

ORKAA SAMUEL TERUNGWA  
19/MHS01/358

MBBS

## CHEMISTRY ASSIGNMENT 1.

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

a) Monohydric Alkanols.

These are alkanols with only one hydroxyl group (OH) in their molecule. The first three members of the family are:

- Methanol,  $\text{CH}_3\text{OH}$  (Commonly known as wood spirit)
- Ethanol,  $\text{CH}_3\text{CH}_2\text{OH}$  or  $\text{C}_2\text{H}_5\text{OH}$
- Propanol,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  or  $\text{C}_3\text{H}_7\text{OH}$

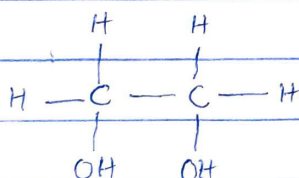
b) Polyhydric Alkanols.

This class of alkanols contain more than one hydroxyl group per molecule. It occurs in the two sub class namely; the dihydric alkanols and the trihydric alkanols.

### Examples

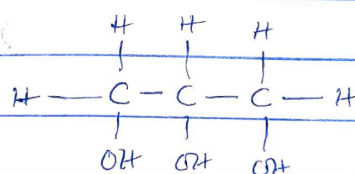
Dihydric alkanols

Ethanol-1,2-diol



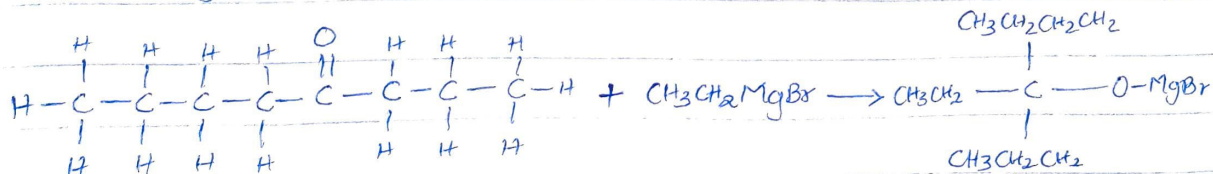
Trihydric alkanols.

Propan-1,2,3-triol

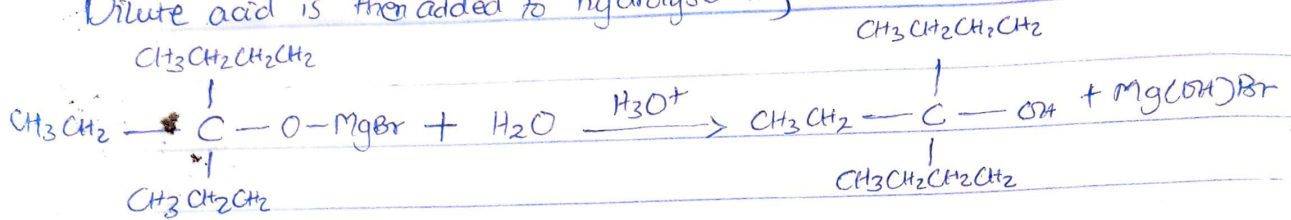


2. In the Grignard Synthesis of Alkanols, react a named Grignard reagent with  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$ . Show the reaction steps.

First Stage: The grignard reagent adds across the carbon oxygen <sup>double</sup> bond



Dilute acid is then added to hydrolyse it;



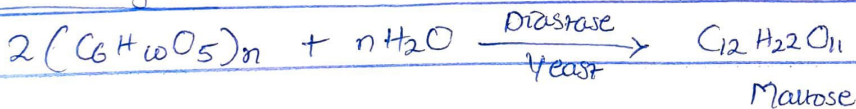
3. Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

The Industrial manufacture of ethanol is through fermentation.

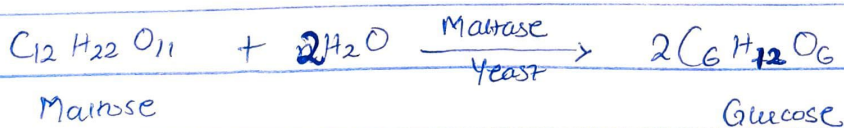
Fermentation is the chemical process that involves the breaking down of molecules such as glucose anaerobically with the release of carbon dioxide gas ( $\text{CO}_2$ ) and alcohol.

The production of ethanol by fermentation occurs in three basic steps: The temperature of the reactions occur at a minimum temperature of ( $25-35^\circ\text{C}$ )

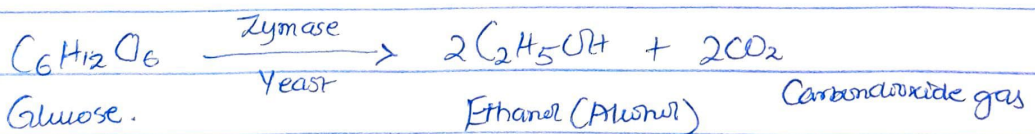
From Starch grains



Then the maltose is then converted to glucose using maltase as catalyst.



The Glucose is then fermented with Zymase to give alcohol.

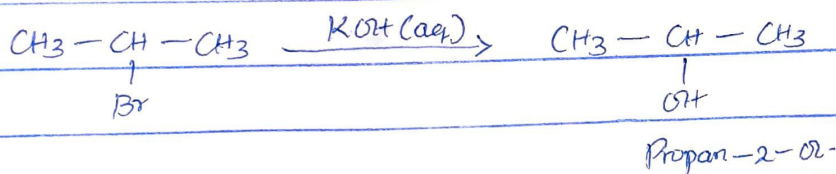
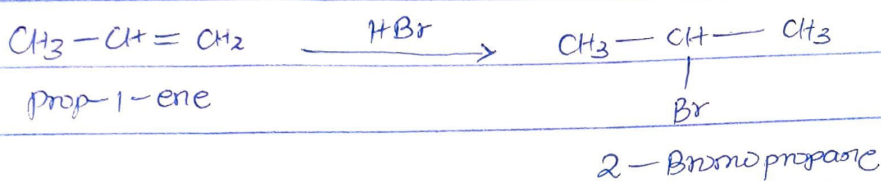
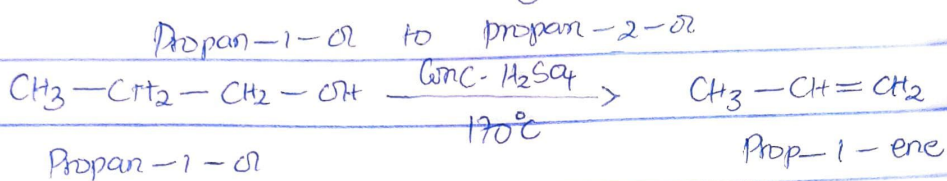


4. Determine the product obtained in the reduction of Alkanone and Alkanol. Use a specific example for each and show the equation of reaction.

### Reduction of Alkanone

Alkanone are reduced to the corresponding secondary alkanol.

Examples: Reduction of Alkanone using Sulphuric acid.



### Reduction of Alkanol.

Alkanols are reduced to the corresponding primary alkanol by reducing agents such as lithium tetrahydridoaluminate(III) ( $\text{LiAlH}_4$ )

Example of such is Reduction of Ethanal to Ethanol.

