**NAME: IGBAFE MAGDALENE AGUMELE**

**MATRIC NUMBER: 19/MHS03/005**

**DEPARTMENT: ANATOMY**

**COURSE CODE: CHM102**

1. **Classification of Alcohols:**
2. Alcohols that are based on the number of hydrogen atoms attached to the carbon atom with the hydroxyl group; in this classification, primary alcohols (1o) are those alcohols in which the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are either three or two. For secondary alcohol (2o), only one hydrogen atom is attached to the carbon atom bearing the hydroxyl group and if no hydrogen atom is attached, it is called a tertiary alcohol (3o). **Example is: CH3OH (Methanol) (1o).**
3. Alcohols based on the number of hydroxyl groups possessed: In this classification, we have monohydric alcohols which have one hydroxyl group present in the alcohol structure. We also have the dihydric alcohols (glycols) which have two hydroxyl groups while trihydric alcohols or triols have three hydroxyl groups present in the alcohol structure. Polyhydric alcohols have more than three hydroxyl groups. Examples are:
* **CH3CH2CH2OH Propanol (Monohydric alcohol)**
* **HOCH2CH2OH Ethane-1,2-diol (Dihydric alcohol)**
* **OHCH2CH(OH)CH2OH Propane-1.2.3-triol (Trihydric alcohol)**
* **CH3CH(OH)CH(OH)CH(OH)CH(OH)CH(OH)CH3 (Heptane-2,3,4,5,6-pentanol) (Polyhydric alcohol)**
1. **In water;** Lower alcohols with up to 3 carbon atoms are soluble in water, this is because lower alcohols can form hydrogen bond with water molecules. Water solubility of alcohols decrease with increasing relative molecular mass.

**In organic solvents;** 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.

1. **Steps in the industrial manufacture of ethanol;**

Starch containing materials are broken down on warming with malt to 60oC for a specific period of time and are then converted to maltose by an enzyme called diastase contained in malt.

* 2(C6H10O5)n + nH2O nC12H22O11

Carbohydrate 60oC/diastase maltose

 The maltose is broken down into glucose on addition of yeast containing an enzyme called maltase at temp of 15o

* C12H22O11 + H2O 2C6H12O6

Maltose 15oC/maltose glucose

 The glucose is then converted to alcohol at a constant temperature of 15oC in the presence of an enzyme contained in the yeast.

* C6H12O6 2CH3CH2OH +2CO2

Glucose 15oC/Zymase Ethanol

1. 

