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CHM102 Assignment Answers

1) Classification of Alcohols

a) They are classified base on the ~~A~~ number of hydrogen atoms attached the ~~the~~ carbon atom with the hydroxyl group. If there ~~num~~ are 3 or 2 hydrogen atoms attached the the carbon atom with the hydroxyl group then it is called a primary alcohol (1°), ~~If there are two then it is call~~ ~~a se~~ If there is only One hydrogen atom attached to the carbon atom then it is a secondary alcohol (2°), If there is no hydrogen atom attached, ~~then~~ It is a tertiary alcohol (3°). E.g, $CH_3CH(OH)CH_3$ - Propan-2-ol (2°)

b) They are classified based on the number of hydroxyle groups the alcohol contains. If it has only on then it is a ~~monoh~~ monohydric alcohol, If two then it is Dihydric, If 3 It is called trihydric and those with more than three are called poly hydric alcohols E.g $HOCH_2CH(OH)CH_2OH$ - Propan-1,2,3-triol (Trihydric alcohol)

2) Solubility of Alcohols

Lower ~~alcho~~ alcohols with up to 3 carbon atoms are soluble in water because they can form hydrogen bonds with water molecules. Solubility of alcohols with ~~water~~ water decreases with increasing R.M.M. All monohydric alcohols are soluble in organic solvents.

3. Starch is converted to maltose by boiling with ~~malt~~ malt at 60°C by an enzyme, diatase, contained in malt

$$\cancel{n(C_{12}H_{22}O_{11})+}$$

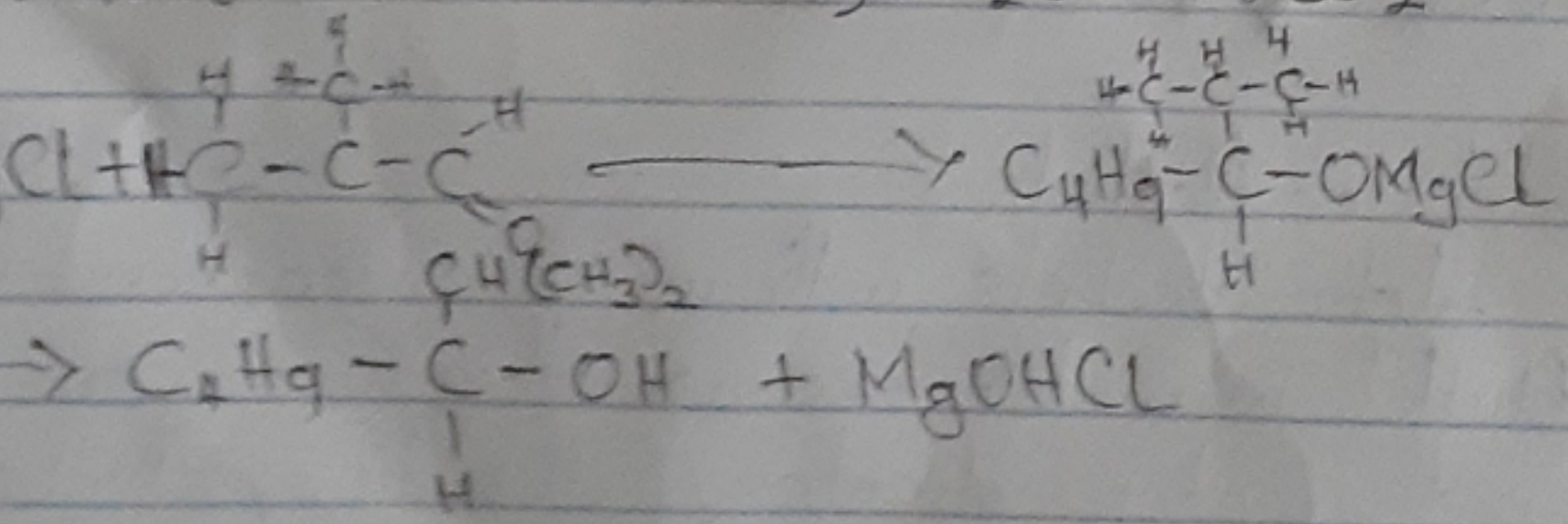
$$\underset{\text{Carbohydrate}}{2(C_6H_{10}O_8)_n} + nH_2O \xrightarrow{60°/\text{diatase}} \underset{\text{Maltose}}{nC_{12}H_{22}O_{11}}$$

Maltose is then ~~boiled~~, with yeast at 15°C ~~and~~, converted to glucose by an enzyme, Maltase ~~Zymase~~, contained in ~~of~~ yeast

$$\underset{\text{Maltose}}{C_{12}H_{22}O_{11}} + H_2O \xrightarrow{15°/\text{Maltase}} \underset{\text{glucose}}{2C_6H_{12}O_6}$$

The glucose at constant temperature of 15°C is then converted into alcohol by enzyme, Zymase, contained in yeast.

$$C_6H_{12}O_6 \xrightarrow{15°C/\text{Zymase}} 2CH_3CH_2OH + 2CO_2$$



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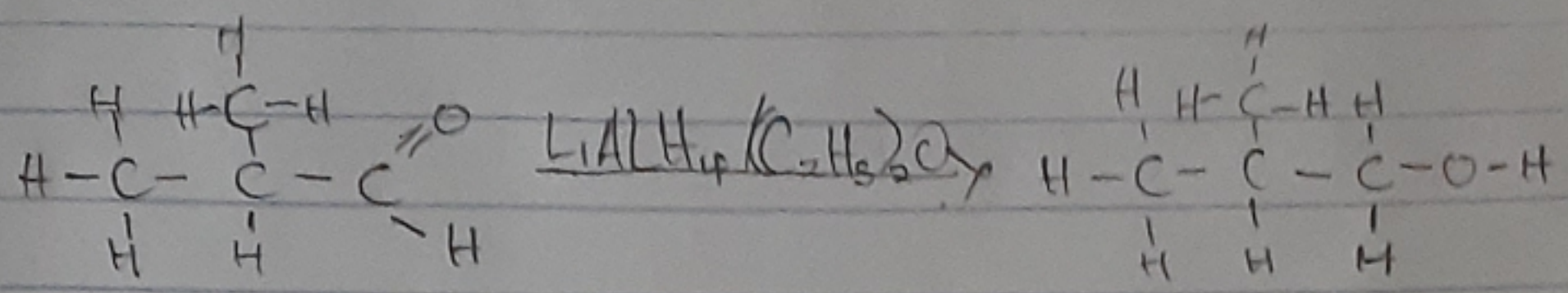
7 

2-Methyl Propanol

8 Convert Propan-1-ol to propan-2-ol

$CH_3CH_2CH_2OH + H_2SO_4 \longrightarrow CH_3CH_2CH_2OH_2OSO_3H$

Propan-1-ol

$CH_3CH_2CH_2OH_2OSO_3H \xrightarrow{-H_2O} CH_3CH_2CH_2OSO_3H + H_2O$

$CH_3CH_2CH_2OSO_3H \xrightarrow{-H_2SO_4} CH_3CH_2=CH_2 + H_2SO_4$

$CH_3CH_2=CH_2 + H_2O \longrightarrow CH_3CH(OH)CH_3$

propan-2-ol