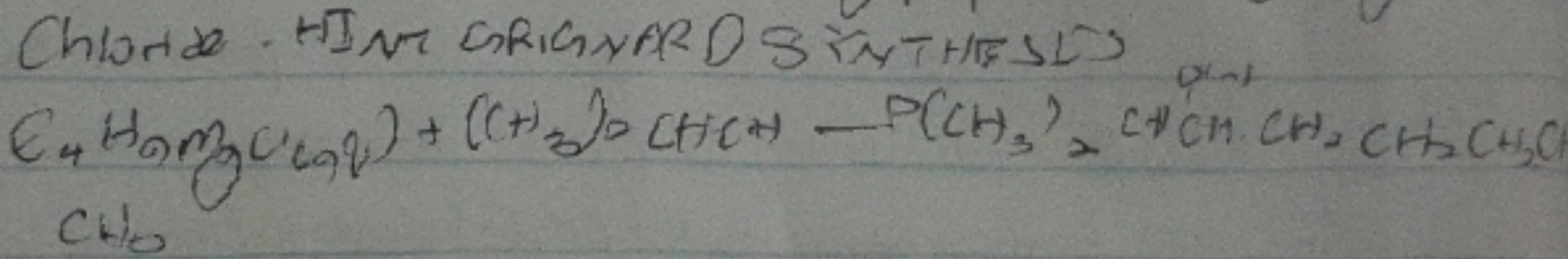
The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 35°C. It is then converted into alcohol by the enzyme zymase contained in the yeast



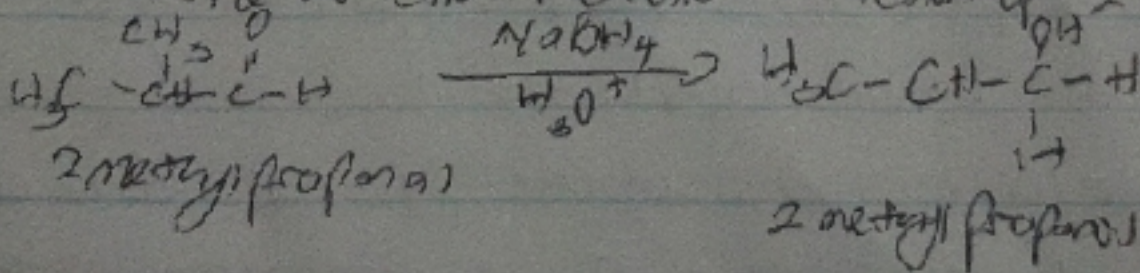
The glucose at constant temperature of 35°C is then converted into alcohol by the enzyme zymase contained in yeast



④ Show the reaction between 2-methylpropanal and butylmagnesium chloride. Give ORIGINAL SYNTHESIS



⑤ Show the reduction reaction of 2-methylpropanal



⑥ Propose a scheme for the conversion of Propan-1-ol to Propan-2-ol

