

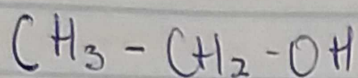
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Matrix Number: 1918N604003

Department: Elect-Elect

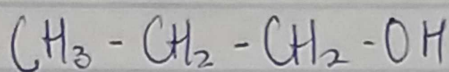
Course Code: CHM 102

1.) Primary alcohols ( $1^\circ$ ): The carbon which carries the  $-OH$  group is only attached to one alkyl group.

Examples of Primary alcohol include:



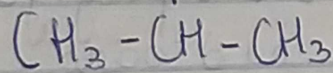
ethanol



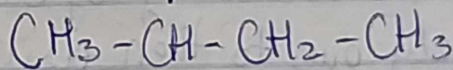
propanol

Secondary alcohol ( $2^\circ$ ): The carbon with the  $OH$  group attached is joined directly to two alkyl groups, which may be the same or different.

Examples of Secondary alcohol.



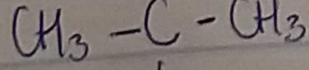
propan-2-ol



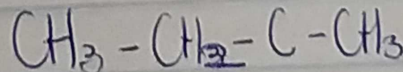
butan-2-ol

Tertiary alcohol ( $3^\circ$ ): The carbon atom holding the  $-OH$  group is attached directly to three alkyl groups, which may be any combination of same or different.

Examples of tertiary alcohol.



2-methylpropan-2-ol



2-methylbutan-2-ol.

## 2) Solubility of alcohols in water Organic Solvents

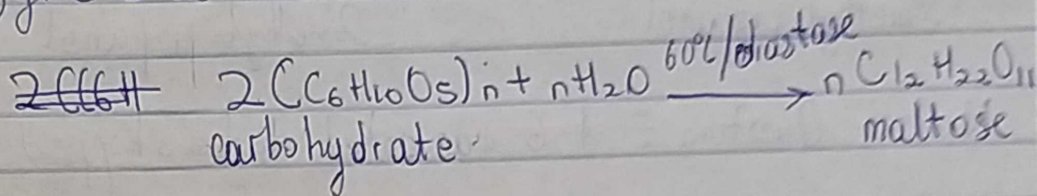
Solubility: Lower alcohols with up three carbon atom in their molecules are soluble in water because these lower alcohols can form hydrogen bond with water molecules. The water solubility of alcohols decreases with increasing relative molecular mass.

\* Organic Solvents: All monohydric alcohols are soluble in organic solvents. The solubility of simple alcohol and polyhydric alcohols is largely due to their ability to form hydrogen bond with water molecules.

3) The manufacture [Industrial] of ethanol

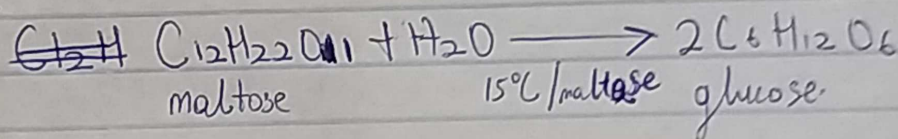
Step 1: The starch containing materials include molasses potatoes, cereals rice and on warming with malt to boil for a specific period of time are converted into maltose by the enzyme diastase contained in the malt.

Equation 1:



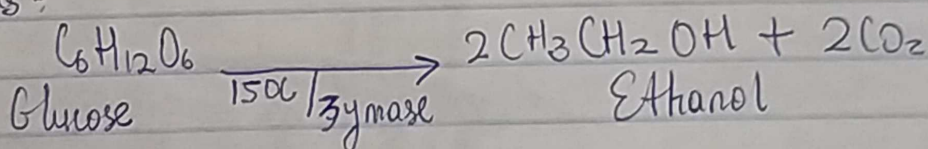
Step 2: The maltose is broken down into glucose on addition of yeast which contains the enzyme maltase and at a temperature of  $15^\circ C$

Equation 2:

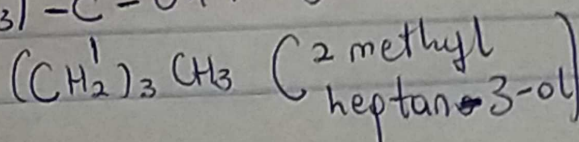
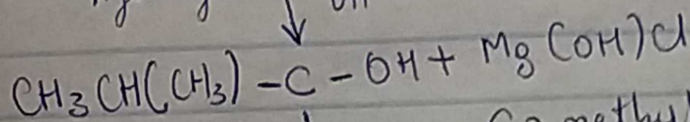
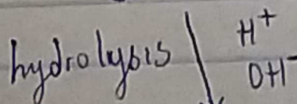
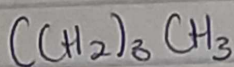
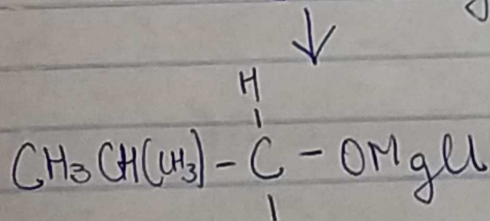
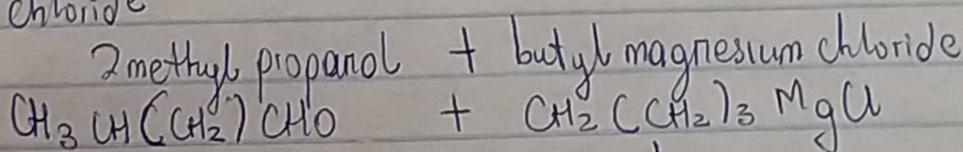


Step 3: The glucose at constant temperature of  $15^\circ C$  is then converted into alcohol by enzyme zymase contained also in yeast.

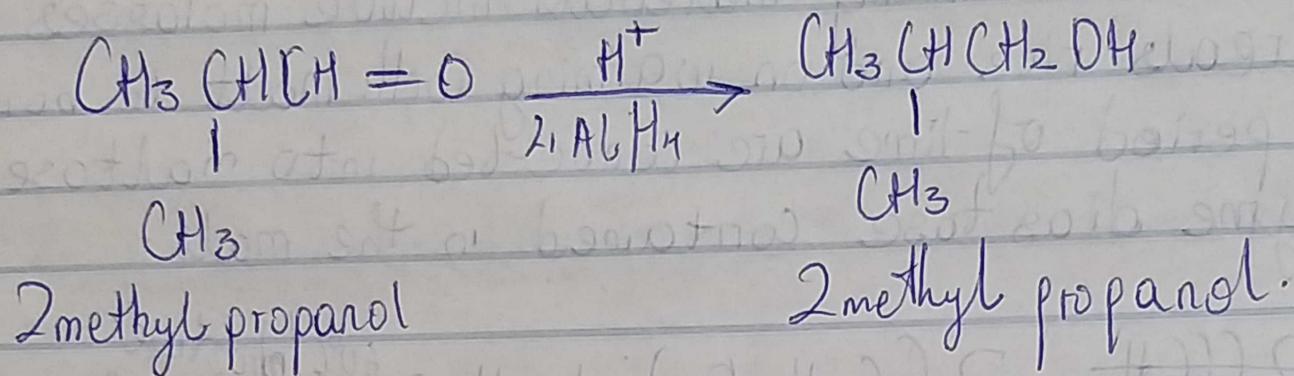
Equation 3:



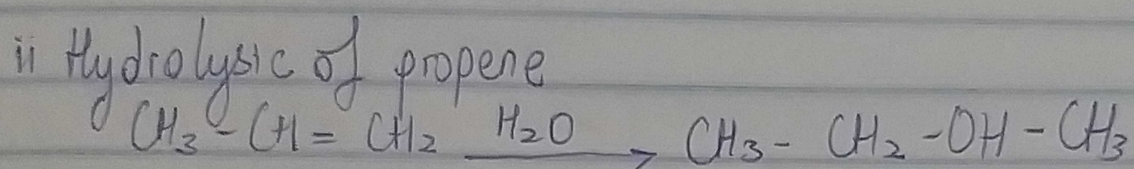
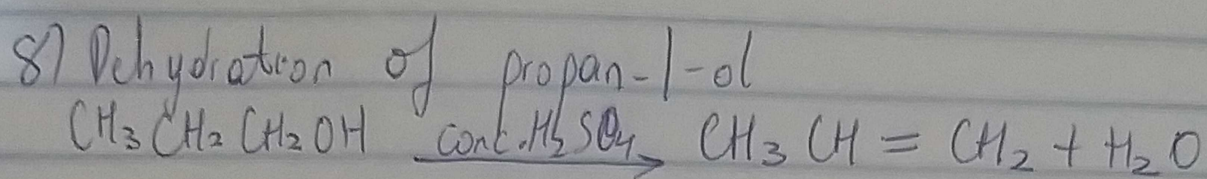
4) Reaction between 2-methyl propanol and butylmagnesium chloride



7) Reduction of 2-methyl propanal



Note: Question 5 & 6 was asked to be skipped.



Propene is hydrolyzed to propan-2-ol in accordance with Markownikoff's addition which states that in an unsymmetrical reagent the negative part of the reagent gets attached itself to the carbon atom of the alkene which has less number of hydrogen atoms