



⇒ Polyhydric alcohols have more than 3 hydroxyl groups  
 Eg.  $(\text{H}_2\text{C}(\text{OH}))_2(\text{CH}(\text{OH}))_2(\text{CH}_2(\text{OH}))_2(\text{CH}_2(\text{OH}))_2(\text{CH}_2(\text{OH}))_2$   
 Heptane-2,3,4,5,6 pentol.

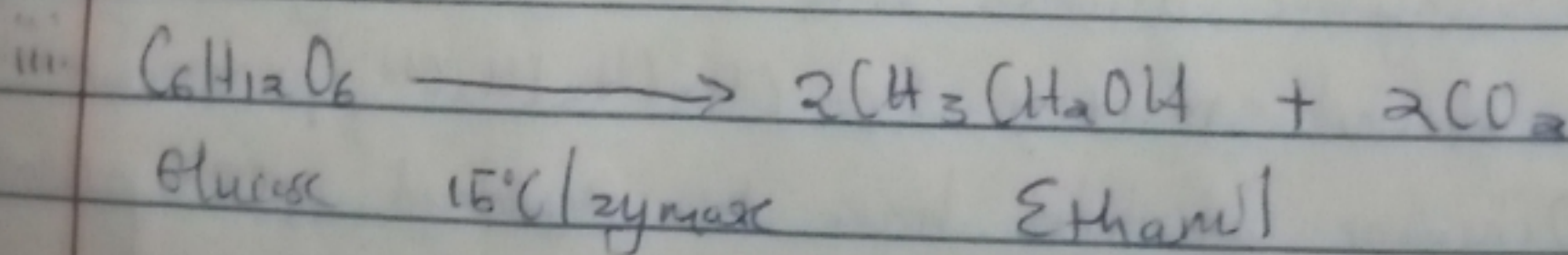
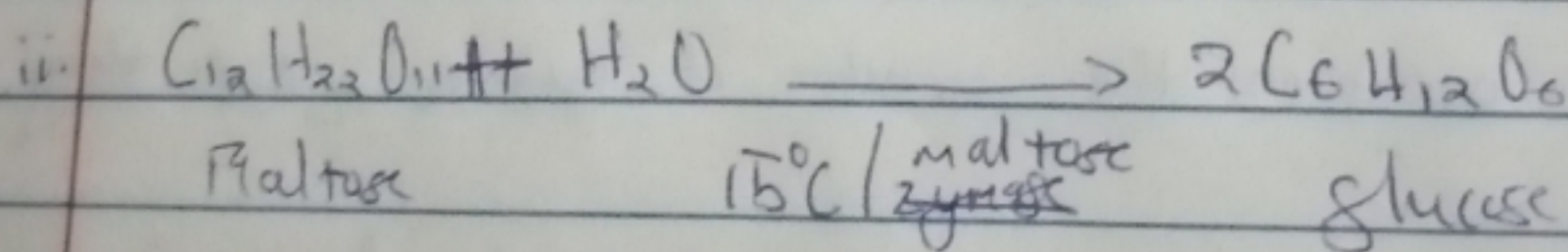
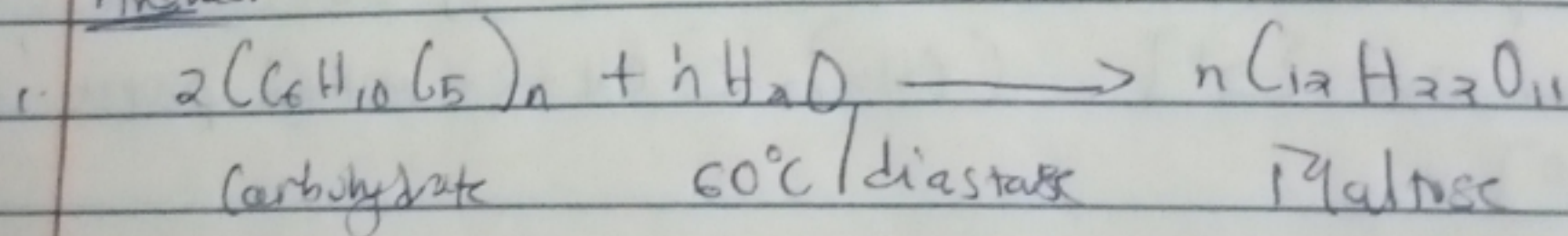
2. Discuss the solubility of alcohols in water, organic solvents.

Answer:

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

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

Answer:



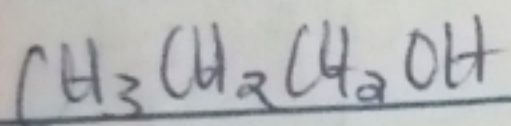
4. Show the reaction between 2-methylpropanal and butylmagnesium chloride.

Answer:

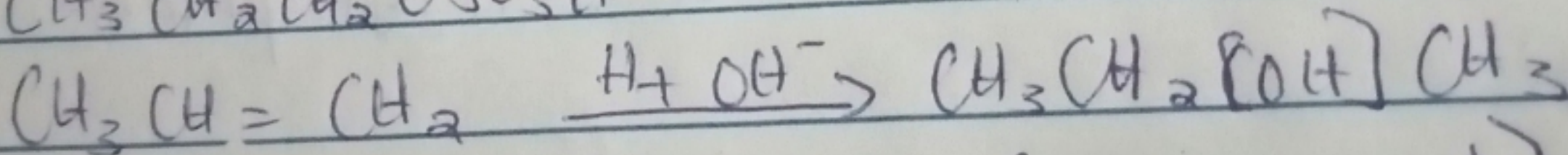
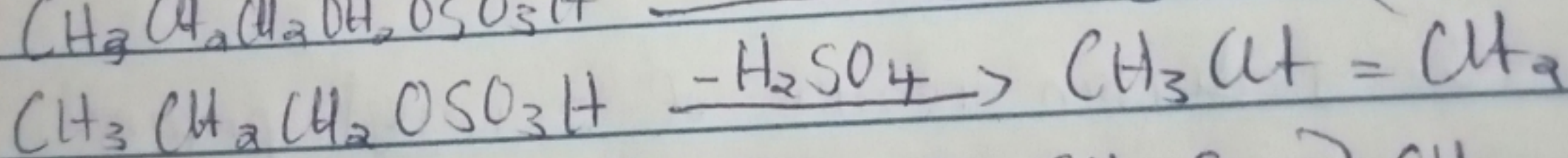
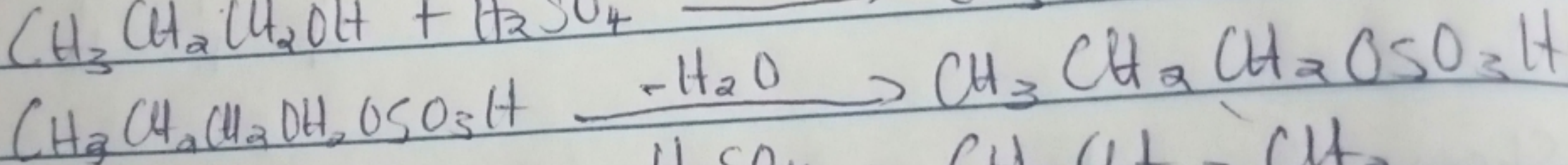
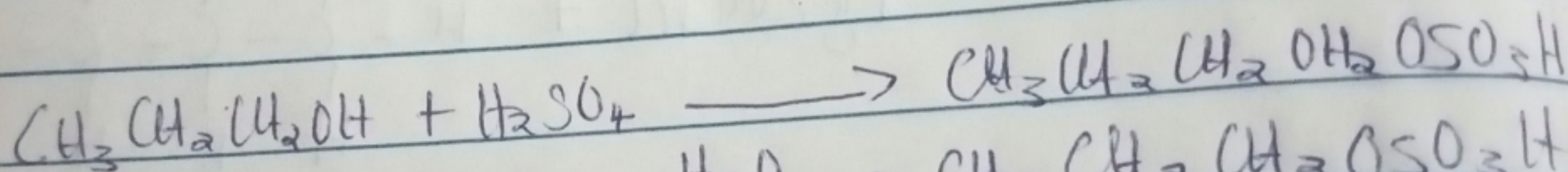
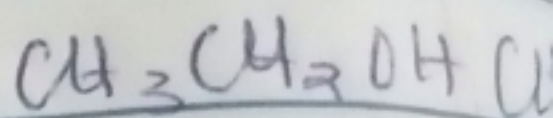
8 Propose a scheme for the conversion of propan-1-ol to propan-2-ol.

Answer:

Propan-1-ol



Propan-2-ol



[propan-2-ol]

Marks -

2 Number

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

Answer:

A. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two, it is called a primary alcohol [ $1^\circ$ ]. If it is one hydrogen atom, it is called secondary alcohol [ $2^\circ$ ] and if no hydrogen atom is attached to the carbon atom bearing the hydroxyl group, it is called a tertiary alcohol [ $3^\circ$ ].

Examples are:  $\text{CH}_3\text{CH}_2\text{OH}$  [Ethanol [ $1^\circ$ ]],  $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$  Propan-2-ol [ $2^\circ$ ],  $(\text{CH}_3)_3\text{C}-\text{OH}$  - 2-methyl propan-2-ol [ $3^\circ$ ]

B This is based on the number of hydroxyl groups they possess

$\Rightarrow$  Monohydric alcohols have one hydroxyl group present in the alcohol structure. E.g.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  propan-1-ol [monohydric alcohol]

$\Rightarrow$  Dihydric alcohols have two hydroxyl groups present in the alcohol structure. E.g.  $\text{HOCH}_2\text{CH}_2\text{OH}$  Ethane-1,2-diol [dihydric alcohol]

$\Rightarrow$  Trihydric Alcohols have three hydroxyl groups present in the alcohol structures. E.g.  $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$  propan-1,2,3-triol [Trihydric alcohol]