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Matric No: 19/ENGG01/015

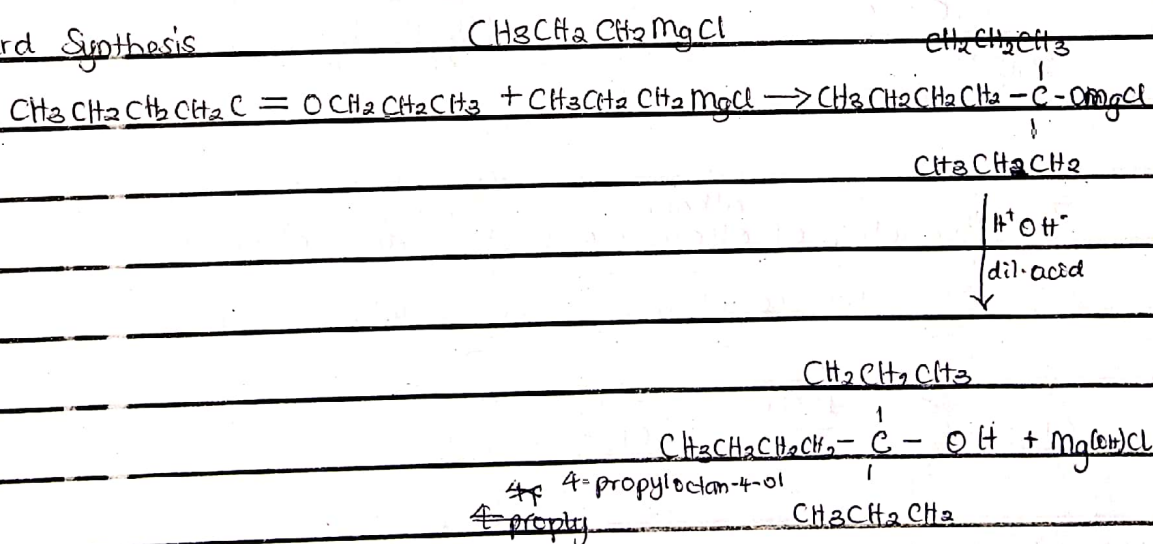
CHM 102 Assignment

1) The two major classifications of alkanols are:

(a) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group; if the numbers 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, it is called tertiary alcohol (3°). Examples: $\text{CH}_3\text{CH}_2\text{OH}$ (ethanol) (1°), $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ (propan-2-ol) (2°)

(b) Based on the number of hydroxyl groups they possess: Alkanols that have one hydroxyl group are called monohydric alcohols. Alkanols with two and three hydroxyl groups are called dihydric alkanols (glycols) and trihydric alkanols respectively. The alkanols that have more than three hydroxyl groups are called polyhydric alkanols or polyols. Examples: $\text{HOCH}_2\text{CH}_2\text{OH}$ (ethane-1,2-diol), $\text{OCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$ (propan-1,2,3-triol).

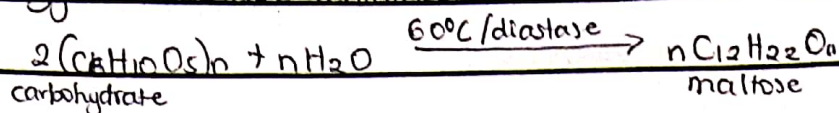
2) Grignard Synthesis



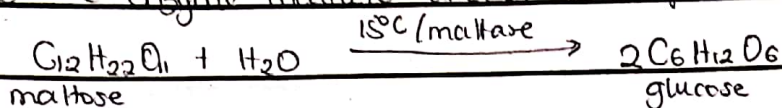
3) Carbohydrates such as starch can yield ethanol by the biological process of fermentation. The following steps are involved in this process!

Step 1: The starch-containing materials include rice, cereals and so on, which on

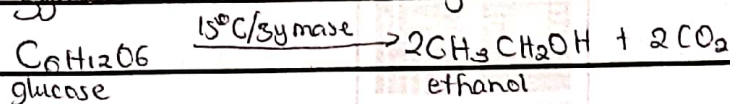
warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



Step 2: The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C

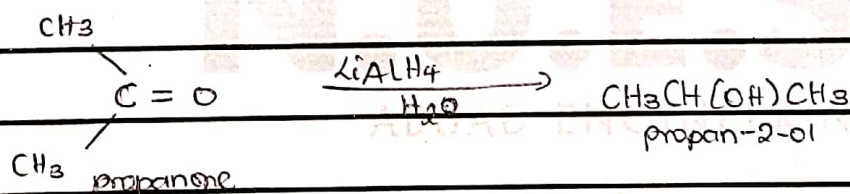


Step 3: The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.



4.) The Reduction of alkanone gives secondary alcohols

Example is the reduction of propanone which will give propan-2-ol



The Reduction of ~~alkane~~ ^{alkanal} gives ~~secondary~~ ^{primary} alcohols

Example is the reduction of propanal which propanol

