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MATRIC NO 191501041001

COURSE CODE CHM102 Assignment

DATE 14TH APRIL 2020.

1 Discuss the two major classification of Alkanols. Give two examples each for each case.

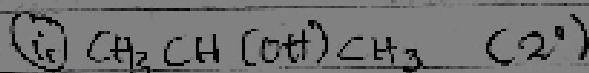
a) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two it is called a primary alcohol ( $1^\circ$ ). If it is one hydrogen atom, it is secondary alcohol ( $2^\circ$ ). And if it has no hydrogen it is called a tertiary alcohol ( $3^\circ$ ).

Examples



Methanol

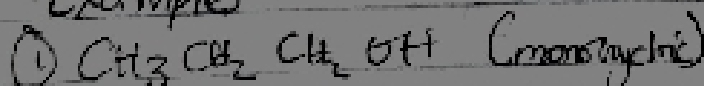


Propan-2-ol

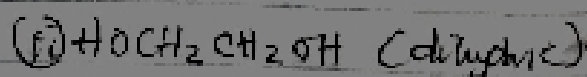
b) Based on the number of hydroxyl groups they possess.

Monohydric or monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called glycols. have two hydroxyl groups present in the alcohol structure while trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups.

Examples:

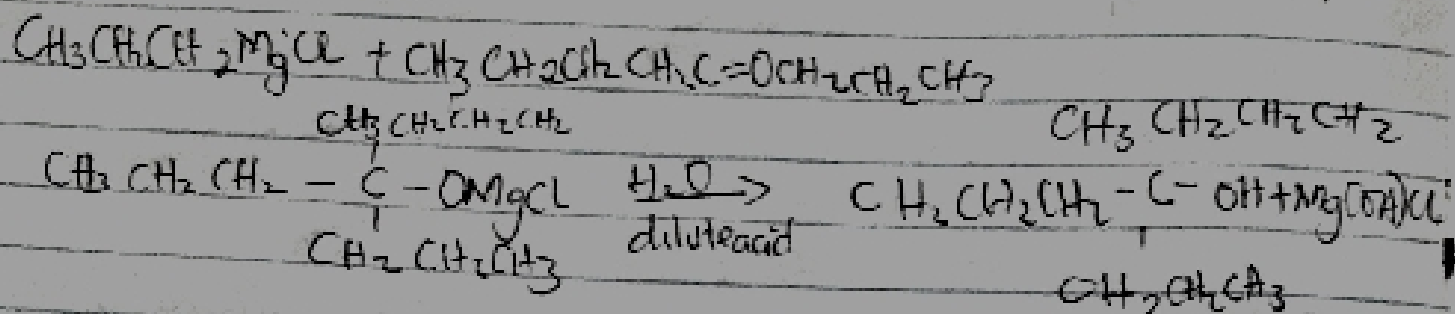


Propanol



Ethane-1,2-diol

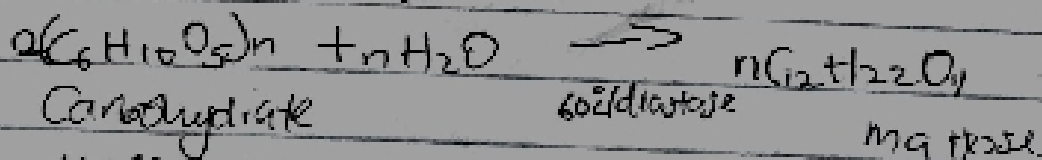
2. In the Grignard synthesis of alkanes, react a named Grignard reagent with  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$ . Show the reaction steps.



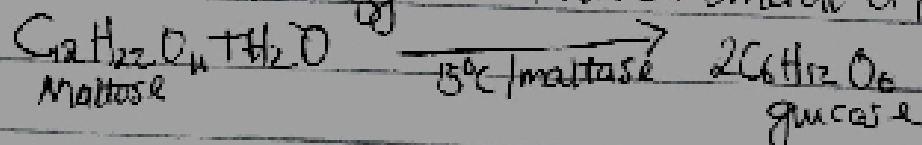
Propyl octan-4-ol.

3. Discuss the industrial manufacture of ethanol showing all reactions equations and necessary enzymes and temperature of reaction.

Carbohydrates such as starch are major group of natural compounds that can be made to yield ethanol by the biological ~~enzymes~~ <sup>catalysts</sup> process of fermentation. The biological catalysts, enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to 60°C for a specific period of time or converted into maltose by the enzyme diastase contained in the malt.



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



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

