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 Course: CHM 102
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i. Classification of alcohol 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 bearing the hydroxyl group are three or two, it is called primary alcohol (1°). If it is one hydrogen atom, it is secondary alcohol (2°) and if no hydrogen atom is attached, it is called tertiary alcohol (3°) e.g. CH_3OH Methanol (1°).

ii. Classification of alcohol based on: the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols (also called Glycols) have two hydroxyl groups present in the structure of alcohol structure while trihydric alcohols (Triols) have three hydroxyl groups present in the structure of the alcohol. Polyols (or polyhydric alcohols) have more than three hydroxyl groups. Example: $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ Propanol (Monohydric alcohol).

2- Lower alcohols with up to three carbon atoms in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing 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. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.

$$2(\text{C}_6\text{H}_{10}\text{O}_5)_n + n\text{H}_2\text{O} \xrightarrow{60^\circ\text{C}/\text{diastase}} n\text{C}_{12}\text{H}_{22}\text{O}_{11}$$

Carbohydrate maltose

ii. The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C .

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

Maltose glucose

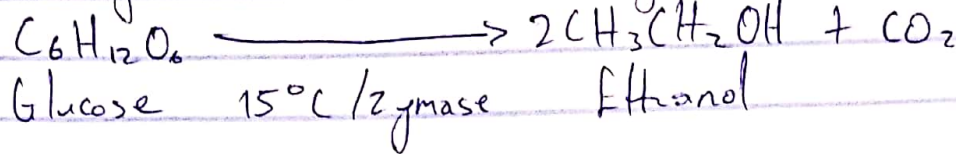
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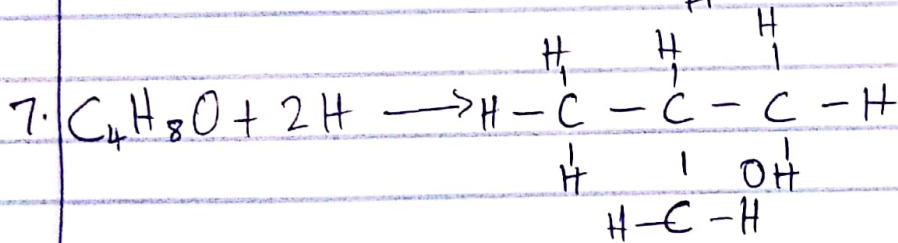
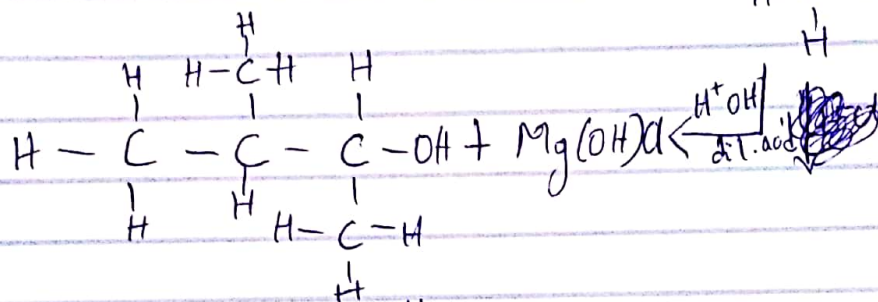
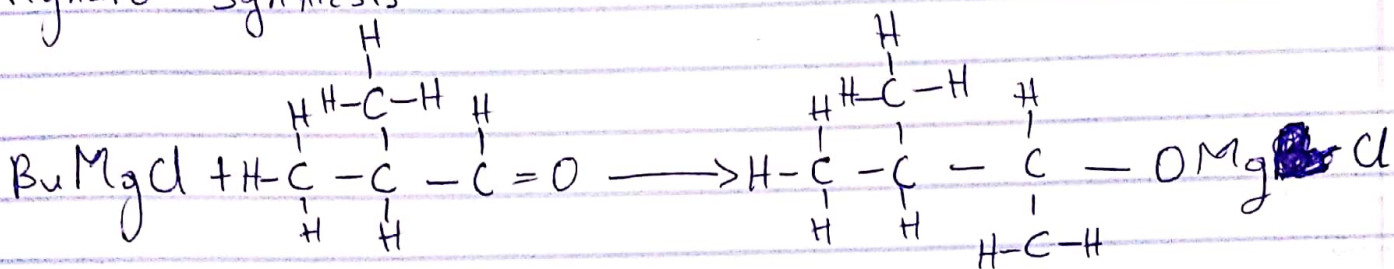
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11. The glucose at temperature of 15°C is then converted into alcohol by the enzyme Zymase contained also in yeast.



4. Grignard Synthesis



2-methylpropan-1-ol

