

NAME - ILOLA KOLANIBIT / DESTINA
Matric No - 19/SC107/006

DATE - 01 April 2020

Topic - CHM 102

DEPT - AGRICULTURAL SCIENCES

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

This is based Classification of Alcohols

This is 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°). If it is one hydrogen atom it is called secondary alcohol (2°) and if no hydrogen atoms is attached to the carbon atom bearing the hydroxyl group it is called a tertiary alcohol (3°).

Examples are primary alcohols (1°)

- 1) $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol (1°)
- 2) CH_3OH Methanol (1°)

Secondary alcohols (2°)

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

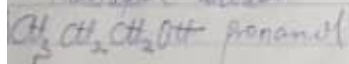
Tertiary alcohol (3°)

- 1) $(\text{CH}_3)_3\text{C-OH}$ 2-Methyl propan-2-ol (3°)

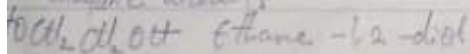
2) This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl groups present in the alcohol structure while trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol. polyhydric alcohols or polyols have more than three hydroxyl groups.

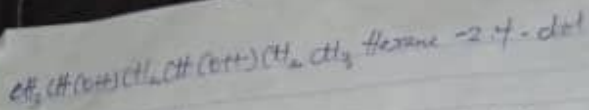
Examples are

Monohydric alcohol

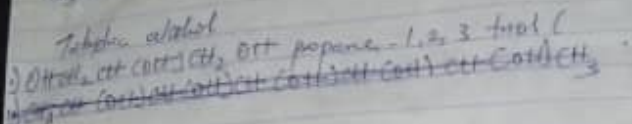


Dihydric alcohols

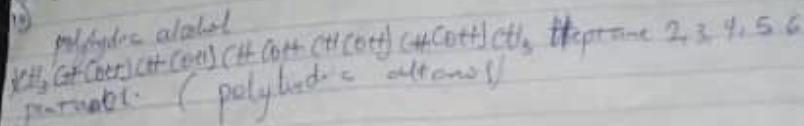




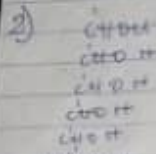
Tertiary alcohol



polyhydro alcohol



C(1)

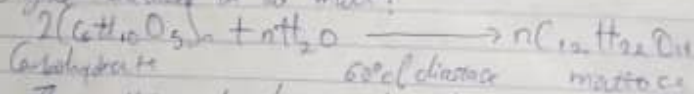


L-(-)-Talose

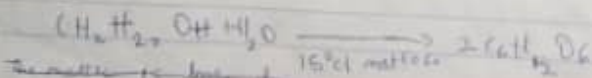
2) Discuss the Industrial Manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

Production of Ethanol

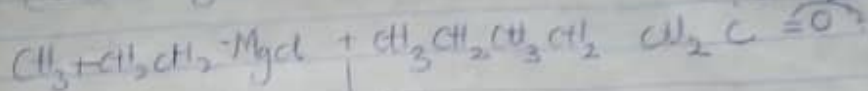
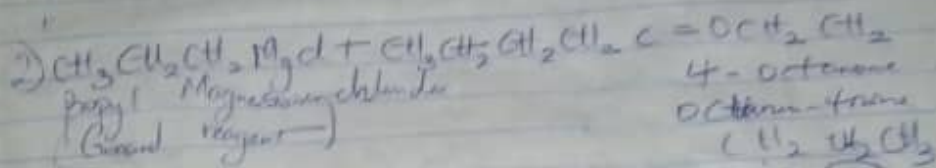
Carbohydrates such as starch are main group of natural compounds that can be made to yield ethanol by the biological process of fermentation. The biological catalysts, enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include maltose, potatoes, cereals, rice and on slurring with malt to give a specific period of time are converted into maltose by the enzyme contained in the malt.



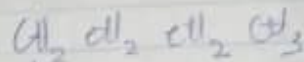
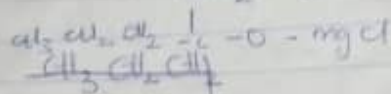
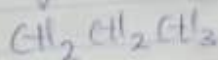
The maltose is broken down into glucose on addition of yeast which contain the enzymes and at a temperature of 15°C



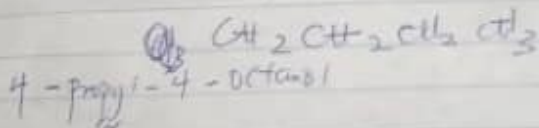
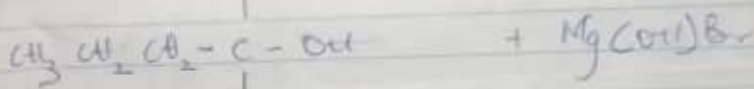
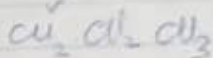
4) Determine the product obtained in the reduction of Al and Alkyl. Use a specific example for each and show the equation or reaction.



diethyl ether



$\text{H}^+ \text{OH}^-$

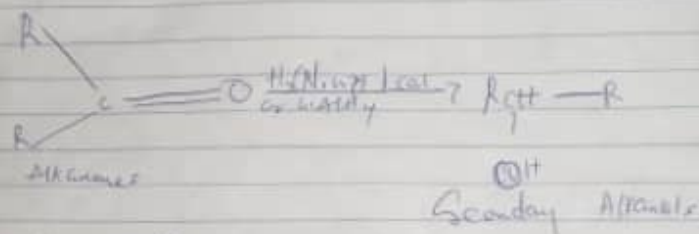
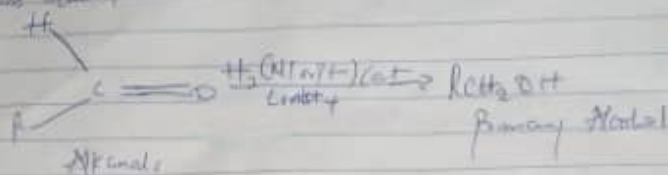


propyl octan-4-ol

Discuss the products obtained in the reduction of Alkanones and Aldehydes. Use a specific example for each and show the equation & reaction.

Reduction of Alkanones and Aldehydes

Aldehydes and Alkanones are reduced to primary and secondary alcohols respectively by reaction with hydrogen gas in the presence of a platinum or nickel catalyst or with aluminum powder as the Mercurium-potassium reaction is used. Common reagents used are lithium tetrahydridoaluminate (LiAlH₄) or sodium tetrahydridoaluminate (NaAlH₄) (NaBH₄).



Specific examples

