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DEPT: MBBS

COLLEGE: MHS

MATRIC NO: 19 / MHS01 / 416

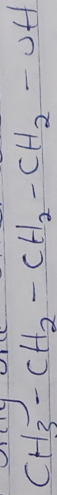
COURSE CODE: CHM102

ASSIGNMENT:

i. Alcohols are very important organic compounds. Discuss briefly their classification and give one example each.

a. One way of classifying alcohols is based on which carbon atom is bonded to the hydroxyl group.

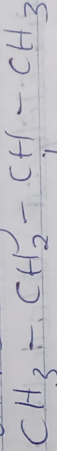
i. Primary Alcohols: In these alcohols, one hydrogen atom is bonded to only one other carbon atom. E.g.



1-butanol

Primary (1°)

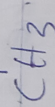
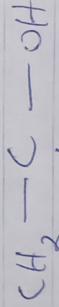
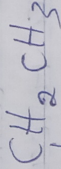
ii. Secondary Alcohol: It has the hydroxyl group on a secondary (2°) carbon atom, which is bonded to two other carbon atoms. E.g.



2-butanol

Secondary (2°)

iii. Tertiary Alcohol: It has the hydroxyl group on a tertiary (3°) carbon atom, which is bonded to three carbons. E.g.



2-methyl-2-butanol

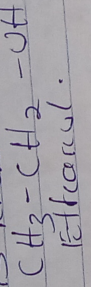
tertiary (3°)

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b. According to the number of hydroxyl (OH) groups,

there are three which are Alcohols containing one

c. Monohydric Alcohols; Alcohols containing one hydroxyl (OH) groups known as Monohydric Alcohols. Eg

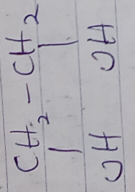


Ethanol.

3. St

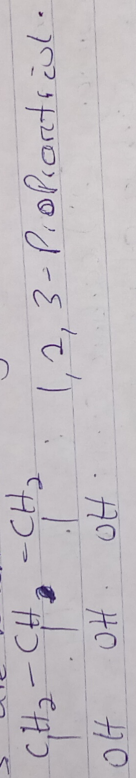
ii. Dihydric Alcohols; Alcohols containing two hydroxyl (OH) groups are known as dihydric Alcohols.

Eg. $\text{CH}_2 - \text{CH}_2$ 1, 2-Ethandiol.



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iii. Trihydric Alcohols; Alcohols containing three hydroxyl (OH) groups are known as trihydric Alcohols. Eg



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2. Discuss the solubility of alcohols in water, organic solvents.

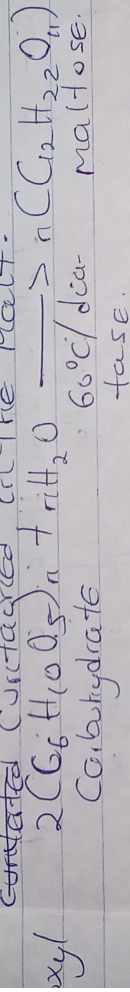
i. In water, most alcohols that are liquids at room temperature are miscible with water. Glycerol, fructose, sorbitol, and mannitol are also miscible with water. As both they and the solvent are polar, the solute is also polar. The dielectric constants of water and ethanol are 80 and 24.55 respectively. The hydrogen bonds in aliphatic alcohols easily form hydrogen bonds with water molecules, so most will mix readily.

ii. In organic solvents: Here, the solubility of an alcohol

in a non-polar solvent (like hexane) increases with the size of the alcohol as the non-polar chain increases. However, as the chain keeps increasing the solubility starts to drop because the molecule becomes too large.

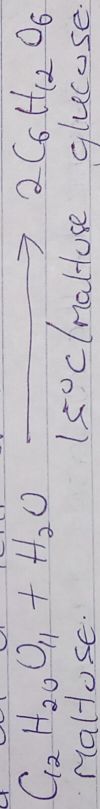
3. Show three steps in the industrial manufacture of ethanol. Equations of reaction are mandatory.

The starch containing materials including molasses, potatoes and biological catalysts 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.



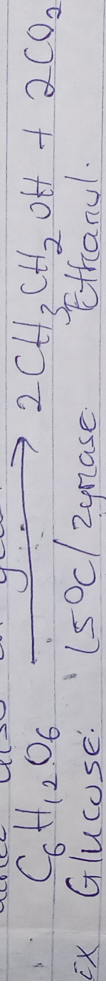
STEP 2.

The maltose is broken down into glucose or added to yeast which contains the enzyme maltase and at a temp. of 50°C.

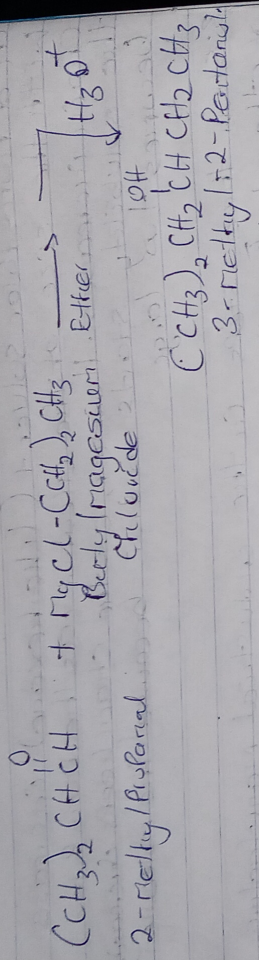


STEP 3.

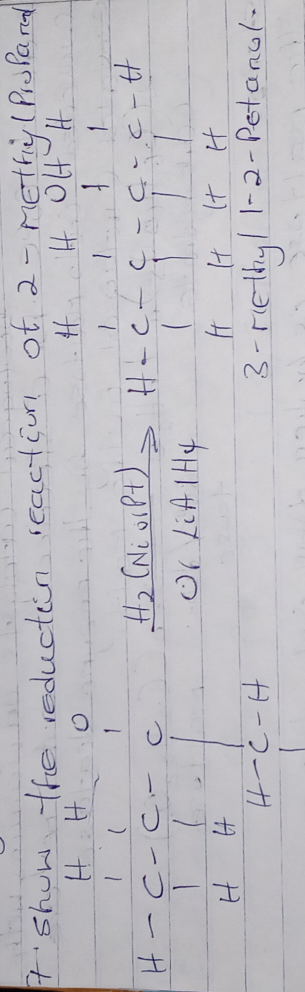
The glucose at constant temperature of 50°C is then converted into alcohol by the enzyme zymase and added to yeast.



4. Show the reaction between 2-methylpropanal and butylmagnesium chloride.



5. Show the reaction between 2-methylpropanal and butylmagnesium chloride.



2-methylpropanal

8. Propose a scheme for the conversion of propan-2-ol to propan-2-ol.

