

UMORU OSILAMA ANTHONY

19 / MHS 11 / 144

PHARMACY

CHEMISTRY 102 Assignment

### 1. Classification of Alcohols

a) Classification based on the number of hydrogen atoms attached to the carbon atom containing the OH group

i) If 2 or 3 hydrogen atoms are attached to the carbon atom bearing the OH group, it is called a primary alcohol ( $1^\circ$ )

ii) If one hydrogen atom is attached to the carbon atom, it is called a secondary alcohol

iii) If no hydrogen atom is attached to the carbon atom, it is a tertiary alcohol ( $3^\circ$ )

### Examples:

Methanol  $\text{CH}_3\text{OH}$  ( $1^\circ$ )

Propan-2-ol  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$  ( $2^\circ$ )

b) Classification based on the number of hydroxyl groups they possess. Monohydric alcohols have one OH group present in the alcohol structure. Dihydric alcohols are called glycols, they have 2 hydroxyl groups present in the structure while

trihydric alcohols or triols have 3 OH groups present in the structure of the alcohol. Polyhydric alcohols or polyols have more than 3 OH groups.

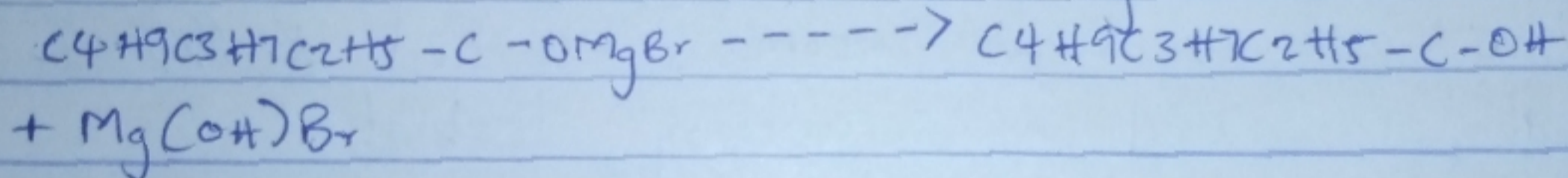
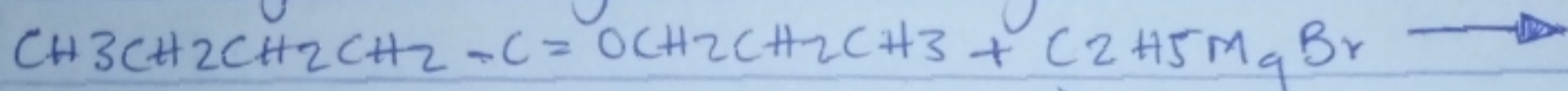
### Examples

Monohydric alcohol — Propanol  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

Dihydric alcohol — Ethane-1,2-diol  $\text{HOCH}_2\text{-CH}_2\text{OH}$

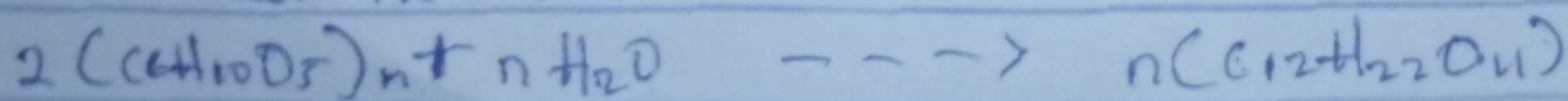
### 2.) Grignard synthesis of Alcohols

Grignard reagent —  $\text{C}_2\text{H}_5\text{MgBr}$



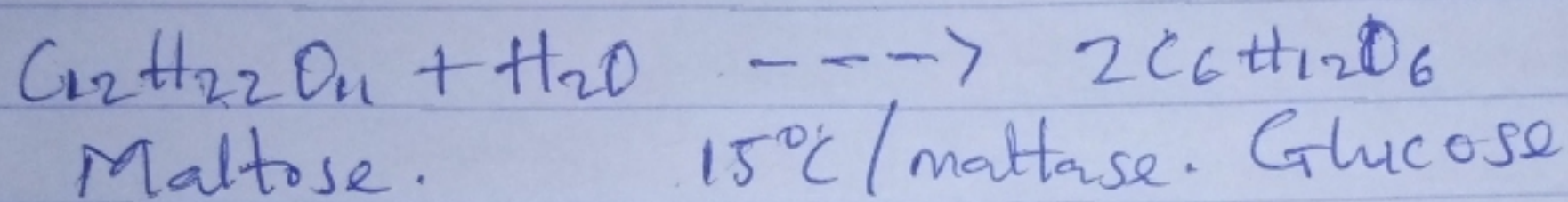
### 3.) Industrial Manufacturer of Ethanol

Carbohydrate 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 yield give a yield of 95%. On warming starch with malt for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.

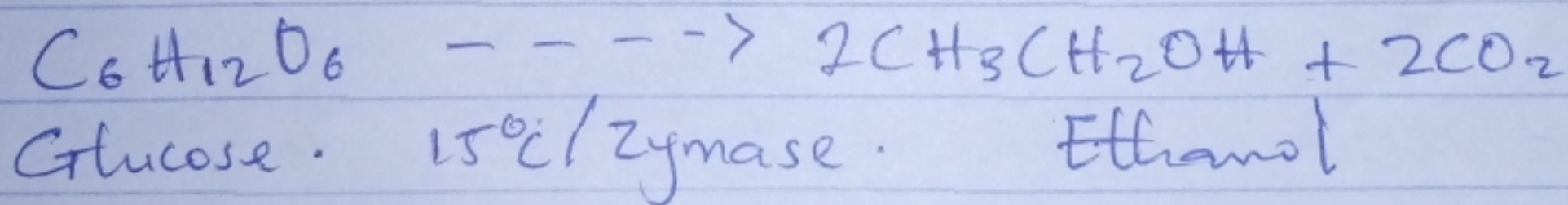


Carbohydrate  $60^\circ\text{C}$  / diastase, Maltase

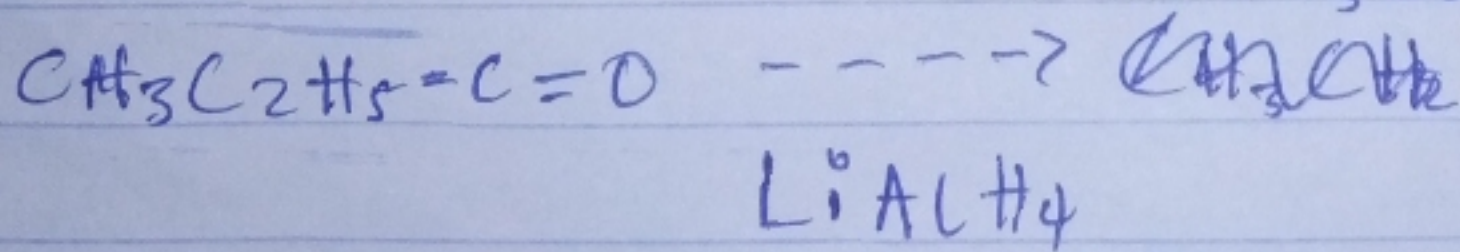
The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of  $15^{\circ}$



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



4. Alkanone. Reduction of alkanone gives secondary alkanols



Alkanals. Reduction of alkanals gives primary alkanols.

