

ORKAA SAMUEL TERUNGWA

19 | MHS01 | 358

GENERAL CHEMISTRY 102.

1a. Based on the number of hydrogen atoms attached to the carbon atoms containing the hydroxyl group  $Z$ , the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two. It is called primary alcohol and if no hydrogen atom is attached to the carbon atom it is called secondary alcohol and if no hydrogen atom is attached to the carbon atom, it is called tertiary alcohol ( $3^\circ$ ) e.g. Propan-2-ol.

b) Based on the number of hydroxyl groups they possess.

Monohydric alcohols (~~al~~) possess one hydroxyl group. Dihydric alcohols (or glycols) possess two hydroxyl groups while trihydric alcohols (or triols) have three hydroxyl groups present in the structure of the alcohol e.g. Propanol, Ethane-1,2-diol, Propan-1,2,3-triol, etc.

## QUESTION 2

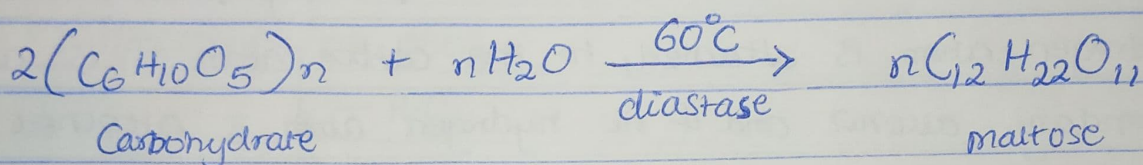
Lower alcohols with up to three carbon atoms in their molecules are soluble in water because the lower alcohol will form hydrogen bonds with water molecules. The water solubility of alcohol decreases with increasing relative molecular mass.

All monohydric alcohols are soluble in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

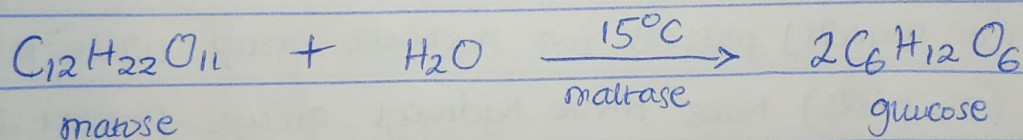
### QUESTION 3

Carbohydrates such as starch are major groups of natural compounds that can be made to yield ethanol by the biological process of fermentation. The biological catalysts, enzymes found in yeast breakdown the carbohydrate molecules into ethanol to give a yield of 95%.

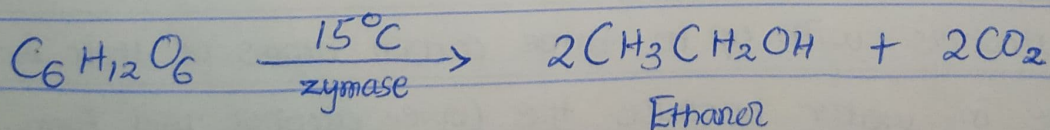
The starch containing materials include potatoes, cereals, rice and on heating with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



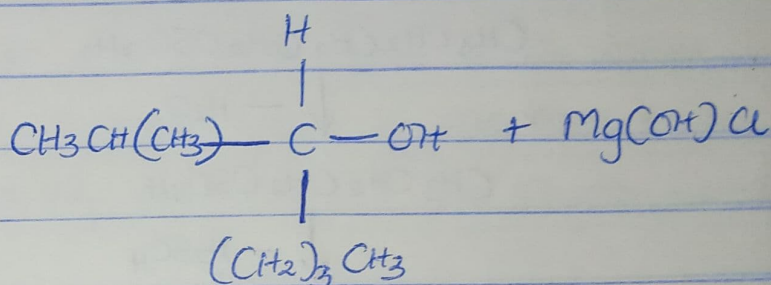
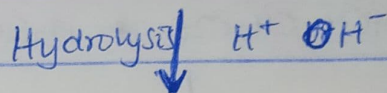
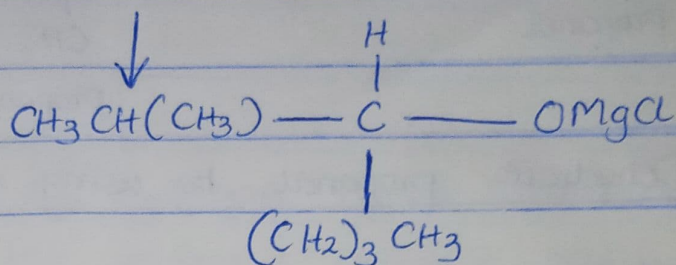
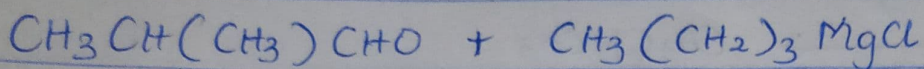
The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C



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



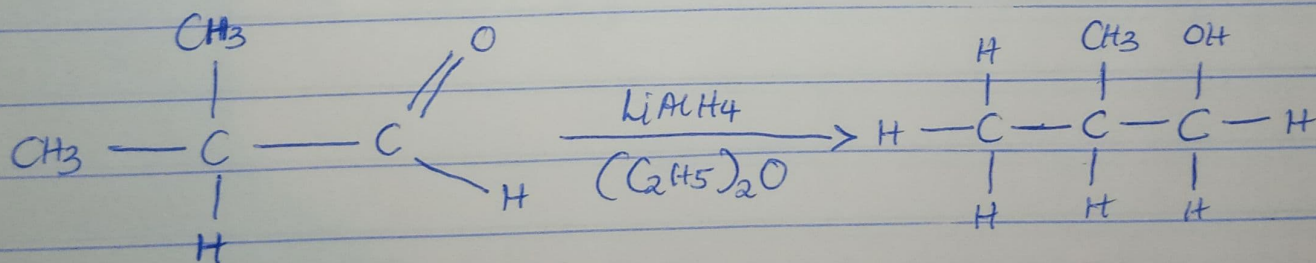
### QUESTION 4



(2-methylhepta-3-ol)

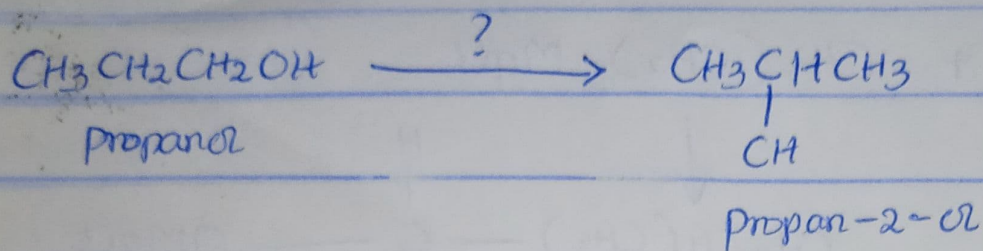
QUESTION 5 AND 6 WERE SKIPPED -

### QUESTION 7



2-methylpropanol

### QUESTION 8



Dehydrate propanol by using conc.  $\text{H}_2\text{SO}_4$

