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19/MHS01/102 CHM102 MBBS.

Assignment.

Question 1

Classification of Alkanols.

1) Alkanols can be classified based on the number of hydrogen atoms attached to the carbon atom containing the hydroxy group (OH). Primary alkanols have three or two hydrogen atoms attached to the carbon atom bearing the hydroxyl group (1°).

Secondary alkanols (2°) have one hydrogen atom attached.

Tertiary alkanols (3°) have no hydrogen atom attached to the carbon atom bearing the hydroxyl group.

Example ① $\text{CH}_3\text{CH}_2\text{OH}$ - Ethanol (1°)

② $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ Propan-2-ol (2°)

2) Alkanols can also be classified based on the number of hydroxyl group they possess. Monohydric alcohol is an organic compound with one alcohol functional group. Dihydric alcohol (Glycols) have two hydroxyl group present. Trihydric (Triols) have three hydroxyl group present in the structure. Polyhydric alcohols (polyols) have more than three hydroxyl group in the structure.

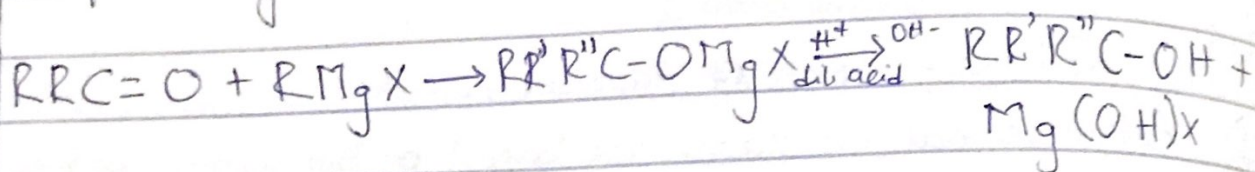
Example.

1) $\text{C}_5\text{H}_{11}\text{OH}$ pentanol (Monohydric)

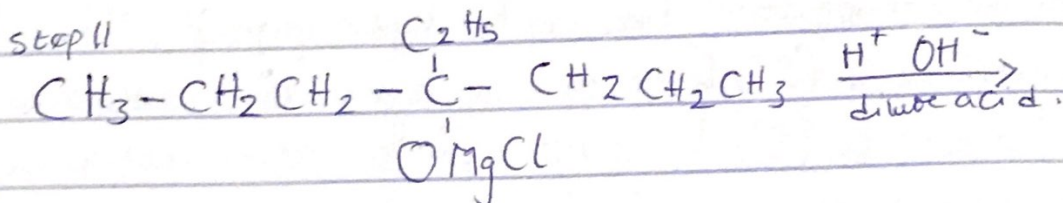
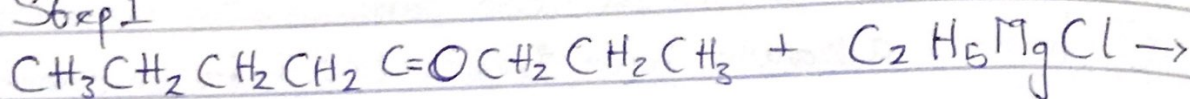
2) $\text{HOCH}_2\text{CH}_2\text{OH}$ Ethane-1,2-diol (Dihydric alcohol)

Question 2

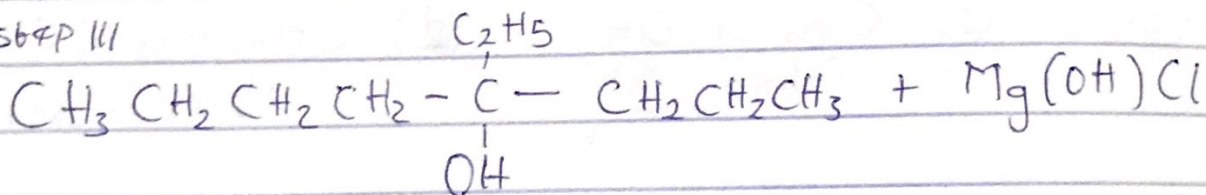
In the Grignard synthesis of Alcohols, react a named Grignard reagent with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$



Step I



step III



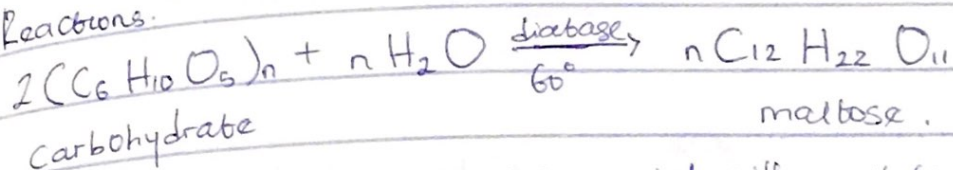
4 ethyl octan-4-ol

Question 3.

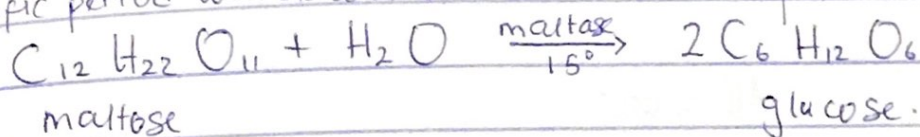
Industrial Production of Ethanol.

Starch is a complex carbohydrate and can be used to produce ethanol by the process of fermentation. The biological catalysts, enzymes found in yeast break down the carbohydrate molecules into ethanol.

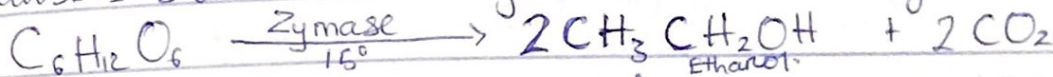
Reactions.



↳ Heating the starch containing material with malt to 60° for a specific period will be converted into maltose by Diastase (in malt).



↳ Maltose is broken down into glucose on addition of yeast at 15°

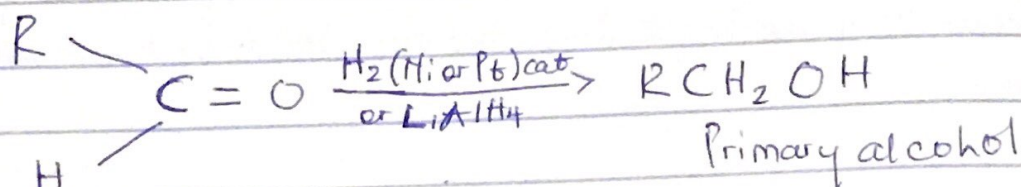


Glucose at constant temperature of $15^\circ C$ is converted into Ethanol by the enzyme Zymase contained in yeast.

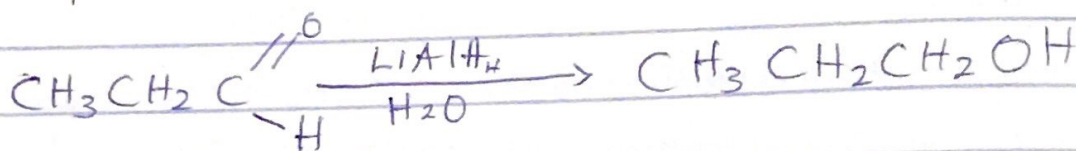
Question 4

Alkanone and Alkanals are reduced to primary and secondary alcohols respectively.

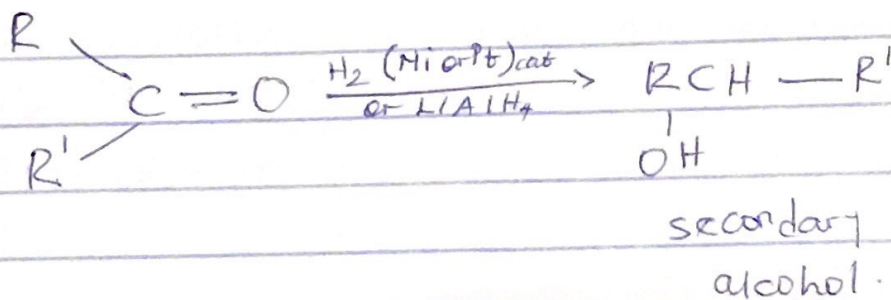
Alkanals



Example.



Alkanone



Example.

