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The classifications of alcohols include;
primary alcohol (1°). This is when the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group is one. Example; Ethanol, methanol.

Secondary alcohol (2°): this is when the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group is two. Example; propan-2-ol, isopropyl.

Tertiary alcohol (3°): is a compound in which a hydroxy group is attached to a saturated carbon atom which has three other carbon atoms attached to it. Example. 2-methylpropan-2-ol.

Alcohols are soluble in water. This is due to the hydroxyl group in the alcohol which is able to form hydrogen bonds with water molecules. Alcohols with a smaller hydrocarbon chain are very soluble. As the length of the chain increases, the solubility in water decreases.

Also, generally, organic compounds are non-polar so most of them are insoluble in water as water is a polar solvent. In case of ethanol, it contains the polar -OH bond hence it is soluble in water but it is not as polar as water so it dissolves readily in non-polar solvents like ~~eat~~ ethers.

Carbohydrates such as starch are a major group of natural ~~group~~ compounds that can be made to yield ethanol by the biological process of fermentation. The biological ~~enzymes~~ catalysts which are found in yeast break down the carbohydrate molecules into ethanol to give yield of 95%.

The starch containing materials include molasses, potatoes, rice etc and on warming with malt to 60°C for a specific period of time are converted to maltose by the enzyme diastase contained in the malt.

$$2(C_6H_{10}O_5)_n + nH_2O \xrightarrow{60^\circ C/\text{diastase}} n\,C_{12}H_{22}O_{11}$$

carbohydrate. maltose

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

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow{15^\circ C/\text{maltase}} 2C_6H_{12}O_6$$

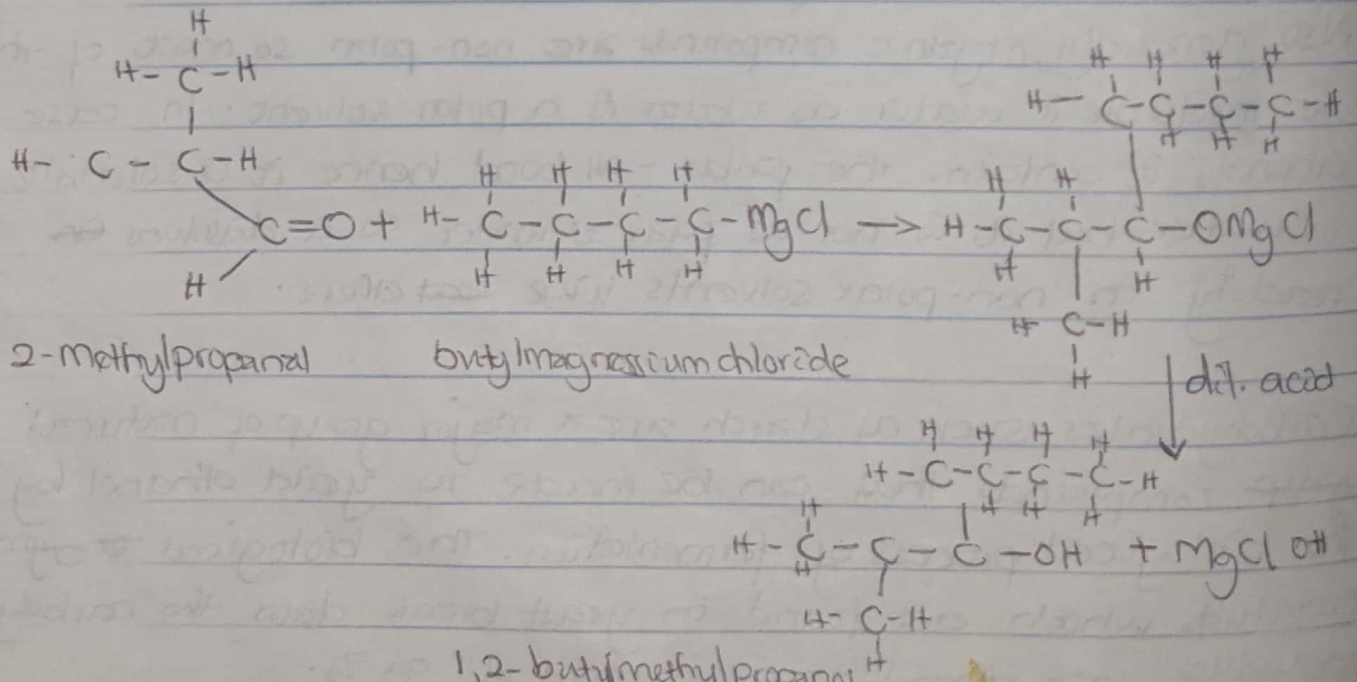
maltose Glucose

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

$$C_6H_{12}O_6 \xrightarrow{15^\circ C/\text{zymase}} 2CH_3CH_2OH + 2CO_2$$

Glucose Ethanol

4.

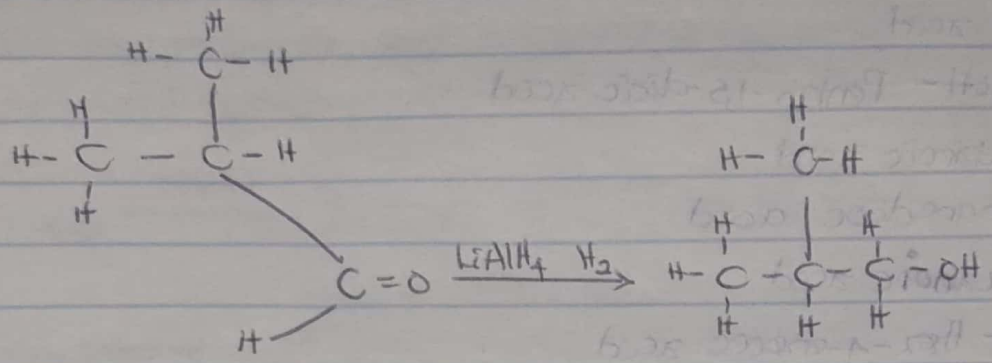


1,2-butylmethylpropanol

5. No answer.

6. No answer

7.



2-methylpropanal 2-methylpropanol

8. $CH_3CH_2CH_2OH + H_2SO_4 \longrightarrow CH_3CH_2CH_2OH_2OSO_3H$

$\downarrow -H_2O$

$CH_3CH_2CH_2OSO_3H$

$\downarrow -H_2SO_4$

$CH_3CH=CH_2 + H_2O$

$\downarrow$

$CH_3CH(OH)CH_3$ (propan-2-ol)