

## CHM 102 Assignment

Name: Qabele Iscohe Hope

Matric Number: 191MHS01/284

Department: MBBS

1) Classification of alcohols.

a) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.

If the number of hydrogen attached to the carbon atom containing the hydroxyl group is

- (i) 3 or 2 hydrogen atoms it is called primary alcohol.
- (ii) 1 hydrogen atom it is called secondary alcohol.
- (iii) No hydrogen atom it is called tertiary alcohol.

Example: Methanol ( $1^\circ$ ), propan-2-ol ( $2^\circ$ ), 2-methylpropan-2-ol ( $3^\circ$ )

b) Based on the number of hydroxyl group they possess

i) Monohydric alcohols: 1 hydroxyl group present

ii) Dihydric alcohols: 2 hydroxyl groups present

iii) Trihydric alcohols: 3 hydroxyl groups present

iv) Polyhydric alcohols: more than 3 hydroxyl groups present.

Example: Propanol (monohydric), ethane-1,2-diol (dihydric), Propan-1,2,3-triol (trihydric)

## 2) Solubility

Lower alcohols with up to 3 carbon atoms in their molecules are soluble in water because these molecules readily form hydrogen bond with water molecules. The water solubility of alcohols decreases with increase in 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 bond with water molecules.

## 3) Industrial preparation of Alcohols.

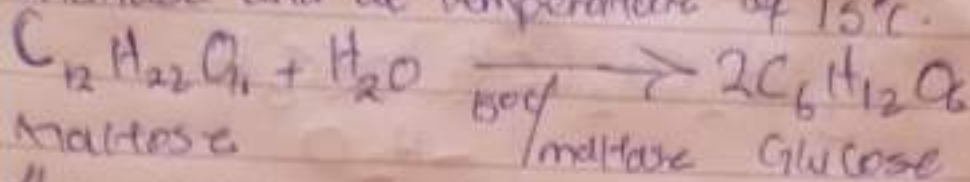
Starch containing materials including cereals, potatoes etc on cooking with malt to be a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



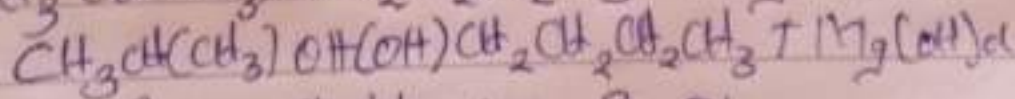
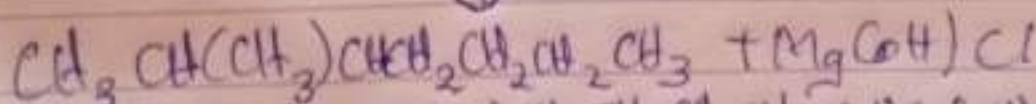
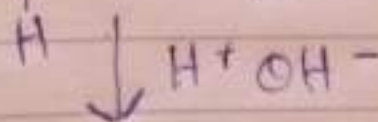
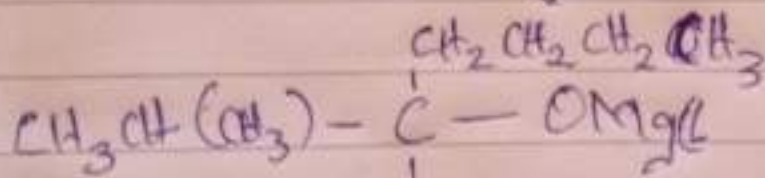
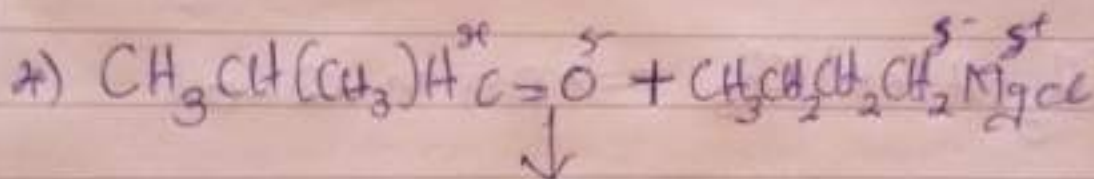
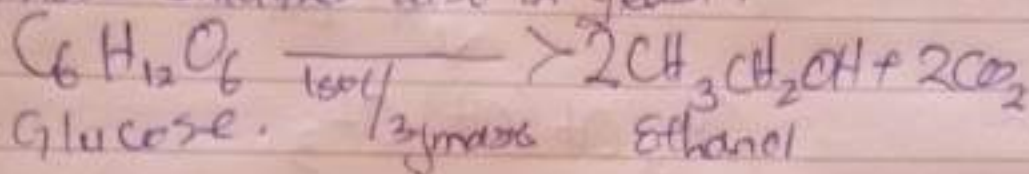
Carbohydrate

Diastase maltose

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

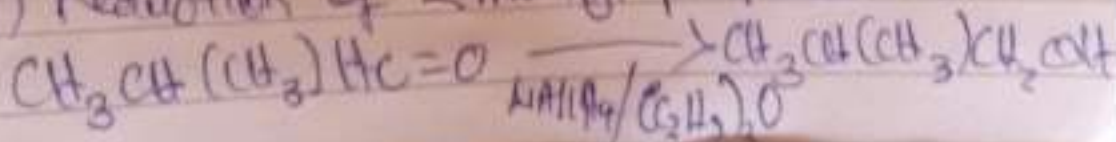


The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.



2-methyl heptan-3-ol

7) Reduction of 2-methyl propanal



9) Conversion of propan-1-ol to propan-2-ol

