

TOUGH PRAISE

MBBS

19/MHS01/441

i. Classification based on the number of hydrogen atoms attached to the carbon carrying the OH - functional group

ii. If there are 2/3 hydrogen = Primary alcohol  $1^\circ$   
e.g. Ethanol, Butanol

iii. If there is just (1) hydrogen = Secondary alcohol  $2^\circ$   
e.g. Propan-2-ol, Butan-2-ol

iv. If there is none = tertiary alcohol  $3^\circ$   
e.g. 2-Methyl propan-2-ol, 2-Methyl butan-2-ol

b. Classification based on the number of OH functional group present in the structure of the alcohol:

i. Monohydric alcohol - 1 OH functional group present  
e.g. Propanol, Ethanol

ii. Dihydric alcohol / glycol - 2 OH functional group present  
e.g. Ethan-1,2-diol, Propan-1,3-diol

iii. Trihydric alcohol / triol - 3 OH functional group present  
e.g. Propan-1,2,3-triol, Butan-1,2,3-triol

iv. Polyhydric alcohol / polyol - 4/ more OH functional group present  
e.g. Heptan-2,3,4,5,6-polyol  
Hexan-2,3,4,5-polyol

2. Alcohols and water have similar properties because water molecules contain hydroxyl groups that can form hydrogen bonds with other water molecules and with alcohol molecules and likewise alcohol molecules can form hydrogen bonds with other alcohol molecules as well as water.

Because alcohols form hydrogen bonds with water, they tend to be relatively soluble in water. Alcohols with higher molecular weights tend to be less water-soluble because the hydrocarbon part of the molecule, which is hydrophobic, is larger with increased molecular weight.

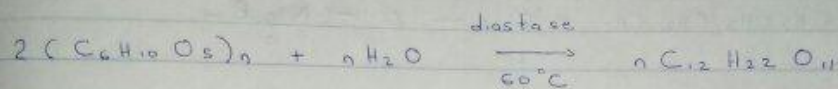
Also, because they are strongly polar, alcohols are better solvents than hydrocarbons for ionic compounds & other polar substances.

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

Carbohydrates such as starch are major group of natural compounds that can yield ethanol by the biological process of fermentation.

1<sup>st</sup> step:

Starch containing materials such as potatoes, cereals, rice etc on warming with malt @ 60°C for a specific period of time are converted into maltose



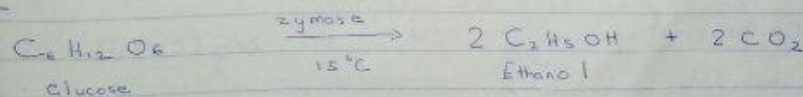
2<sup>nd</sup> step:

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



3<sup>rd</sup> step:

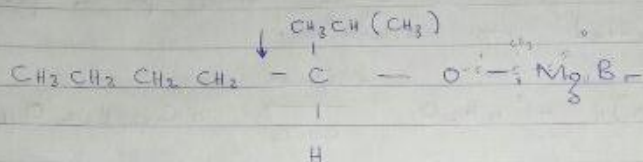
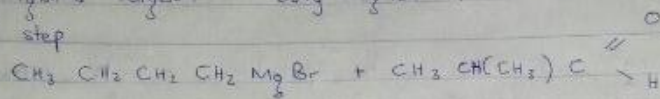
The glucose at constant temperature of 15°C is then converted into alcohol by an enzyme, zymase, contained in yeast



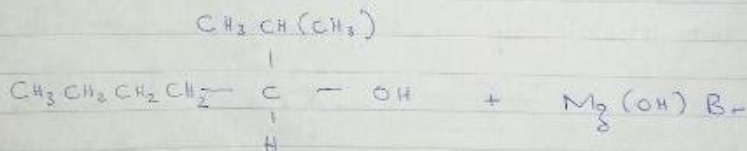
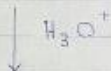
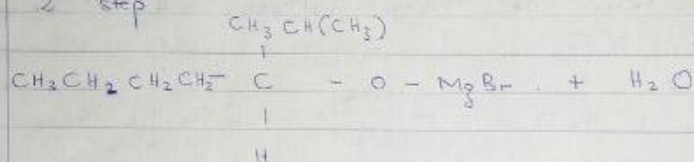
4. React a named Grignard reagent with 2-methyl propanal €

Grignard reagent = Butylmagnesiumchloride

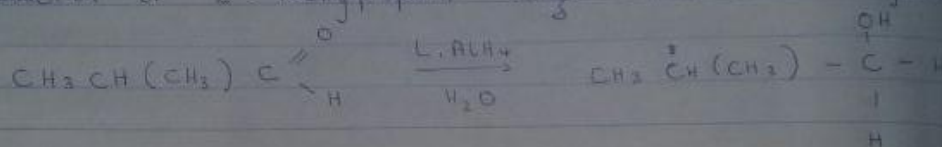
1<sup>st</sup> step



2<sup>nd</sup> step



7 Reduction of 2-Methylpropanal Using Lithium aluminium hydride



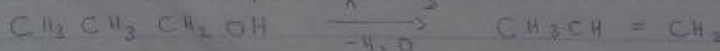
2-methyl propanal

2 Methyl propanol

8 Using Markovnikov rule



i. Dehydration of Propanal to Propene using concentrated  $\text{H}_2\text{SO}_4$



ii. Hydration of Propene to Propan-2-ol using Markovnikov addition

