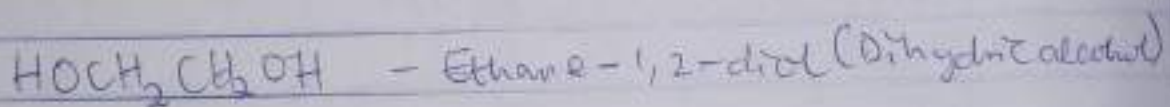
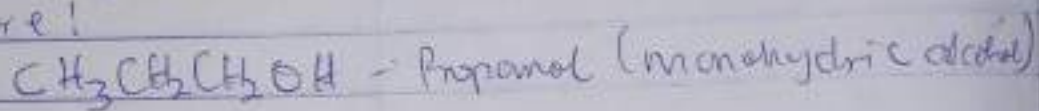


1) Alcohols are very important organic compounds. Discuss briefly their classification and give one example each.

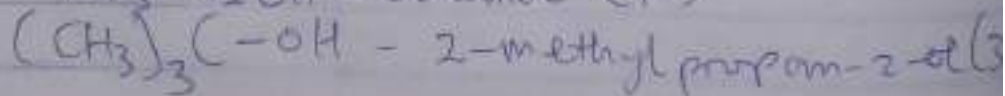
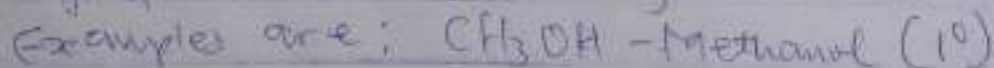
Ans

1) Alcohols are based on the number of hydroxyl groups they possess.

- Monohydric alcohol contains one hydroxyl group in the alcohol structure.
- Dihydric alcohols are also called Glycols which contains two hydroxyl groups present in the alcohol nature.
- Trihydric alcohols or triols have three hydroxyl groups present in the structure of the alcohol.
- Polyhydric alcohols or polyols have more than three hydroxyl groups.
- Example are!



2) Alcohols are also based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If the numbers of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is called primary alcohol (1°). If it is one hydrogen atom it is called secondary alcohol (2°) and if no hydrogen atom is attached the carbon atom bearing the hydroxyl group is called tertiary alcohol (3°).



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

Ans

Lower alcohols with up to three carbon atoms in their molecules are soluble in water because they can form hydrogen bonds with water molecules. The water solubility decreases of alcohols decreases with increasing relative molecular mass.

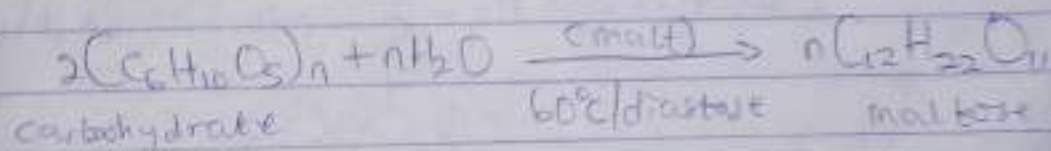
All monohydric alcohols are soluble in organic solvents. The solubility of simple alcohols and polyhydric alcohols is largely due to their ability to form hydrogen bonds with water molecule.

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

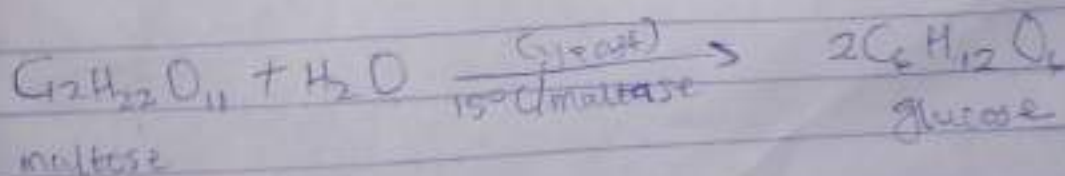
Ans

Production of Ethanol:

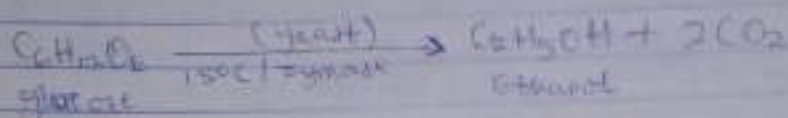
1) Carbohydrate is converted into maltose by enzyme diastase contained in malt at 60°C



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

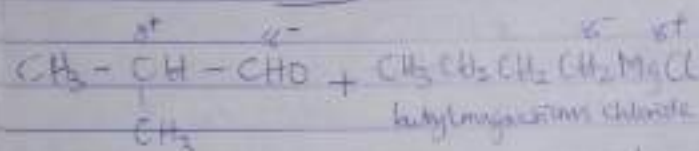


3) The glucose is then converted to alcohol by the enzyme Zymase contained in yeast at 15°C

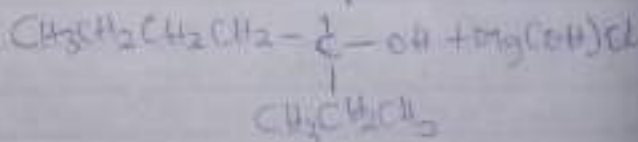
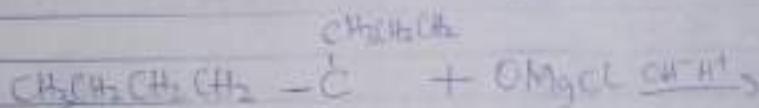


4) Show the reaction between 2-methylpropanal and butylmagnesium chloride. Hint: Grignard Synthesis

Ans

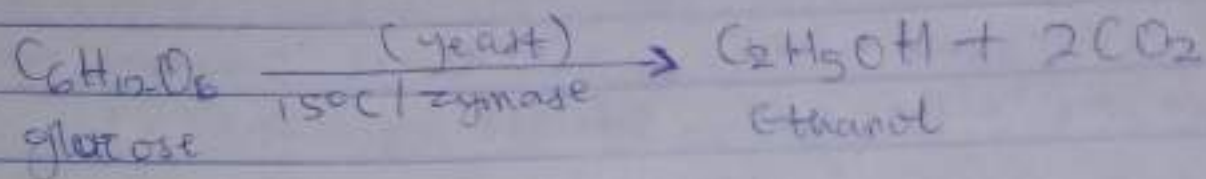


2-methylpropanal



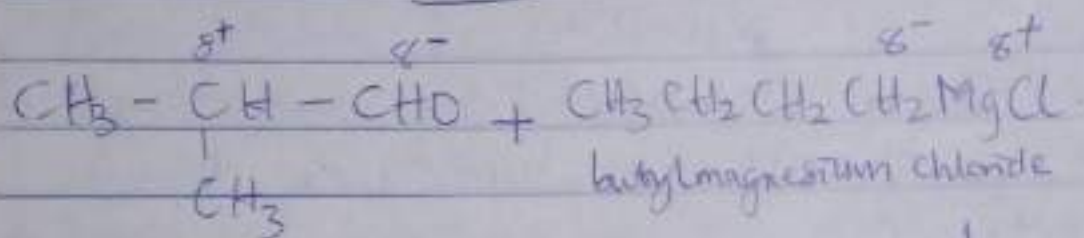
octan-4-ol

3) The glucose is then converted to alcohol by the enzyme zymase contained in yeast at 15°C

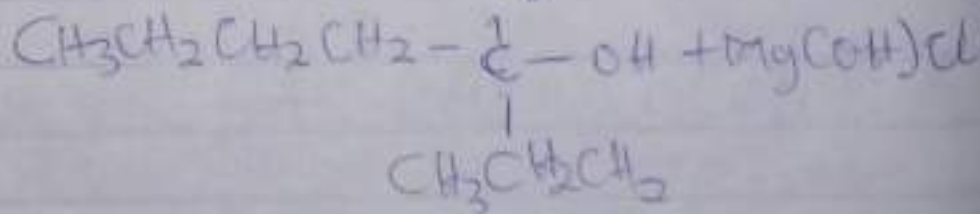
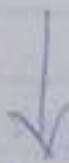
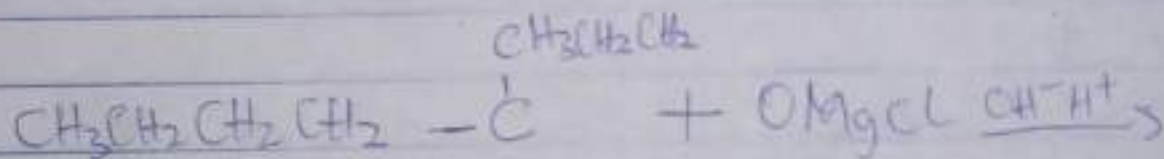


4) Show the reaction between 2-methylpropanal and butylmagnesium chloride. Hint: Grignard synthesis

Ans

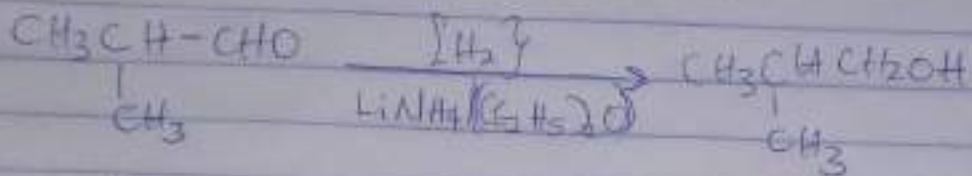


2-methyl Propanal



octan-4-ol

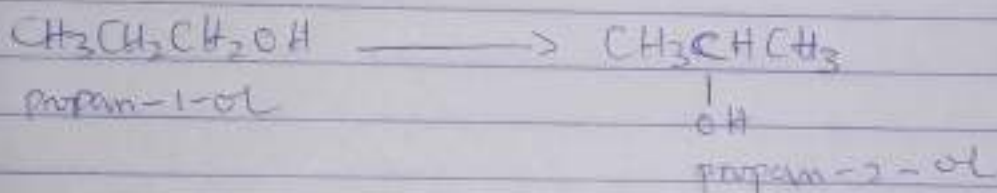
7) Show the reduction reaction of 2-methylpropanal
Ans



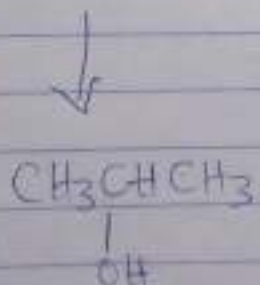
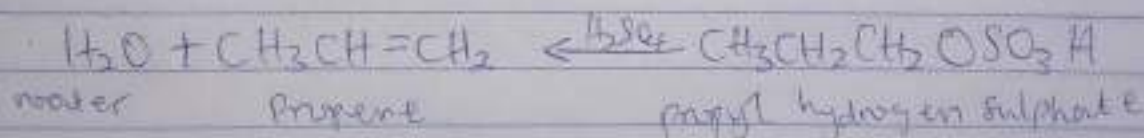
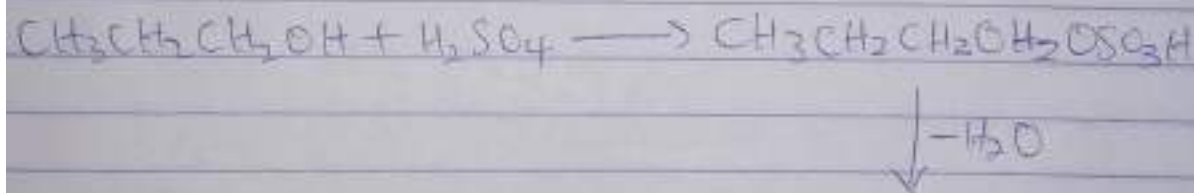
2-methylpropanal

2-methylpropanol

8) Propose a scheme for the conversion of propan-1-ol to propan-2-ol.
Ans



Therefore,



Propan-2-ol