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**MATRIC NUMBER: 19/MHS06/003**

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**COURSE: CHM 102**

**ANSWER**

1. CLASSIFICATION OF ALCOHOLS AND EXAMPLES.

Alcohols are any carbon chain with an OH group attached to one of the carbon atoms. They can be primary, secondary or tertiary.

* A PRIMARY ALCOHOL: Is one in which the OH group is attached to a terminating carbon (the last carbon on a carbon chain. Example is ETHANOL
* A SECONDARY ALCOHOL: Is when the carbon that is attached to the OH group is attached to 2 other carbon atoms. Example is ISOPROPANOL
* TERTIARY ALCOHOL: Is when the carbon that is attached to the Oh group is not attached to any hydrogen atoms instead; it is attached to the 3 other carbon atoms. Example is TERT- BUTANOL.

1. Solubility in Water

Alcohols are soluble in water. This is due to the high hydroxyl group in the alcohol which can form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. As the length of the hydrocarbon chain increases, the solubility in water decreases. With four carbon in the hydrocarbon chain and higher, the decrease in solubility becomes visible as the mixture forms two immiscible layers of liquid. The reason why the solubility decreases as the length of the hydrocarbon chain increases is because it requires more energy to overcome the hydrogen bond between the alcohol molecules as the molecules are more tightly packed together as the size and masses increases.

1. INDUSTRAIL MANUFACTURE OF ETHANOL

Ethanol is produced industrially from the following raw materials.

Sucrose, starch and cellulose (carbohydrates).

Ethene – obtained from the cracking of petroleum products.

Palm-wine