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Department : MLS

Course : CHEM 102

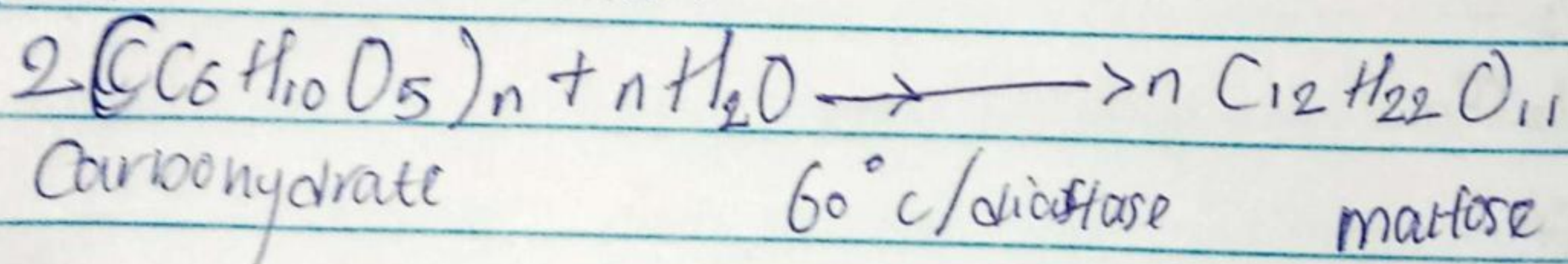
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(2) Solubility of alcohols

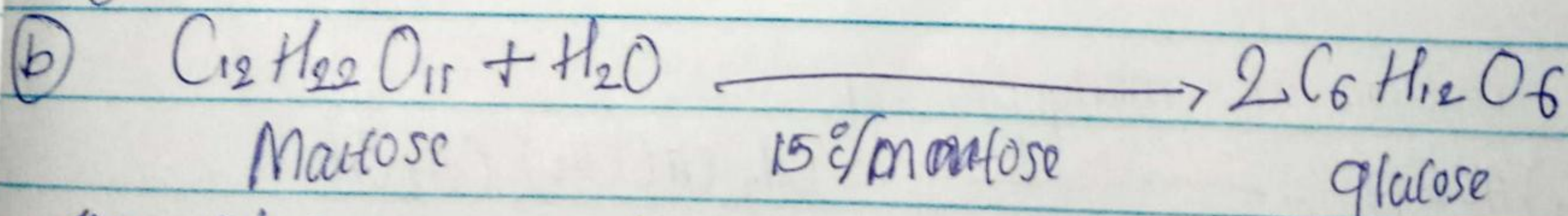
Lower alcohols with up to three carbon atoms in the molecules are soluble in water because these lower alcohols can form hydrogen bonds with water molecules. The water solubility of alcohols decrease with increasing relative molecular mass. All monohydric alcohols are suitable in organic solvents. The solubilities of simple alcohols and polyhydric alcohol is largely due to their ability to form hydrogen bonds with water molecules.

(3) Industrial Production of Alcohols

(a) Starch containing materials includes molasses, potatoes, cereals, etc. On warming with malt to 60°C for specific period of time are converted into maltose by the enzyme diastase contained in the malt.



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

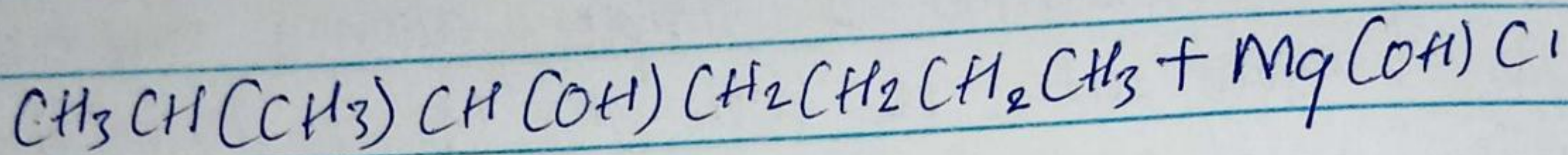
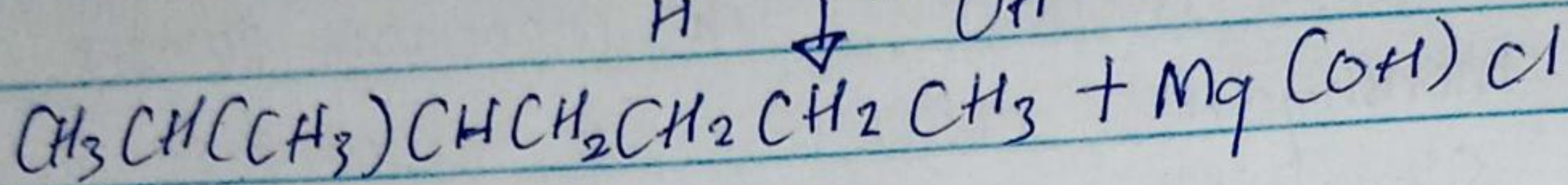
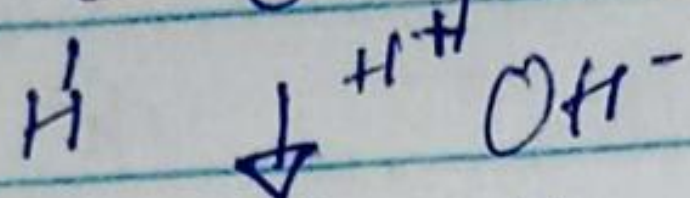
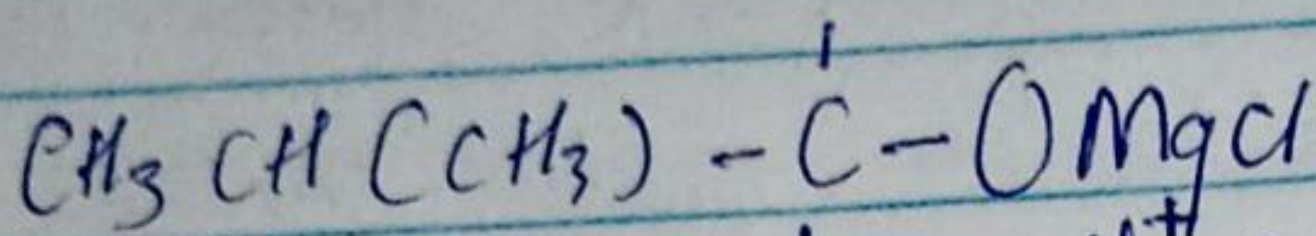
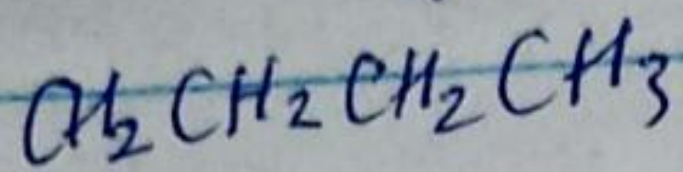
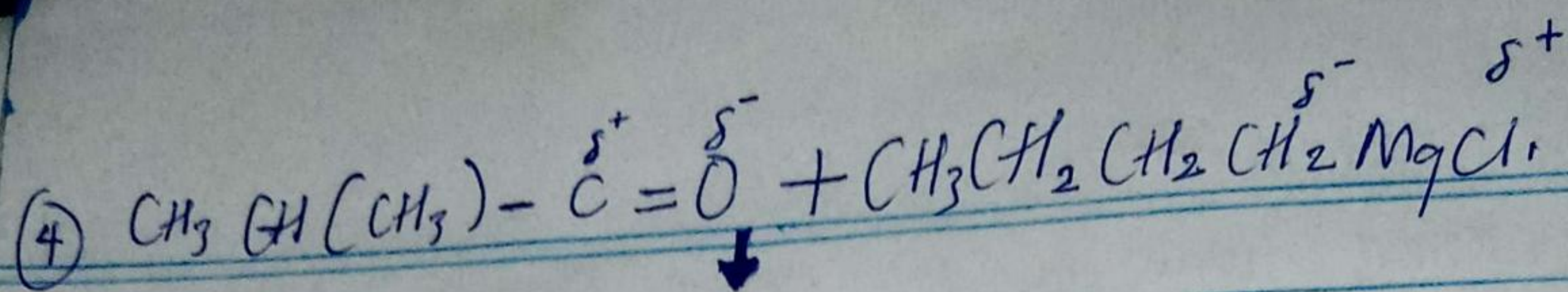


The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme zymase contained also in yeast.

(1) Classification of Alcohols

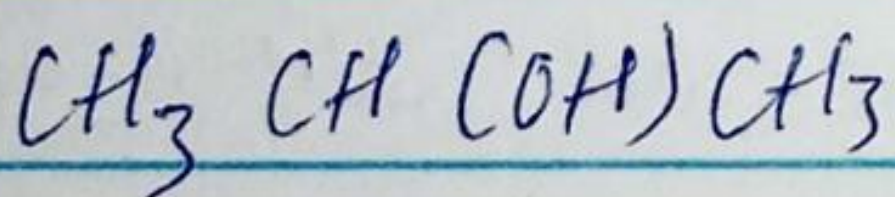
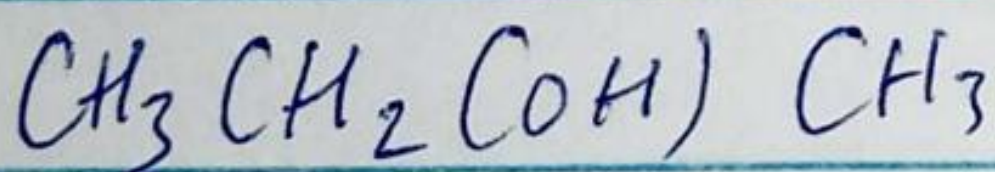
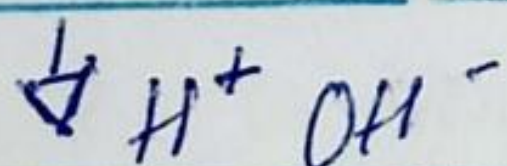
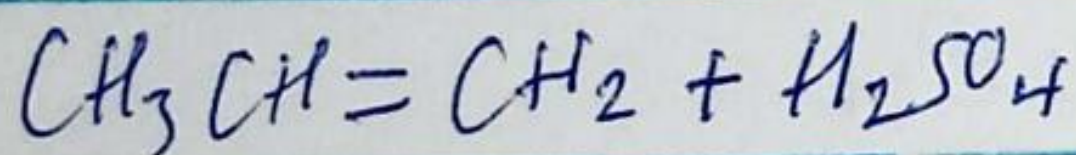
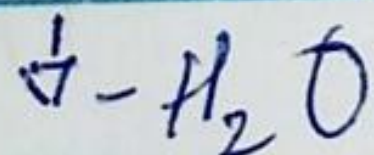
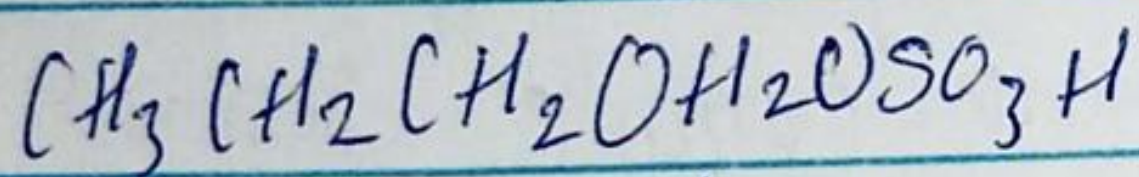
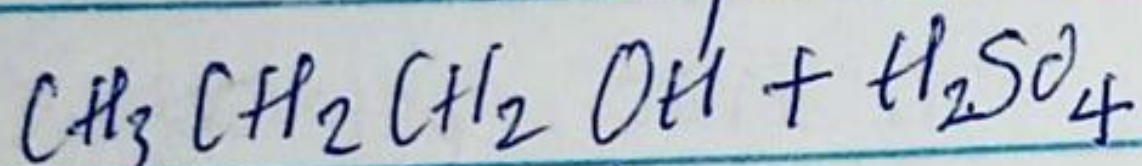
(a) Classification based on the no of Hydrogen Atoms attached to the Carbon Atoms containing the Hydroxyl Group; If the number of hydrogen atoms attached to the Carbon atom are ~~one or two~~, three or two, it is called a primary alcohol, if it is one hydrogen atom it is called Secondary alcohol, if no hydrogen atom is attached, it is called a Tertiary alcohol. Examples; $\text{CH}_3-\text{CH}_2-\text{OH}$, $\text{CH}_3-\overset{\text{OH}}{\text{CH}}-\text{CH}_3$, $\text{CH}_3-\overset{\text{OH}}{\underset{\text{CH}_3}{\text{C}}}-\text{CH}_3$

(b) Classification based on the no of hydroxyl groups they possess: Monohydric alcohols have one hydroxyl group present in their alcohol structure. Dihydric alcohols are also called Glycols and have two hydroxyl groups present in the alcohol structure while trihydric alcohols or triols have three hydroxyl group present in structure of the alcohol. Polyhydric alcohol or Polyols have more than three hydroxyl groups. Example; $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ Propanol (Monohydric alcohol)
 $\text{HOCH}_2\text{CH}_2\text{OH}$
 $\text{OHCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$



2-methyl heptan-3-ol.

(8) Conversion of Propan-1-ol to Propan-2-ol



Propan-2-ol

(9) Reduction reaction of methyl propanal

