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Dept: Pharmacy

Matric No: 197/02HS U/143

Course: Chem 102

Assignment:

i) Examples of Monohydric alcohols → Ethanol (C_2H_5OH)
Methanol (CH_3OH)

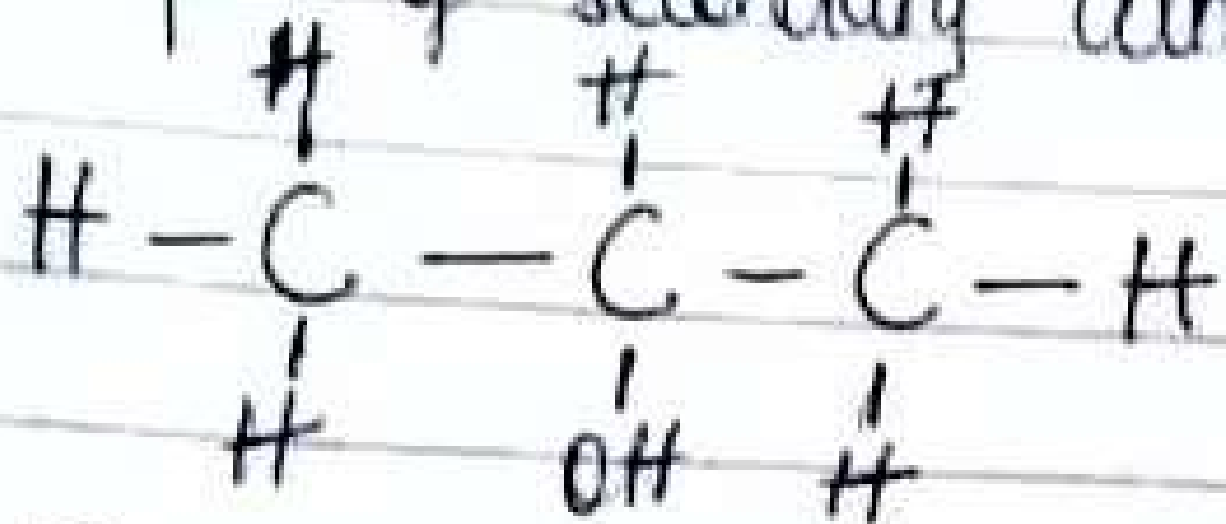
ii) Polyhydric alcohols
Eg of dihydric: $CH_3 - \overset{OH}{\underset{|}{C}} - \overset{OH}{\underset{|}{C}} - CH_3$ $CH_2 - \overset{OH}{\underset{|}{C}} - \overset{OH}{\underset{|}{C}} - CH_2$
2,3-Butanediol Ethane-1,2-diol

Eg of trihydric: $CH_3 - \overset{OH}{\underset{|}{C}} - \overset{OH}{\underset{|}{C}} - CH_2 - \overset{OH}{\underset{|}{C}} - CH_3$
Hexane-2,3,5-triol

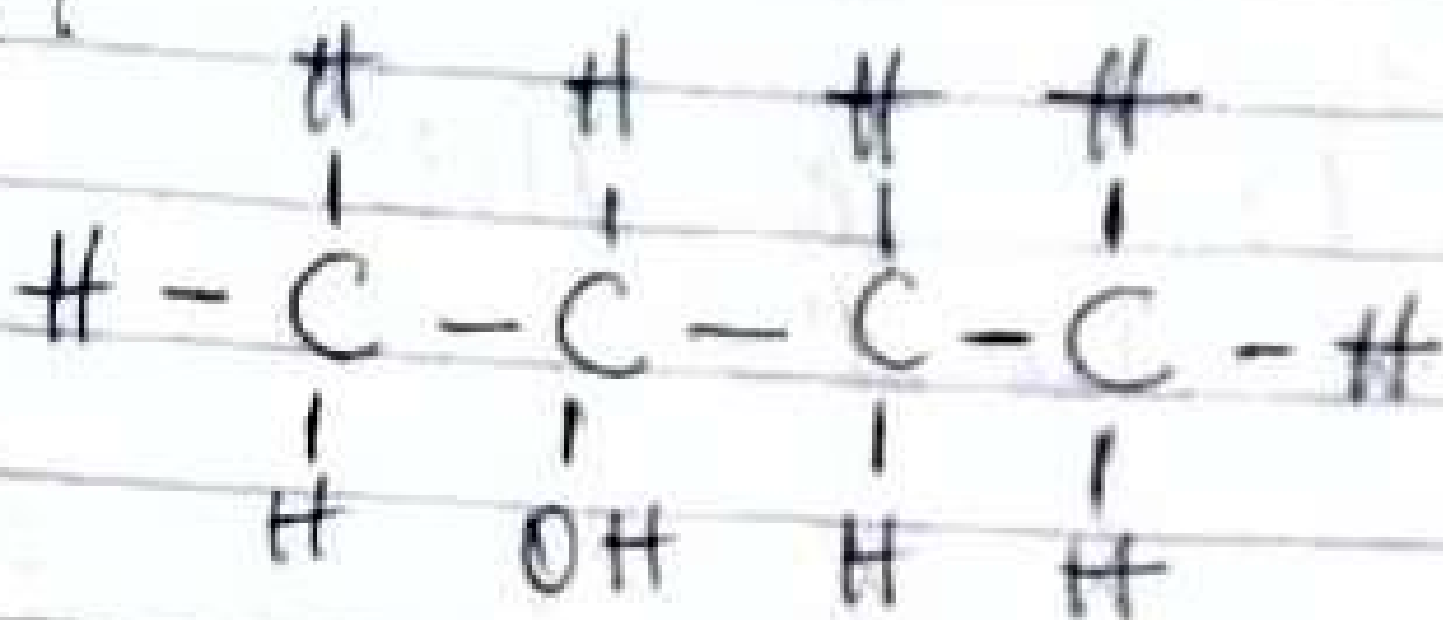
$CH_2 - \overset{OH}{\underset{|}{C}} - \overset{OH}{\underset{|}{C}} - \overset{OH}{\underset{|}{C}} - CH_2$
Propane-1,2,3-triol (Glycerol)

iii) Examples of Primary alcohols: $H - \overset{H}{\underset{|}{C}} - \overset{H}{\underset{|}{C}} - \overset{H}{\underset{|}{C}} - OH$ $H - \overset{H}{\underset{|}{C}} - \overset{H}{\underset{|}{C}} - OH$
Propanol Ethanol

i) Examples of Secondary alcohols:

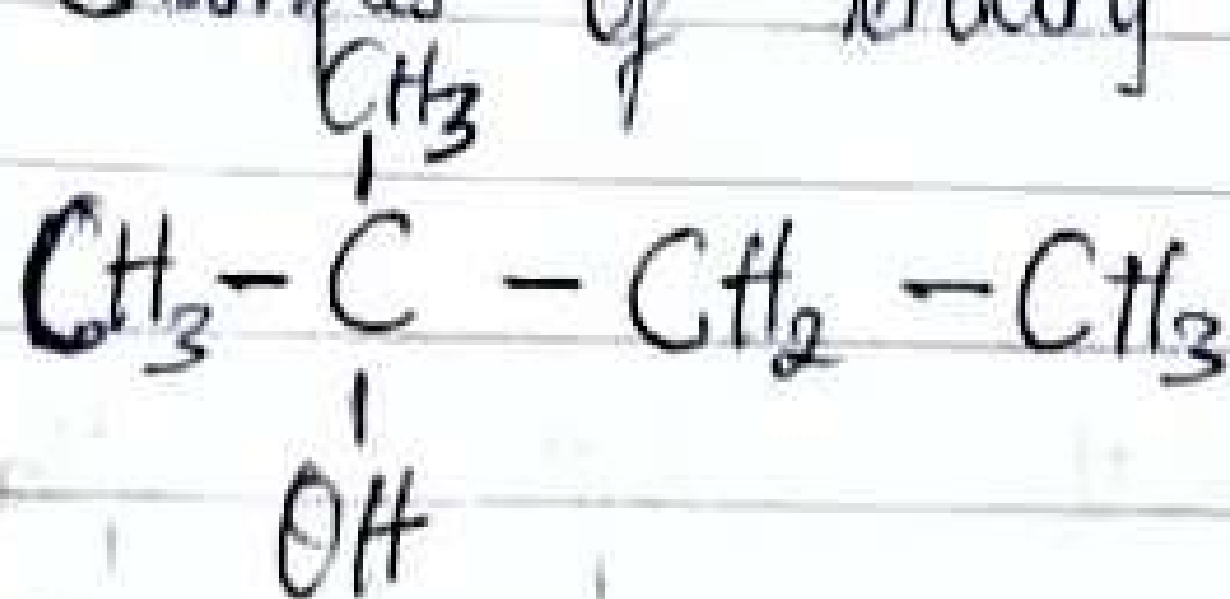


Propan-2-ol

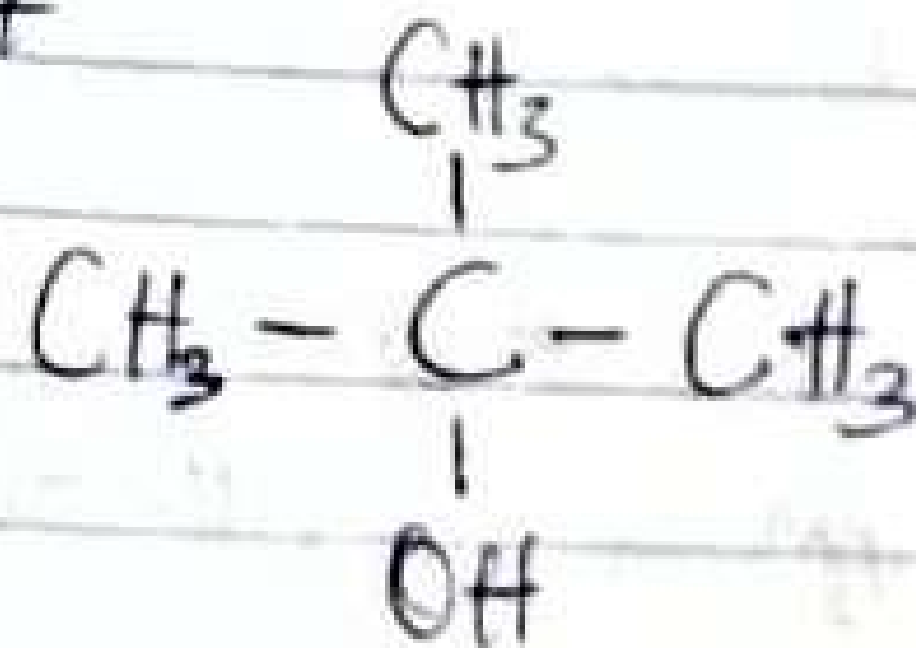


Butan-2-ol

ii) Examples of Tertiary alcohols:

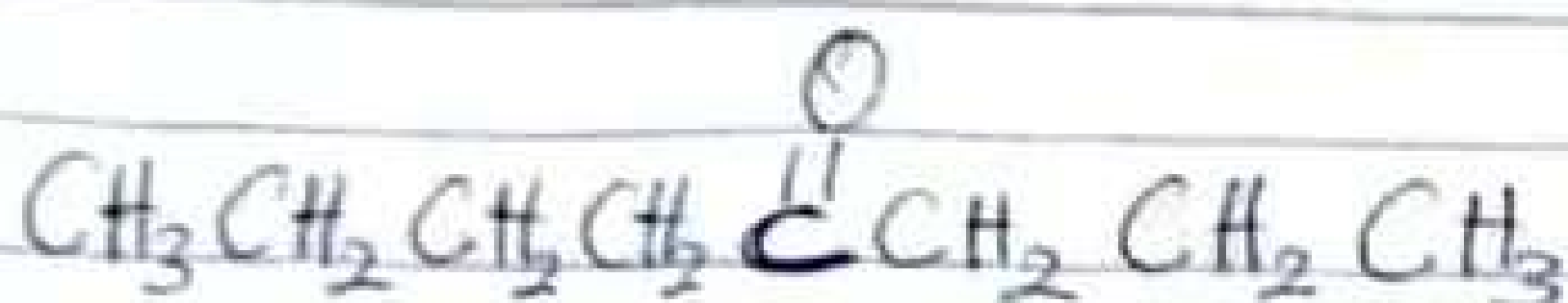


2-methylbutan-2-ol



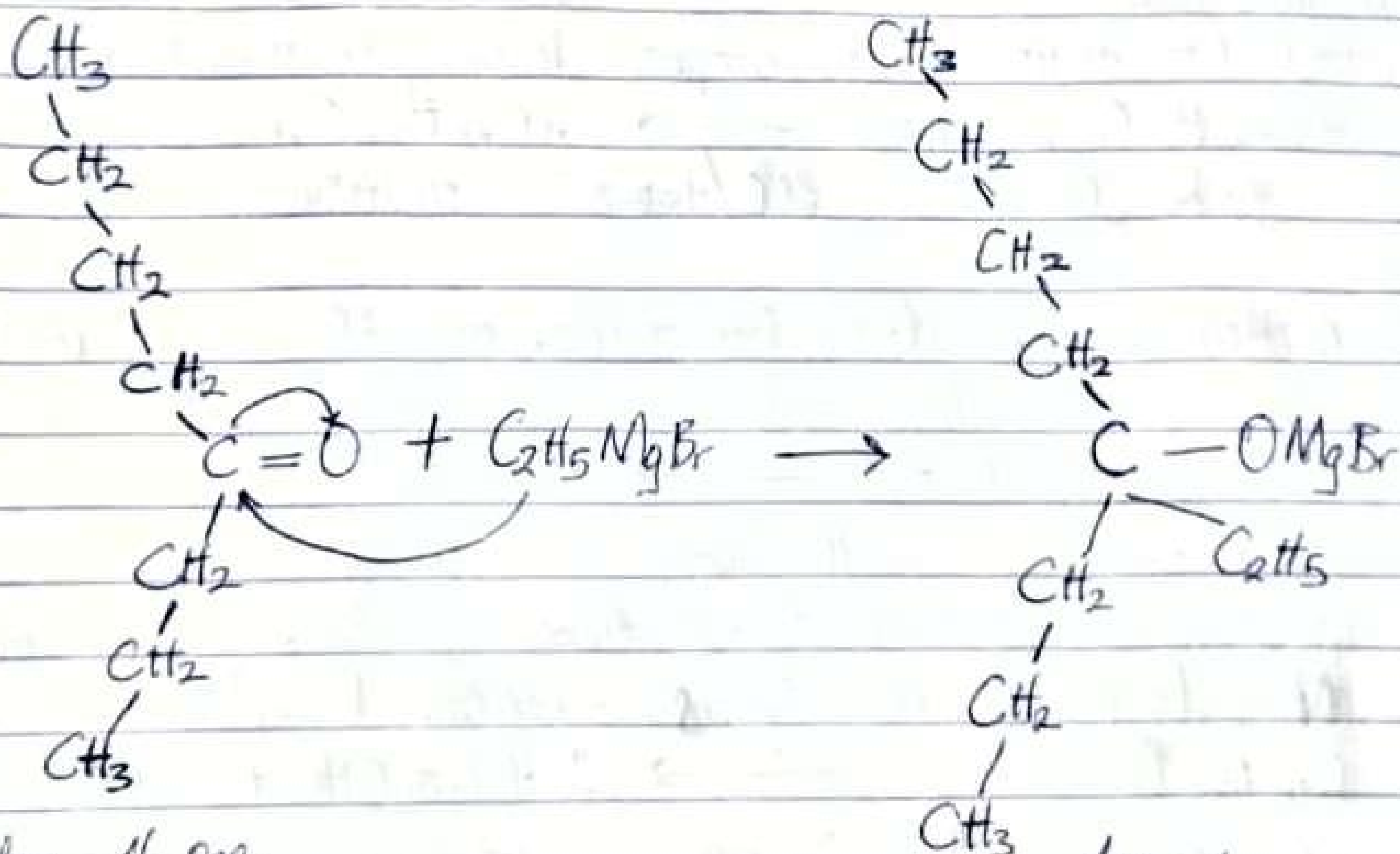
2-methylpropan-2-ol

2.)

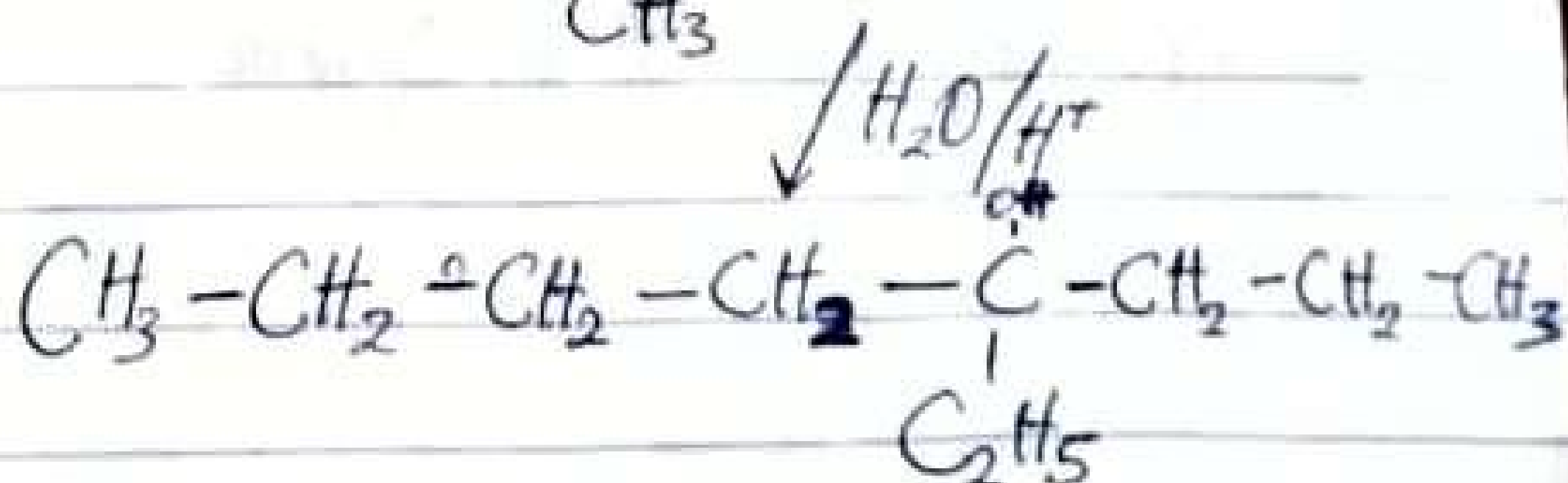


Octan-4-one

The compound above (Octan-4-one) is a ketone. It will react with a Grignard reagent e.g. ethyl magnesium bromide ($\text{C}_2\text{H}_5\text{MgBr}$) to give a tertiary alcohol.



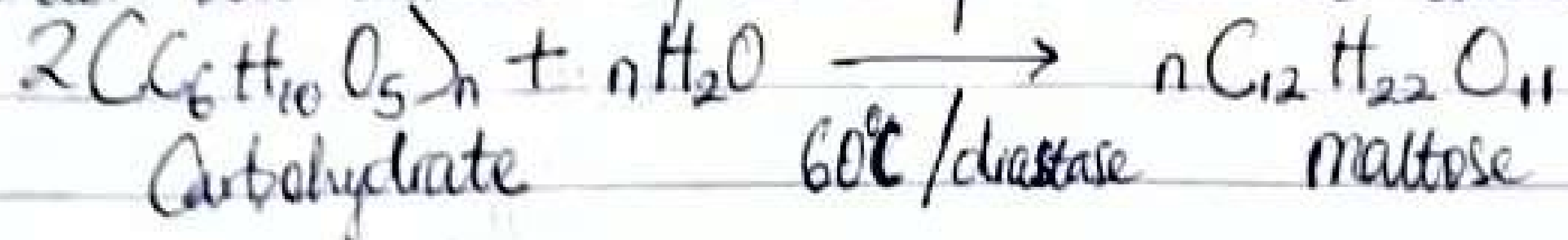
Octan-4-one



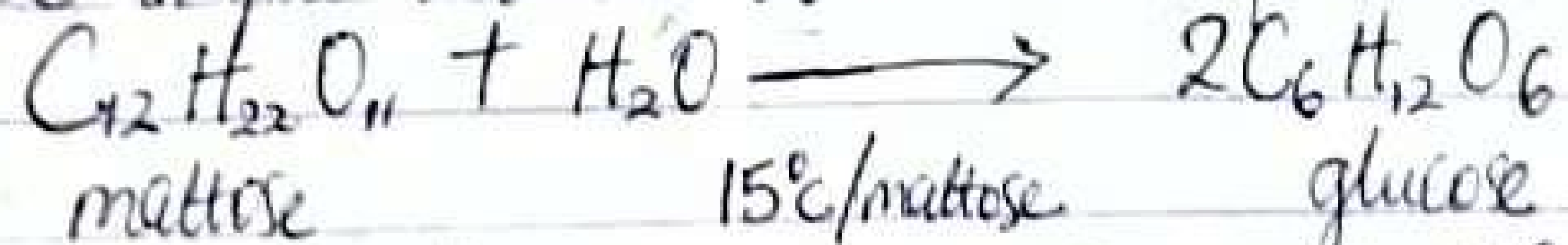
4-ethyl-octan-4-ol

3) Production of Ethanol.

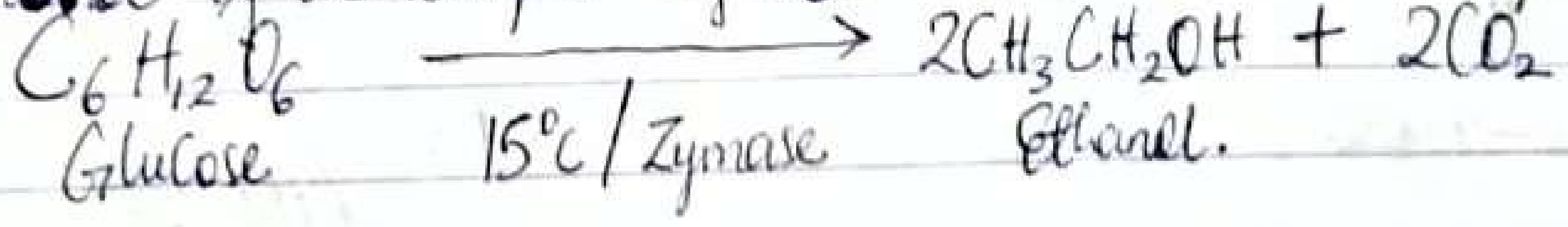
Carbohydrates such as starch are major group of natural compounds that can be made to yield ethanol by the biological process of fermentation. The biological catalysts, enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials include molasses, potatoes, cereals, rice and on warming with malt to 60°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°C

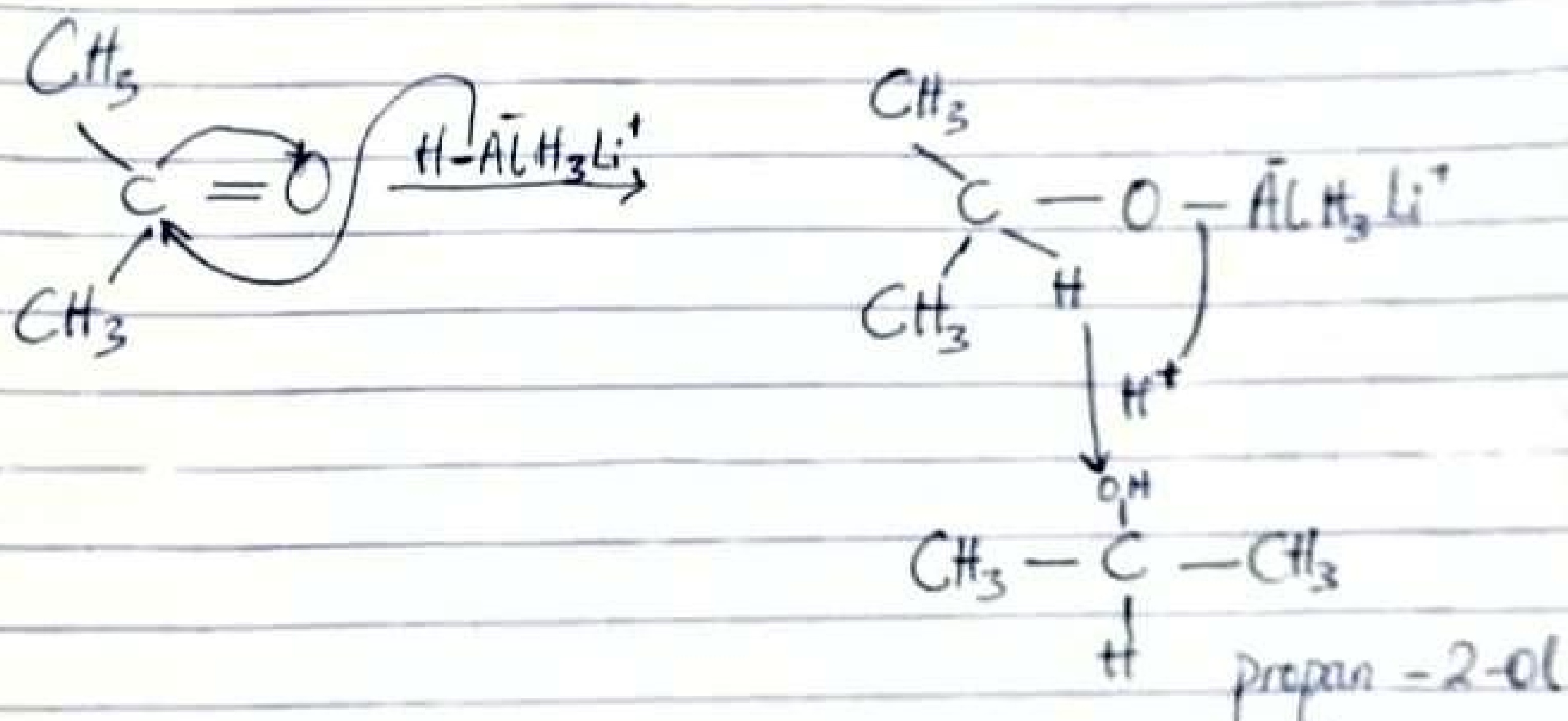


The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme - Zymase - contained also in yeast



1) Reduction of ketone or ketone gives a secondary alcohol while reduction of an alkanal or aldehyde gives a primary alcohol.

Reduction of acetone or acetone ($\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$) the reducing agent used is lithium aluminium hydride (LiAlH_4) or sodium borohydride (NaBH_4)



ii) Reduction of alkanal e.g. ethanal ($\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{H}$)

