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DEPARTMENT: COMPUTER ENGINEERING

COURSE: CHM 102

MATRIC. NO.: 19/Eng02/011

### ASSIGNMENT

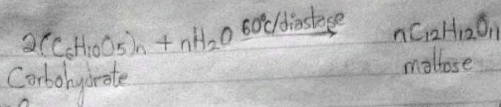
1) Classification of alcohols based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is called a primary alcohol ( $1^\circ$ ) if it is one Eg.  $\text{CH}_3\text{OH} \rightarrow$  Methanol ( $1^\circ$ ),  $\text{CH}_3\text{CH}_2\text{OH} \rightarrow$  Ethanol ( $1^\circ$ ). If it is one hydrogen atom, it is called secondary alcohol ( $2^\circ$ ) and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol ( $3^\circ$ ). Examples are  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3 \rightarrow$  Propan-2-ol ( $2^\circ$ );  $(\text{CH}_3)_3\text{C}-\text{OH} \rightarrow$  2-Methylpropan-2-ol ( $3^\circ$ ).

ii) This is based on the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Eg.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  (Monohydric alcohol). Dihydric alcohols are also called glycols and have two hydroxyl groups present in the structure of the alcohol. Eg.  $\text{HOCH}_2\text{CH}_2\text{OH}$  (Ethane-1,2-diol)  $\rightarrow$  Dihydric alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups. Eg.  $\text{CH}_2\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}_3 \rightarrow$  Pentanol (polyhydric alcohol) Heptane-2,3,4,5,6-pentol (polyhydric alcohol).

2) Solubility of alcohols in water: 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.

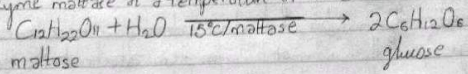
Solubility of alcohols in organic solvents: All monohydric alcohols are soluble in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecules.

3) Step 1: The biological catalysts, enzymes found in yeast are introduced to break down the carbohydrate (yeast found in yeast) molecules into ethanol to give a yield of 95%. The starch containing material which include molasses, potatoes, cereals, etc. on warming with malt to  $60^\circ\text{C}$  for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



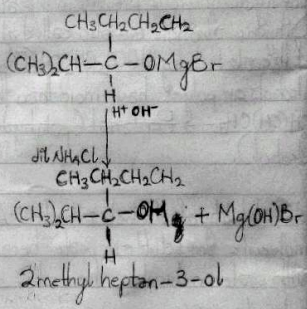
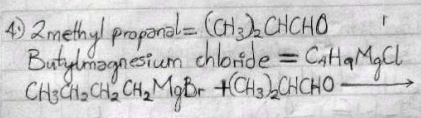
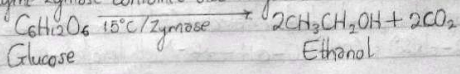
Step 2

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



Step 3

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



5) Such a reaction is highly impossible as there is no such compound as 2-methyl propanone.

6) Such a reaction is impossible as there is no such compound as 2-methyl propanone.

