

UNUANE-HENRY

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ALCOHOLS

~~XXXXXXXXXXXX~~ 19/MHS01/424

MBBS

CHE 102

1 Discuss two major classifications of Alkanols. Give 2 examples for each class

a Based on the number of hydrogen atoms attached to the carbon atom with the hydroxyl (OH) group:

If the number of hydrogen atoms attached to the carbon with (OH) group are three or two, it is a primary alcohol. If it is one hydrogen atom, it is a secondary alcohol. If no hydrogen atom is attached, it is a tertiary alcohol.

Primary alkanol — CH_3OH , ~~CH~~ $\text{C}_2\text{H}_5\text{OH}$

Secondary alkanol — Propan-2-ol

Tertiary alkanol — 2-Methylpropan-2-ol

b Based on the number of hydroxyl group they possess

i Monohydric Alkanols

They have only one hydroxyl group in their structure. Examples are propanol and butanol.

ii Dihydric Alkanols

They have two hydroxyl groups present in their structure. They are also known as glycols. Examples are Ethane-1,2-diol, Heptane-2,5-diol.

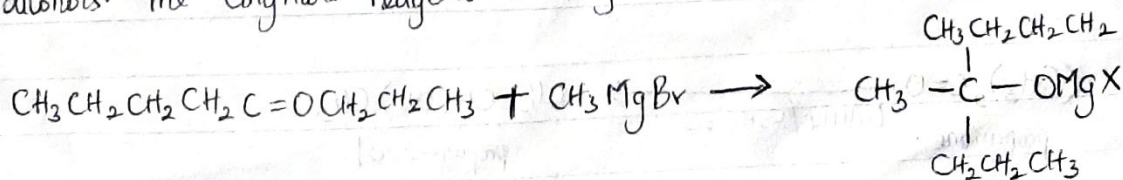
iii Trihydric Alkanols

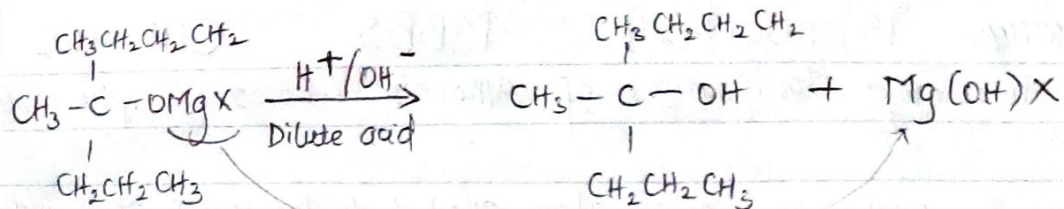
They are also known as triols and have three hydroxyl groups in their structure. Examples are propan-1,2,3-triol, Heptane-2,4,6-triol.

iv Polyhydric Alkanols

They are also known as polyols and they have more 3 hydroxyl groups. Examples are Heptane-2,3,4,5,6-pentaol and Hexane-2,3,4,5-tetraol

2 Grignard Synthesis is a process used to prepare primary, secondary and tertiary alcohols. The Grignard reagent is RMgX . We can use CH_3MgBr

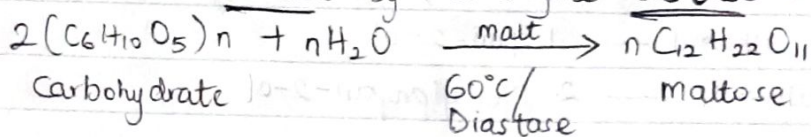




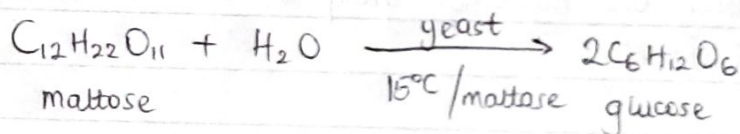
3 Industrial Manufacture of Ethanol

Large and complex carbohydrates such as starch can yield ethanol by the biological process of fermentation. The process gives about a 95% yield of ethanol.

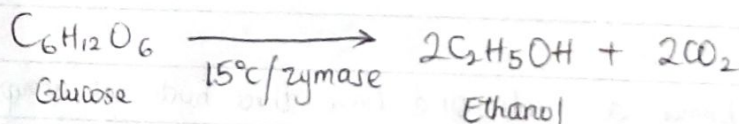
i The starch is warmed with malt to 60°C for a period of time. It is then converted into maltose by the enzyme diastase in the malt



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

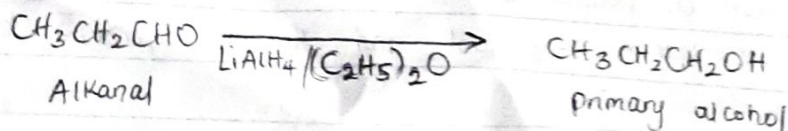


iii The glucose at constant temperature of 15°C is converted into alcohol (ethanol) by the enzyme zymase also in yeast



i) Reduction of Alkanal

Its reduction yields a primary alcohol



ii) Reduction of Alkanone

