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Matric NO: 19/MH506/027

CHM 102 ASSIGNMENT

1. CLASSIFICATION OF ALCOHOLS

(A) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group; if the carbon of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two; it is called a primary alcohol (1°) if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol (3°) e.g. CH_3OH Methanol (1°), $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol (1°), $\text{CH}_3\text{C}(\text{OH})(\text{CH}_3)_2$ 2-methylpropan-2-ol (3°).

(B) Based on the number of hydroxyl groups they possess; Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols are also called Glycols and have two hydroxyl groups present in the alcohol structure while trihydric alcohols groups present in the alcohol structure while have three hydroxyl group structure of the alcohol. Polyhydric alcohols or polyols have more than three hydroxyl groups.

E.g. $\text{C}_2\text{H}_5\text{OH}$ Ethanol (monohydric alcohol)

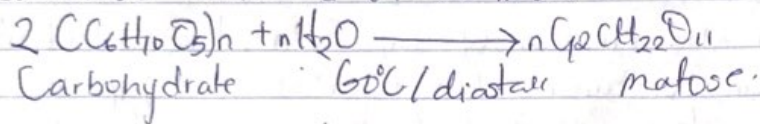
$\text{HOCH}_2\text{CH}_2\text{OH}$ Ethane-1,2-diol (Dihydric alcohol)

$\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$ Propane-1,2,3-triol (Trihydric alcohol)

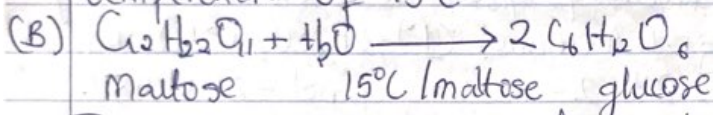
(2) Solubility: Lower alcohols with up to three carbon atoms in the molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative molecular mass. All monohydric alcohols are suitable in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due

(3) INDUSTRIAL PRODUCTION of ALCOHOLS

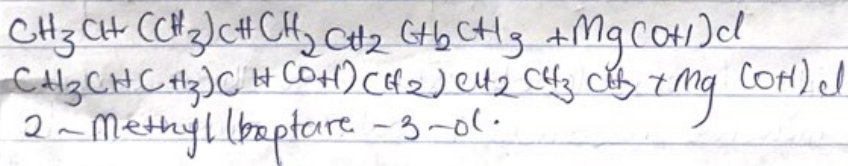
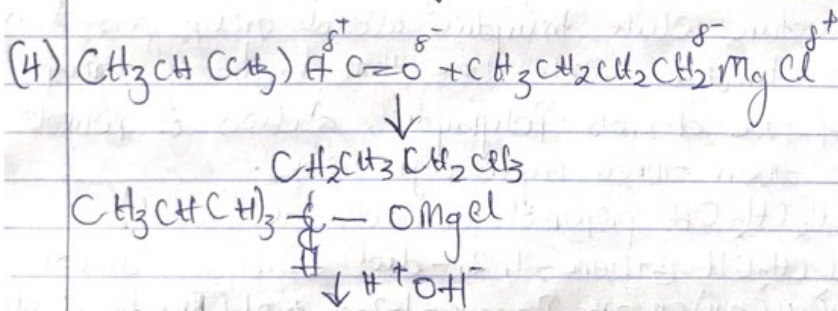
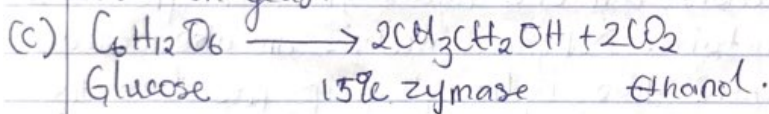
(A) Starch containing materials including cereals, potatoes etc on warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.



The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of 15°C



The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast



(E) Reduction of 2-methylpropanal

