

BIHAMEEN ABDOLAPO ABDULFATTAH
MECHATRONICS ENGINEERING
19/ENG05/019.

- The two major classification of alkanols are
- Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group
 - Based on the number of hydroxyl groups they possess

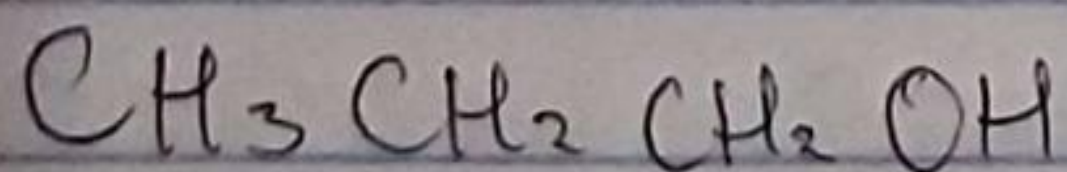
Based on the number of hydrogen atoms attached to the carbon atom carrying the hydroxyl group: if there are 3 or 2 hydrogen atoms bound to the carbon atom the alkanol is said to be primary (1°), if it is one hydrogen atom attached it is called a secondary alkanol (2°) and if no hydrogen atom is attached to the carbon atom bearing hydroxyl group it is called a tertiary alcohol (3°).

Examples under this class are:

- $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol (1°)
- $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$ Butan-2-ol 2°
- $(\text{CH}_3)_3\text{COH}$ 2-Methylpropan-2-ol 3°

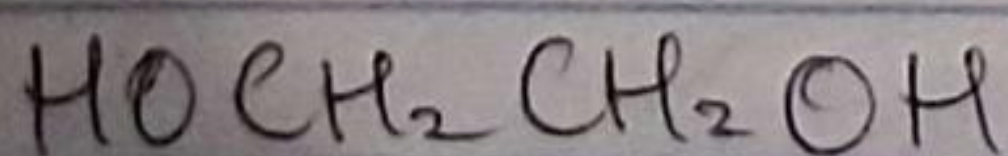
- Based on the number of hydroxyl groups they possess alkanols are:

- Monohydric when there is only one hydroxyl group present in their alkanol structure example



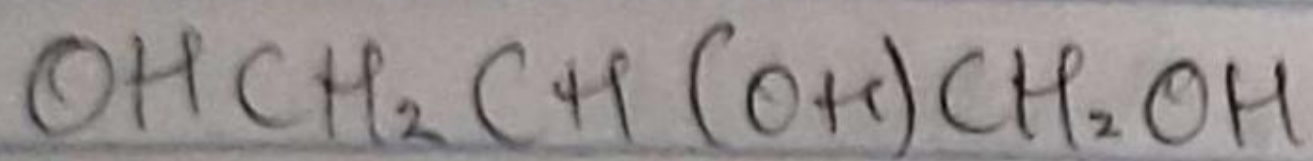
Propanol

- Dihydric also called glycols these ones have two hydroxyl group present in their atomic structure



Ethene-1,2-diol

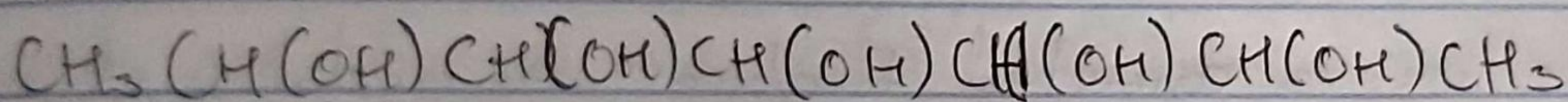
c) Trihydric or triols have three hydroxyl groups present in the alkane structure. Example



Propane-1,2,3-triol

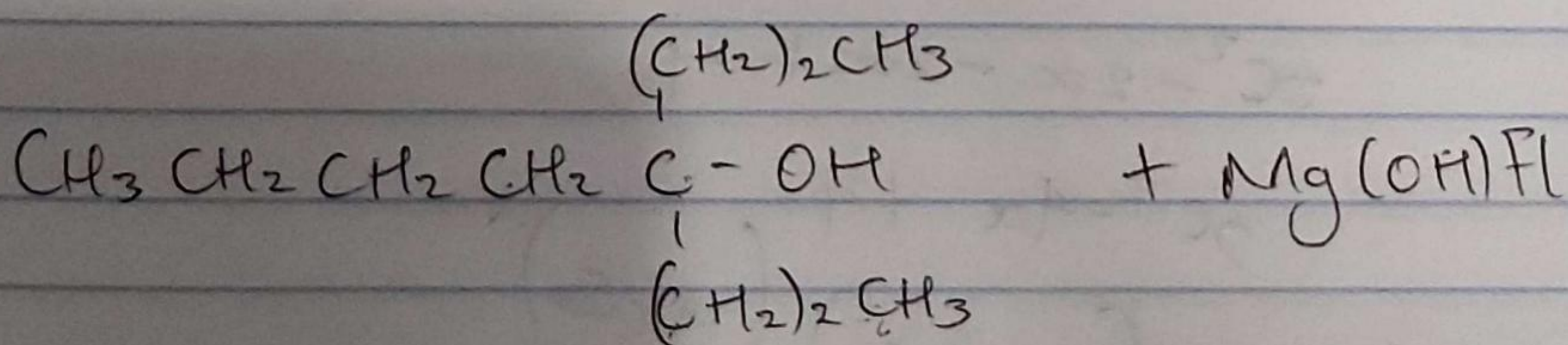
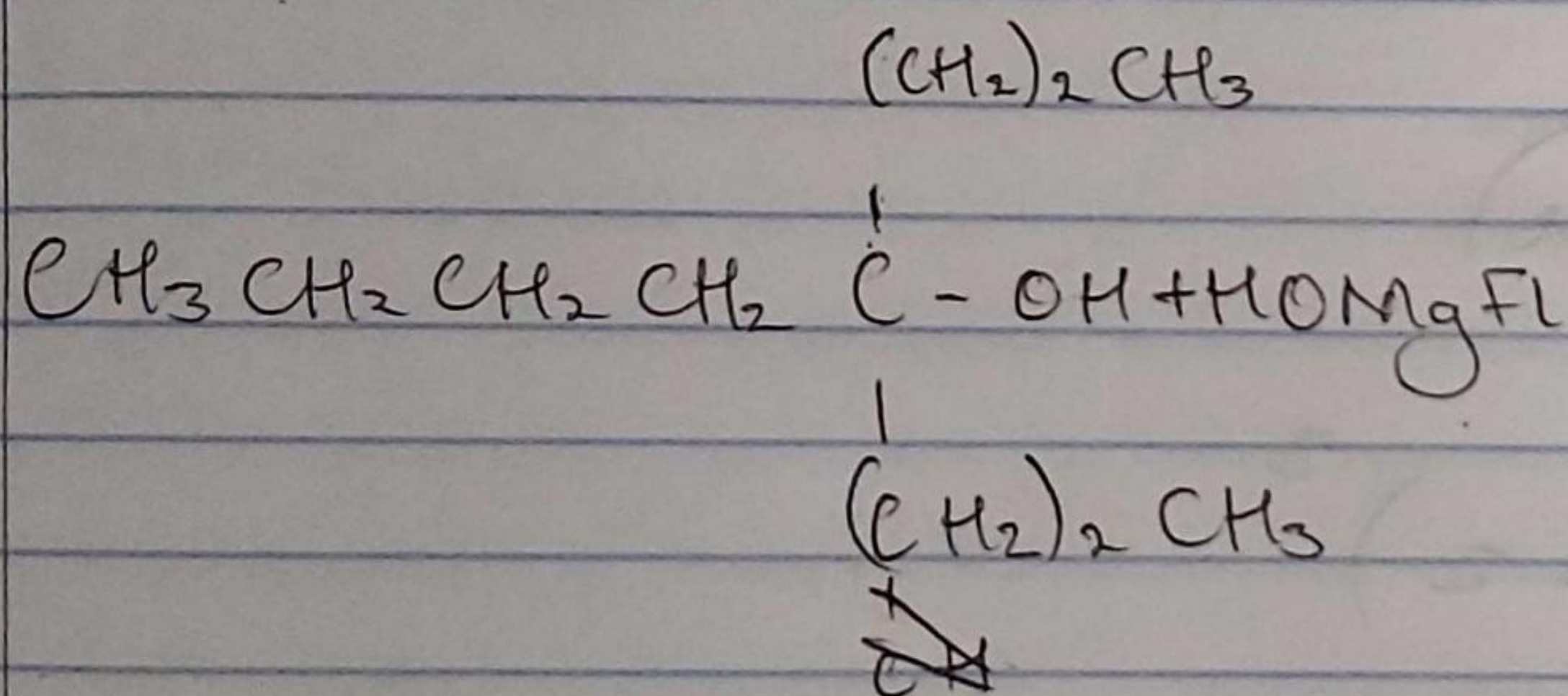
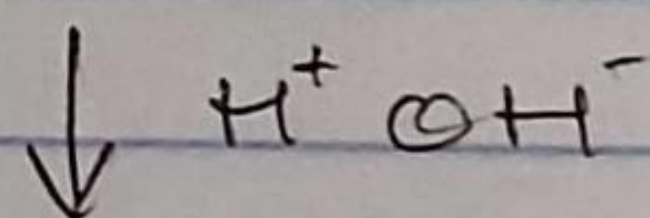
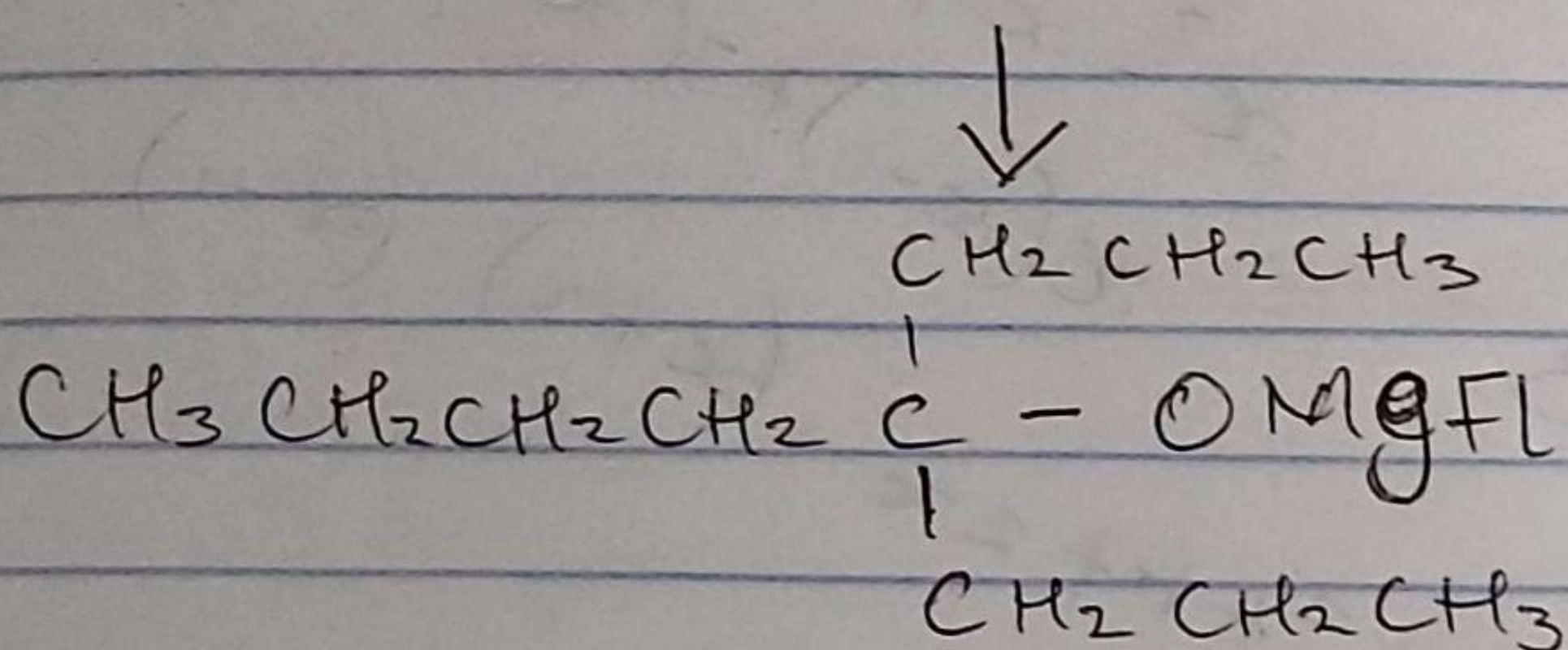
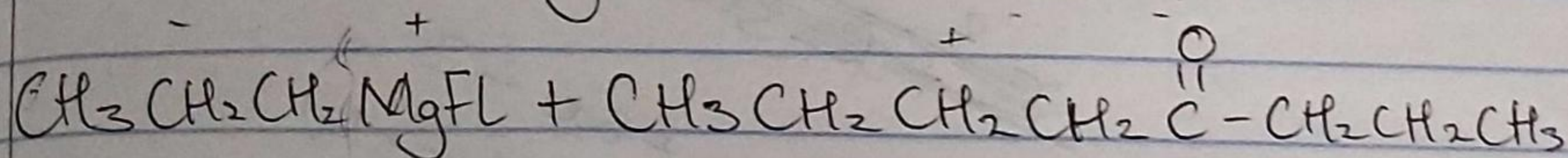
(Trihydric alcohol)

d) Polyhydric or polyols have more than three hydroxyl groups in their structure. Example



Heptane-2,3,4,5,6-pentanol.

2 Using Propyl Magnesium fluoride $\text{CH}_3\text{CH}_2\text{CH}_2\text{MgF}$



~~4-Propyl Octan-5-ol~~

4-Propyl Octan-4-ol

3 Ethanol is manufactured industrially from the fermentation of carbohydrates by organic catalysts (enzymes)

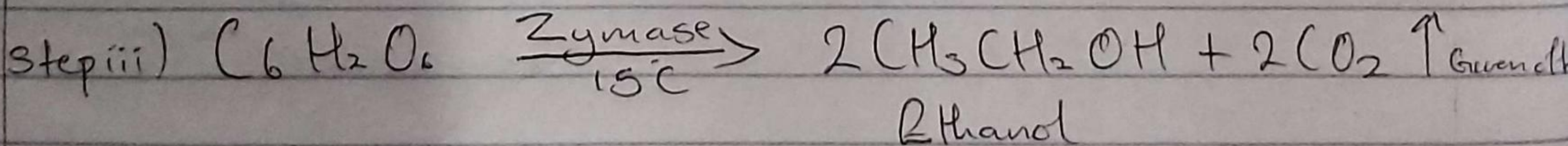
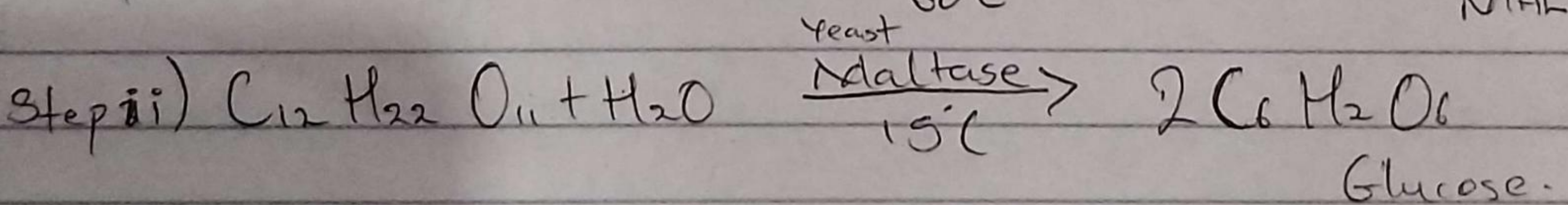
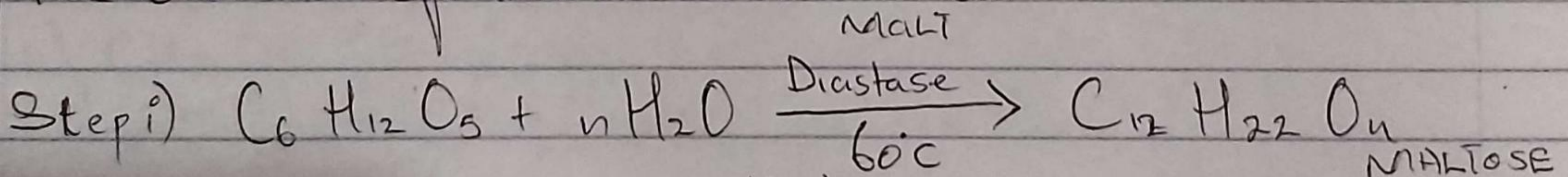
The carbohydrates include, molasses, potatoes, cereals rice etc.
The steps ~~are~~ of conversion are below

i) The carbohydrate is warmed with malt to 60°C over a given period of time and is then converted to MALTOSE by the enzyme diastase in the malt.

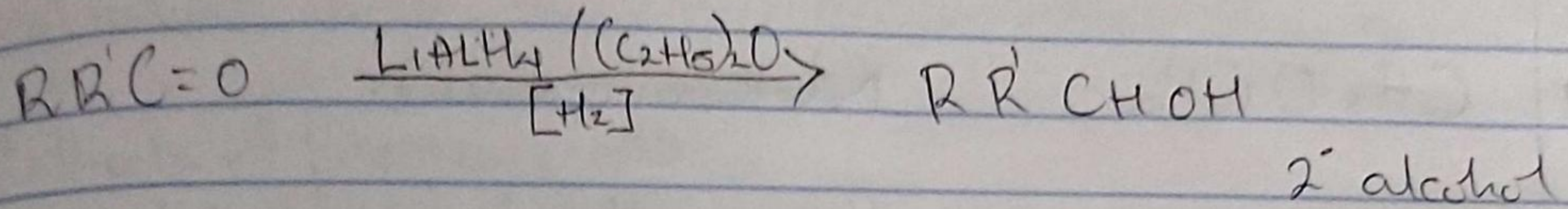
ii) The Maltose is converted to glucose on addition of yeast which contains the enzyme MALTASE at a temperature of 15°C

iii) The GLUCOSE at 15°C temperature is then converted into alcohol by the enzyme Zymase contained also in yeast.

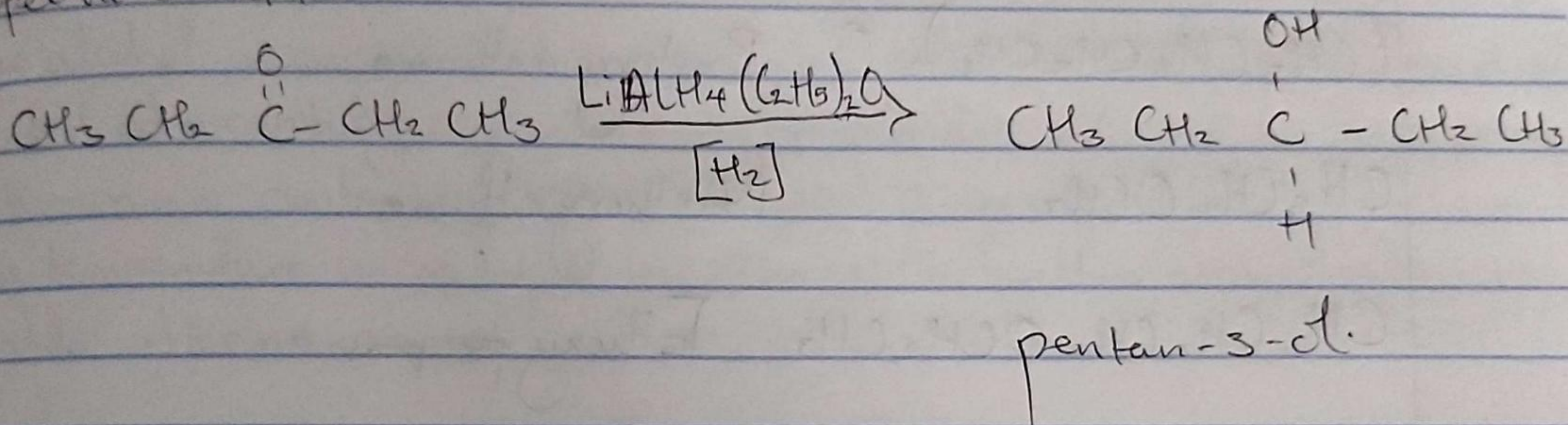
The chemical equation is written below.



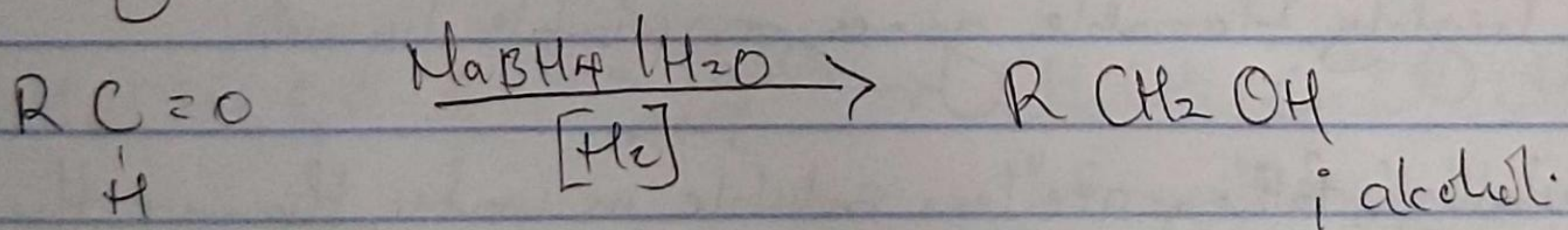
4 The product obtained from the reduction of Alkanone / ketone is secondary alcohol



Specific example



The product obtained from the reduction of alkanal / Aldehyde is a Primary alcohol



Specific example

