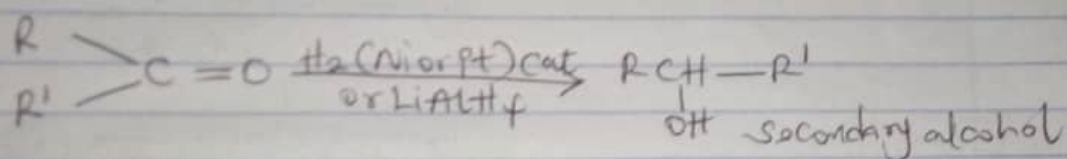
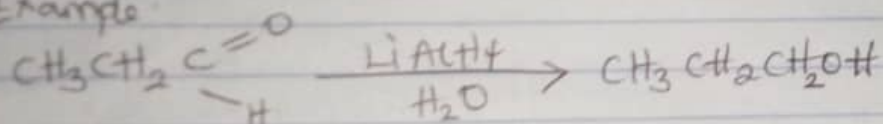


#### 4) Alkanone / Ketone

Reduction of Alkanone gives a secondary alcohol by reaction with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide (the Meerwein-Ponndorf reaction) or with complex metal hydride, such as lithium tetrahydridoaluminate (III) ( $\text{LiAlH}_4$ ) or sodium tetrahydridoborate (III) ( $\text{NaBH}_4$ )

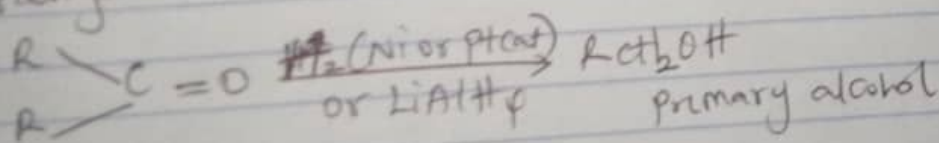


Example

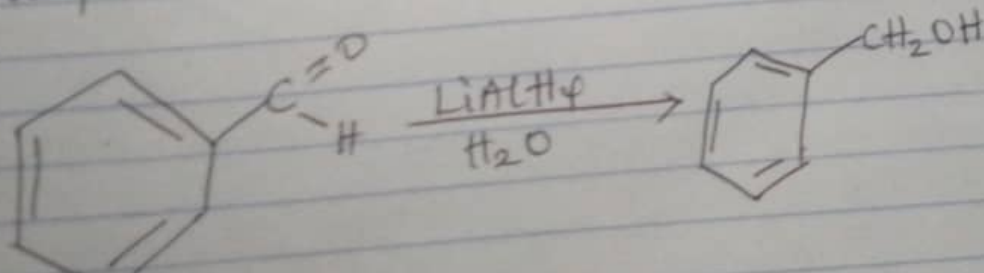


#### Alkanal / Aldehyde

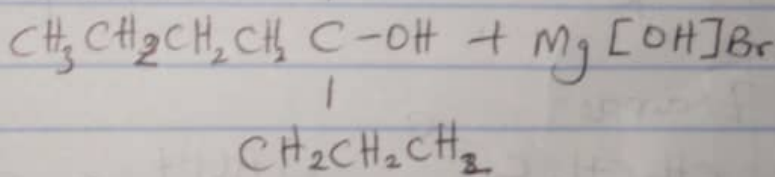
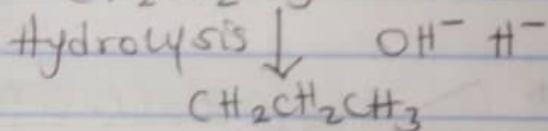
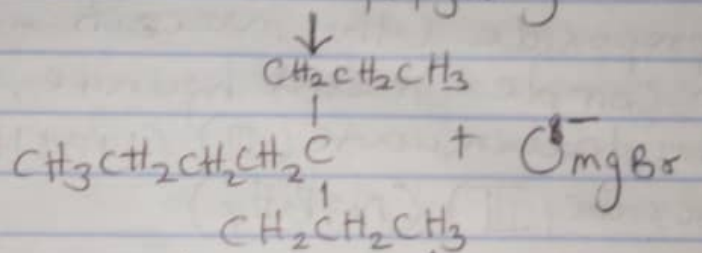
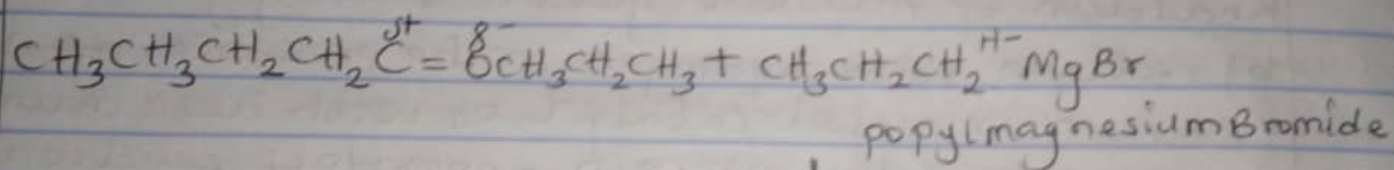
Reduction of Alkanal gives a primary alcohol by reaction with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide (the Meerwein-Ponndorf reaction) or with complex metal hydride, such as lithium tetrahydridoaluminate III ( $\text{LiAlH}_4$ ) or sodium tetrahydridoborate III ( $\text{NaBH}_4$ )



Example



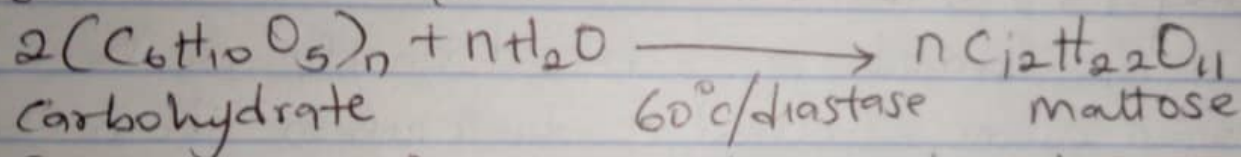
## 2- Grignard synthesis



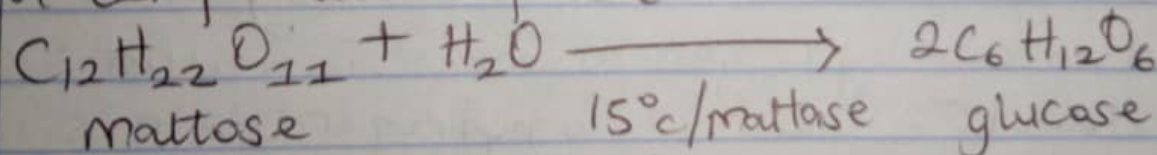
4-propyloctan-4-ol

## Industrial Manufacture of Ethanol:

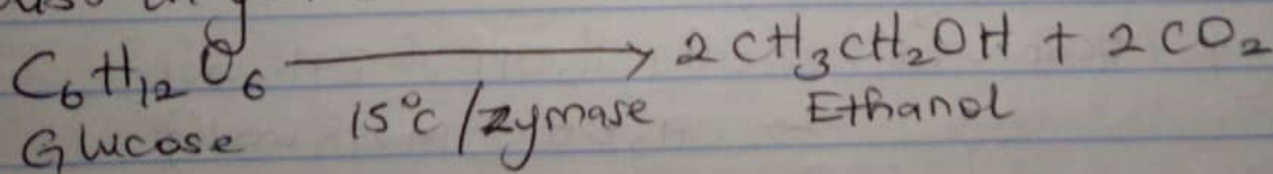
It is manufactured by the biological process of fermentation. The biological catalyst enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to  $60^{\circ}\text{C}$  for a specific period of time are 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  $15^{\circ}\text{C}$ .



The glucose at constant temperature of  $15^{\circ}\text{C}$  is then converted into alcohol by the enzyme zymase contained also in yeast.



NAME: ULOKO FAITH OMAOJO

DEPT: MBBS

MATNO: 19/MHSDI/420

### CHEMISTRY ASSIGNMENT

1) Alkanols can be classified into :-

→ Primary ( $1^\circ$ ) Alkanols

→ Secondary ( $2^\circ$ ) Alkanols

→ Tertiary ( $3^\circ$ ) Alkanols

This classification above 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 bearing the hydroxyl group are three or two, it is called a primary alcohol/alkanol ( $1^\circ$ ). If it is one hydrogen atom, it is called secondary alcohol/alkanol ( $2^\circ$ ) and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol/alkanol ( $3^\circ$ ).

Examples are as follows :-

Primary Alkanol ( $1^\circ$ ) →  $\text{CH}_3\text{CH}_2\text{OH}$  { Ethanol }  
→  $\text{CH}_3\text{OH}$  { Methanol }

Secondary Alkanol ( $2^\circ$ ) →  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$  { Propan-2-ol }  
→  $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$  { Pentan-3-ol }

Tertiary Alkanol ( $3^\circ$ ) →  $(\text{CH}_3)_3\text{C-OH}$  { 2-methylpropan-2-ol }  
→  $(\text{CH}_3\text{CH}_2)_2\text{C}(\text{CH}_3)\text{OH}$  { 3-methylpentan-3-ol }