

**NAME: Oluwadamilare Faith Oluwadarasimi**

**DEPARTMENT: Human Nutrition and Dietetics**

**MATRIC NO: 19/mhs04/002**

**COURSE TITLE: GENERAL CHEMISTRY II**

**COURSE CODE: CHM 102**

**Question**

**1) Alcohols are very important organic compounds. Discuss briefly their classification and give one example each.**

**i.) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group.** In this method of classification, if there are two or three hydrogen atoms attached to the carbon atom bearing the hydroxyl group it is called a primary alcohol. If it is one hydrogen atom, it is called a secondary alcohol and if there is no hydrogen atoms attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol. An example is Ethanol.

**ii.) Based on the number of hydroxyl group they possess.**

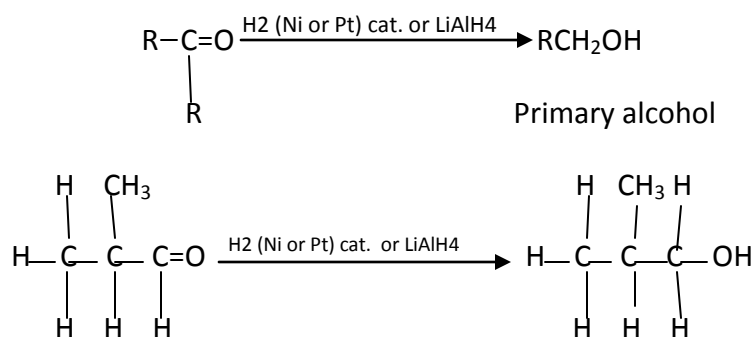
When there is one hydroxyl group present in the alcohol structure it is called a monohydric alcohol. If there are two hydroxyl groups present in the alcohol structure it is called a dihydric alcohol or a glycol and if there are three hydroxyl groups present in the alcohol structure it is called a trihydric alcohols or triols. Also an alcohol with more than three hydroxyl group is called a polyols or polyhydric alcohol. An example is hexane-2, 4-diol.

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

Lower alcohols that have up to three carbon atoms in their molecules are soluble in water because they can form hydrogen bond with water molecules. The solubility of alcohols in water decreases with increasing relative molecular mass. All monohydric alcohols are soluble in organic solvents. Simple alcohols and polyhydric alcohols are soluble because of their ability to form hydrogen bonds with water molecules.



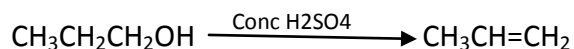
**7) Show the reduction reaction of 2-methylpropanal.**



**8) Propose a scheme for the conversion of propan-1-ol to propan-2-ol.**

**i) Dehydration of Propan-1-ol**

Propan-1-ol is treated with concentrated  $\text{H}_2\text{SO}_4$  a molecule of water is eliminated to form Propene.



**ii) Hydrolysis of Propene**

This is done according to Markownikoffs addition that states that when an unsymmetrical reagent is used, the negative part of the reagent attaches itself to the carbon atom of the alkene which has less number of hydrogen atoms. The unsymmetrical reagent that is used in this reaction is  $\text{H}_2\text{O}$ . Due to the hydrolysis of water the negative part attaches itself to the propene and it forms Propan-2-ol.

