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Department:- Nursing

Course code:- Chm 102

Assignment

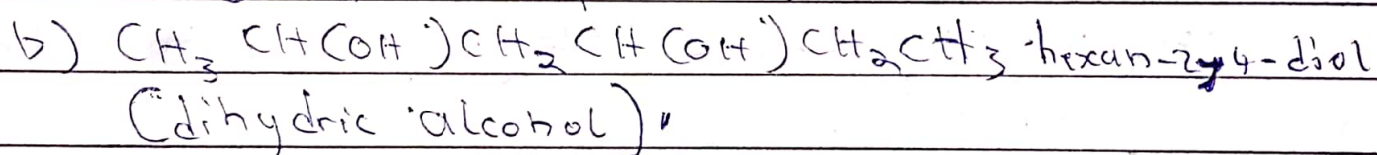
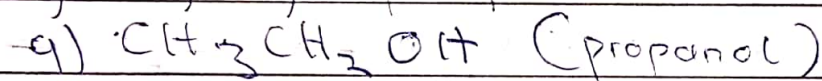
1. Discuss the two major Classification of Alkanols, Give two examples each for each class.
2. In the Grignard synthesis of Alkanols, react a named Grignard reagent with ~~$\text{CH}_3\text{CH}_2\text{CH}_2$~~
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$, Show the reaction steps.
3. Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.
4. Determine the product obtained in the reduction of Alkanone and Alkanal. Use a specific example for each and show the equation of reaction.

Answers

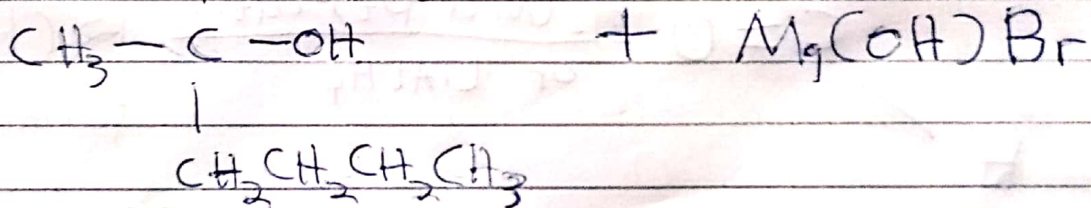
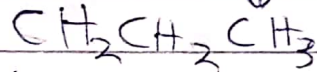
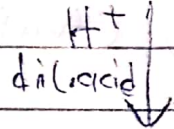
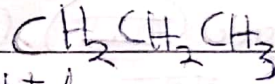
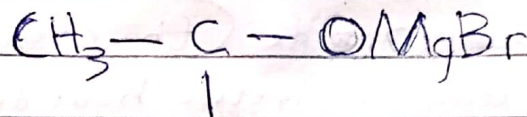
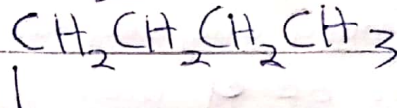
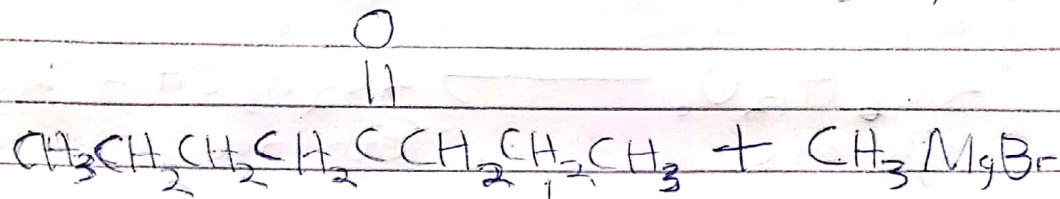
- 1) Based on the number of hydrogen atom attached to the carbon atom containing the hydroxyl group, if there are two or three hydrogen atom attached to the carbon atom containing the hydroxyl group, it is called primary alcohol (1°), if it is one hydrogen atom, it is called secondary alcohol (2°) and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called tertiary alcohol (3°) e.g. CH_3OH (methanol), $\text{C}_2\text{H}_5\text{OH}$ (ethanol).

ii) Based on the number of hydroxyl group they possess.

This can be classified into monohydric alcohols, dihydric alcohols, trihydric alcohols and polyhydric alcohols. Monohydric alcohols have one hydroxyl group that are present in the structure. Dihydric alcohols which are also called glycols have two hydroxyl group present in the structure. Trihydric alcohols or triols have three hydroxyl group present in the alcohol structure. Polyhydric alcohols or polyols have more than three hydroxyl groups present in the alcohol structure. e.g.

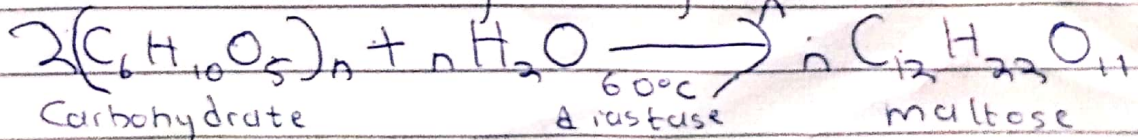


2. Name of Grignard reagent \rightarrow methyl magnesium bromide
 (CH_3MgBr) .

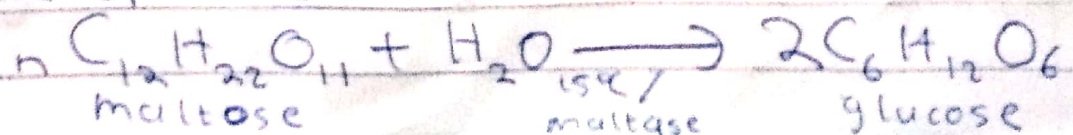


3. Preparation of ethanol

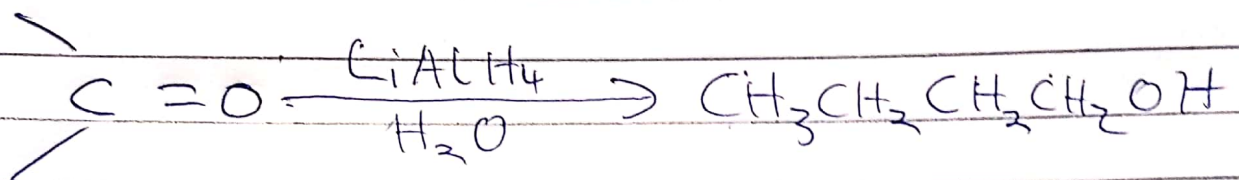
Starch containing materials include molasses, potatoes, cereals, rice, etc. This starch is broken down on warming with malt to 60°C for a specific period of time. It is converted to maltose by an enzyme ^{called diastase} contained in the malt.



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



CH₃



C₄H₈
Butanone

butanol.