

NAME: AKERELE ADEBOLA FUNMILOLA

DEPARTMENT: NURSING

MATRIC NUMER: 19/MHS02/015

COURSE: CHM 102

LEVEL: 100

- 1) **Discuss the two major classification of alkanols. Give two examples for each class**

Answer

- I. **Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.**

Having 2 or 3 hydrogens-: primary alcohol

Having 1 hydrogen-: secondary alcohol

Having no hydrogen-: tertiary alcohol

Example;

CH₃OH-: methanol (primary alkanol)

- II. **Based on the number of hydroxyl they possess**

. Monohydric alcohol has one hydroxyl group

. Dihydric or glycol has two hydroxyl group

. Trihydric or triol has three hydroxyl group

. Polyhydric alcohol has more than three hydroxyl group

Example;

CH₃CH₂CH₂OH-: Propanol (monohydric alcohol)

2. **Discuss the solubility of alcohols in water, organic solvents.**

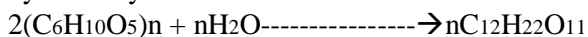
Lower alcohols with up to three carbon atoms in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols' decreases with increasing relative molecular mass.

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.

3. **Industrial preparation of ethanol**

Step 1

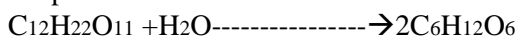
Carbohydrate such as starch can be made to yield ethanol by the biological process of fermentation. Carbohydrate is warmed with malt to 60°C for a specific period of time and converted into maltose by the enzyme diastase contained in the malt.



Carbohydrate 60°C /diastase maltose

Step 2

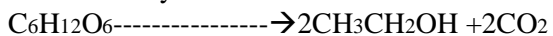
Maltose is broken down into glucose on addition of yeast which contains enzyme maltase and at a temperature of 15°C



Maltose 15°C /maltase glucose

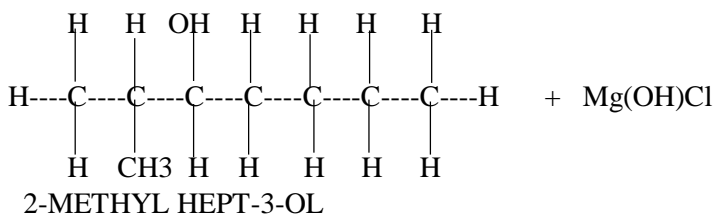
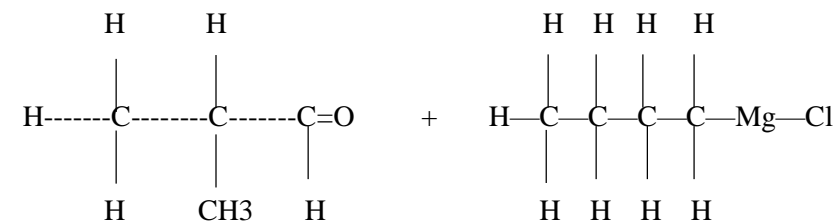
Step 3

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

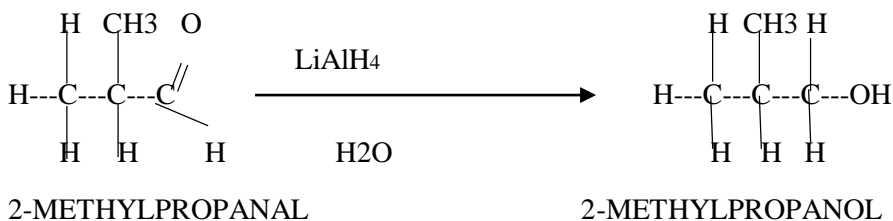


Glucose 15°C / zymase ethanol

4. Reaction between 2-methylpropanal and butylmagnesiumchloride



7. Reduction reaction of 2-methylpropanal.



8. Conversion of propan-1-ol to propan-2-ol

