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Course: CHEM 102

Assignment

i 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 are 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 tertiary alcohol (3°). Example: $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol (1°)

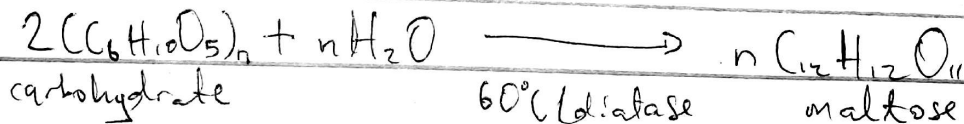
ii This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called glycols have two hydroxyl groups present in the structure of the alcohols or polyols have more than three hydroxyl groups. Example: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

2 Solubility of alcohols in water and organic solvents - 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 decrease with increasing relative molecular mass. All monohydric alcohols are soluble in organic solvents.

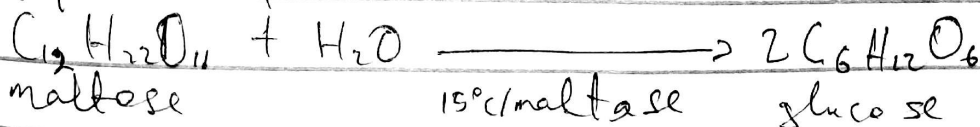
The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bond with water molecules.

3 Production of Ethanol

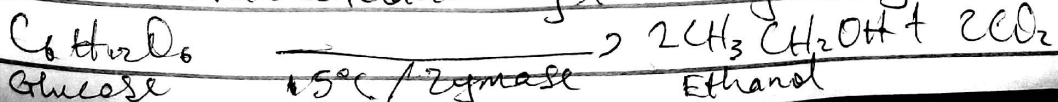
Ethanol can be made biologically from starch through fermentation. The starch containing minerals like rice are warmed with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



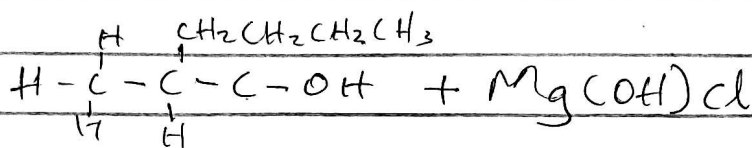
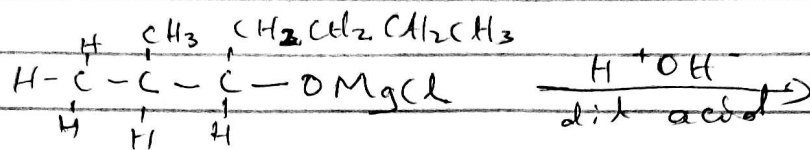
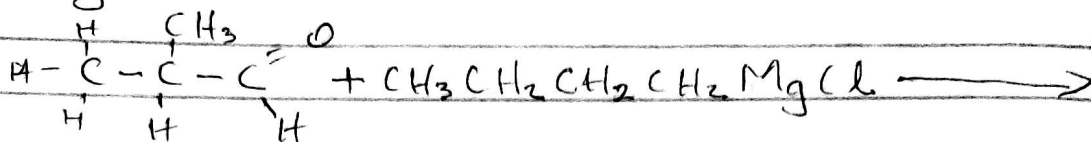
The maltose is broken down to glucose at a temperature of 15°C.



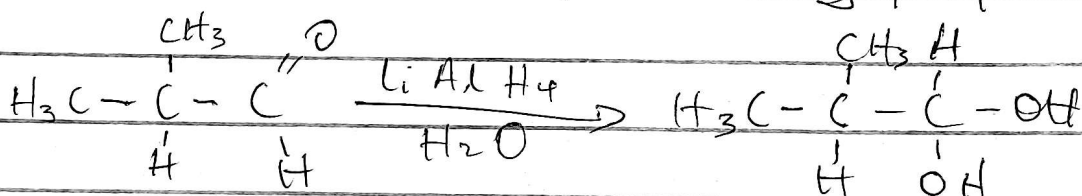
The glucose at constant temperature of 15°C is then converted into ethanol by the enzyme zymase.



4 Reaction between 2-methyl propanal and butyl magnesium chloride

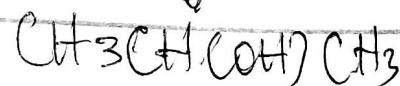
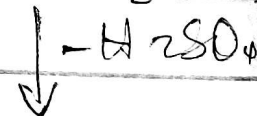
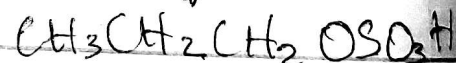
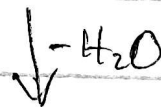


7 Reduction reaction of 2-methyl propanal



2-methyl propanol

8 Convert Propan-1-ol to propan-2-ol



Propan-2-ol