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DEPT: ~~MBA~~ MBBS

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- Classification of alcohols based on number of ^{hydrogen atoms}
- 1) Primary alcohols - They have two or three hydrogen atoms attached to the carbon carrying the hydroxyl group e.g. CH_3OH (methanol)
 - 2) Secondary alcohol - They have only one hydrogen atom attached to the carbon carrying the hydroxyl group e.g. $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$.
 - 3) Tertiary alcohol - They have no hydrogen atom attached to the carbon bearing the hydroxyl group e.g. $(\text{CH}_3)_3\text{C}-\text{OH}$.

These ones are based on number of hydrogen atom attached to the carbon atom containing hydroxyl group.

Classification based on hydroxyl groups present the alcohol possesses

- Monohydric alcohol - They have one hydroxyl group present in their alcohol structure e.g. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- Dihydric alcohols - They have two hydroxyl groups present in their alcohol structure e.g. $\text{HOCH}_2\text{CH}_2\text{OH}$.
- Trihydric alcohols - They have three hydroxyl groups present in their alcohol structure e.g. $\text{OHCH}_2\text{CH}_2\text{C}(\text{OH})(\text{CH}_2\text{OH})$.
- Polyhydric alcohols - They have more than three hydroxyl groups in their alcohol structure e.g. $\text{CH}_3\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}_3$.

2) Solubility of Alcohols

Lower alcohols with up to three carbon atoms in their molecules are soluble in water because they can form hydrogen bond with water molecules. The water solubility decreases with increasing relative molecular mass. All monohydric alcohols are soluble in organic solvents.

3) Industrial manufacture of ethanol

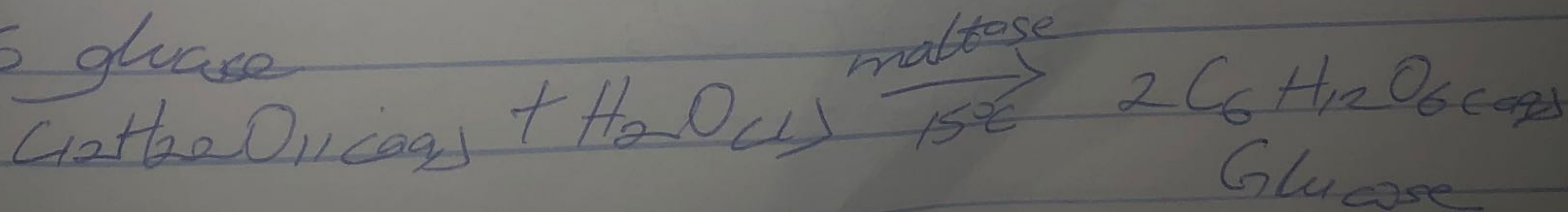
a) Extraction of the starch - The potato is crushed and steamed at 1400°C to 1500°C under pressure to prepare starch solution known as mash. Before hydrolysis, starch undergoes germination at 100°C to 130°C for a few days. The germinated starch is called malt.

b) Hydrolysis of Starch - Starch is hydrolysed to maltose, by an enzyme known as diastase.

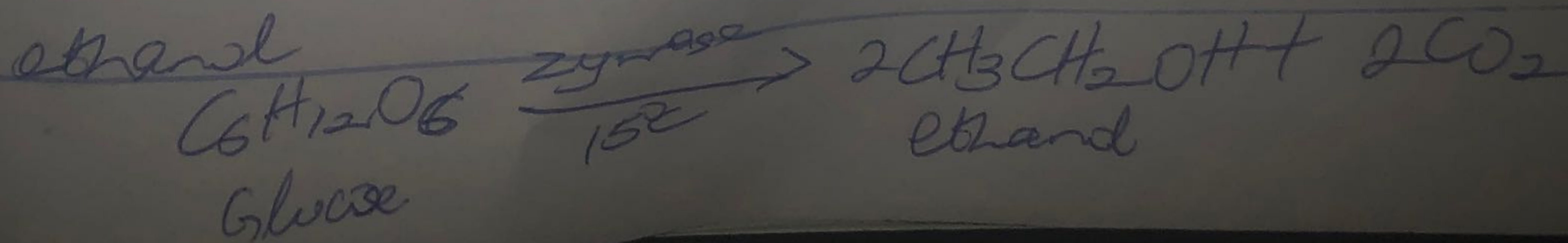
$$2(\text{C}_6\text{H}_{10}\text{O}_5)_n + n\text{H}_2\text{O} \xrightarrow[50^{\circ}\text{C}-60^{\circ}\text{C}]{\text{Diastase}} n(\text{C}_{12}\text{H}_{22}\text{O}_{11})$$

maltose.

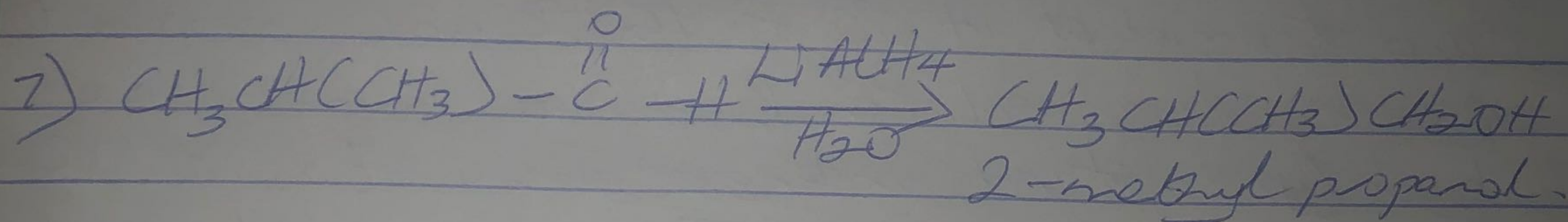
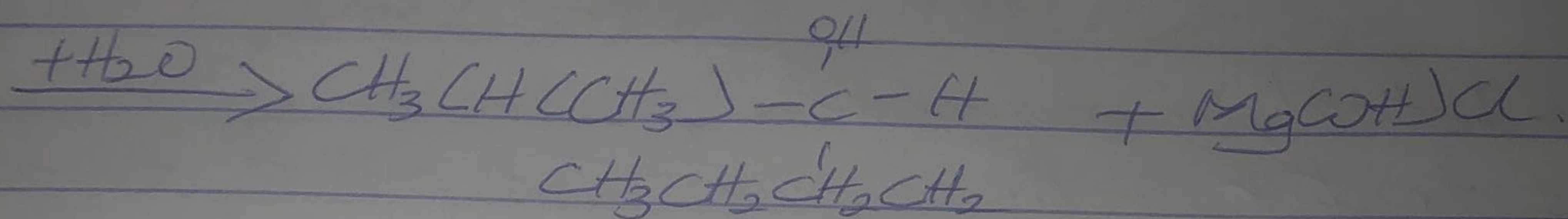
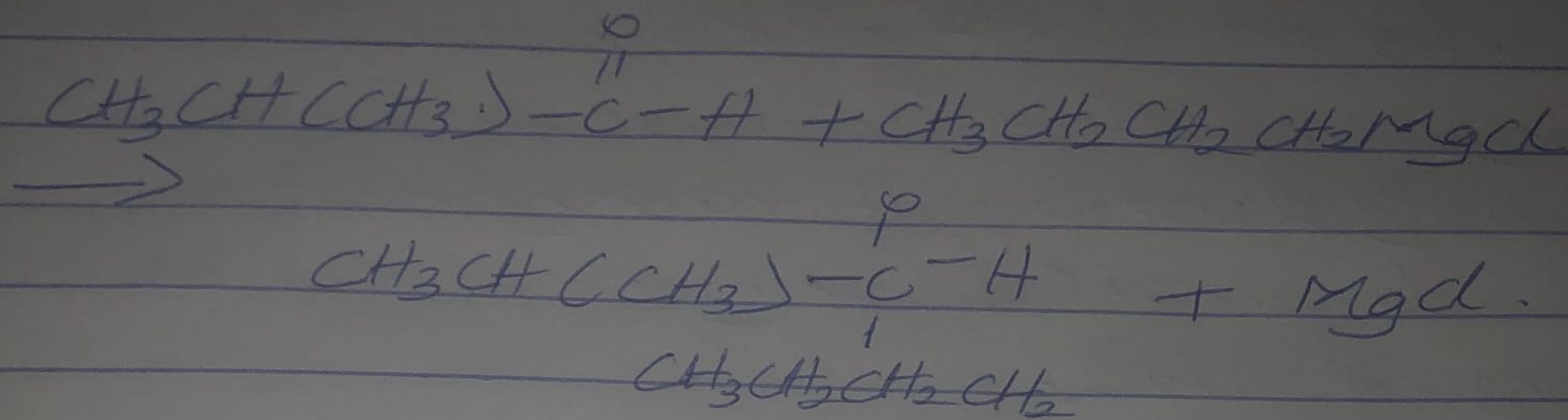
c) Yeast is then added at room temperature. The yeast contains two enzymes which convert maltose to glucose



At constant temperature, glucose is converted to



4) Reaction between 2-methylpropanal and butylmagnesium chloride



Propan-1-ol to Propan-2-ol.

