

## Assignment (CHEM 102)

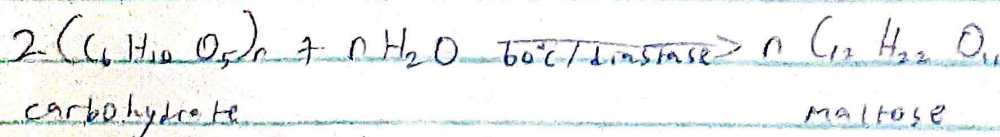
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1a. The first classification of alcohols is based on the number of hydrogen atoms attached to the carbon atoms containing the hydroxyl group. If the number of hydrogen atoms are three or two, it is a primary alcohol and if the number of hydrogen atoms is one, it is a secondary alcohol, and if no hydrogen atom is attached, it is a tertiary alcohol. e.g.  $\text{CH}_3\text{OH}$  (primary alcohol),  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$  (secondary alcohol),  $(\text{CH}_3)_3\text{C}-\text{OH}$  (tertiary alcohol).

b. The second classification of alcohols is based on the number of hydroxyl groups they possess. If one hydroxyl group is present, it is a monohydric alcohol. If two hydroxyl groups are present, it is a dihydric alcohol and if it has three hydroxyl groups it is a trihydric alcohol. Polyhydric alcohols have more than three hydroxyl groups.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  (monohydric),  $\text{HOCH}_2\text{CH}_2\text{OH}$  (dihydric),  $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$  (trihydric alcohol).

2. **Solubility:** 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.

3. The starch containing materials is warmed with malt to  $60^\circ\text{C}$  for a period of time and converted into maltose by the enzyme diastase contained in the malt.



The maltose is broken down into a glucose on addition of yeast which contains the enzyme maltase and at a temperature of  $15^\circ\text{C}$ .



The glucose at a constant temperature of  $15^{\circ}\text{C}$  is then converted into alcohol by the enzyme zymase also in yeast.



glucose:

Ethanol

