

TADESE VICTOR ADEDAMOLA

ELECT/ELECT ENGINEERING

19/ENG04/055

CHM 102 ASSIGNMENT

(i) Alkanols can be classified according to the number of hydrogen atoms attached to the carbon atom containing the hydroxyl group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl group are three or two it is a primary alcohol (1°), if it is one it is a secondary alcohol (2°), if none are present, it is a tertiary alcohol (3°). Examples are

CH_3OH - Methanol - Primary alkanol

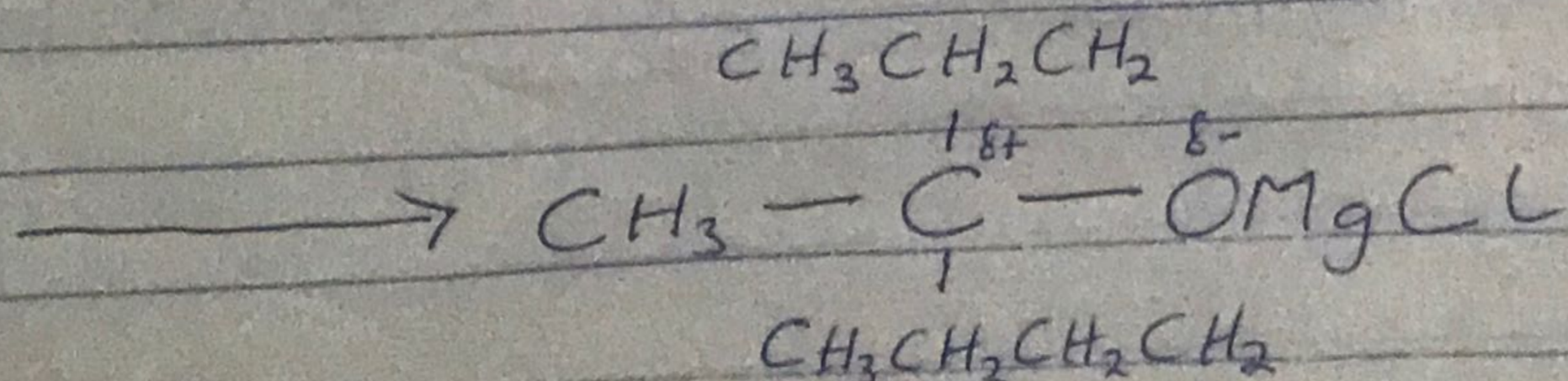
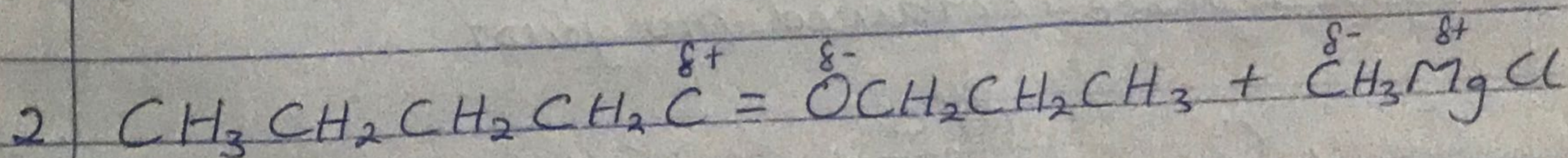
$\text{CH}_3\text{CH}_2\text{OH}$ - Ethanol - Secondary alkanol

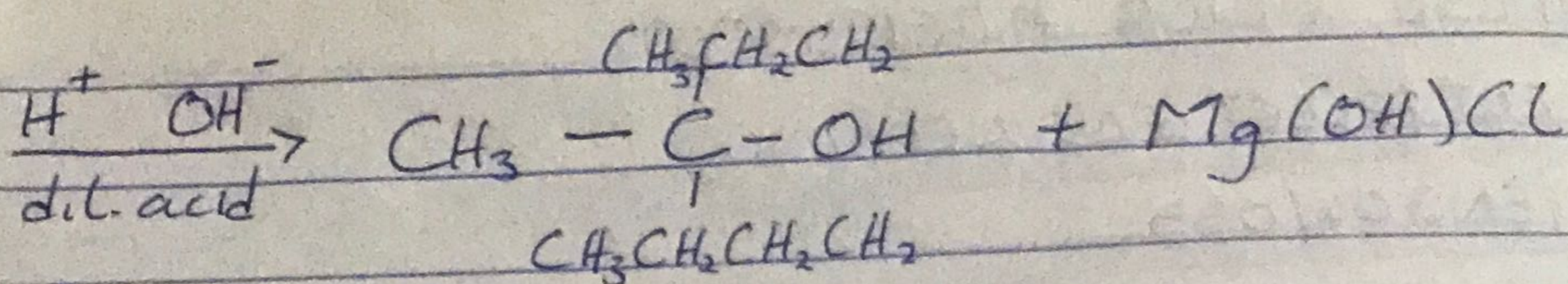
(ii) Alkanols can also be classified according to the number of hydroxyl groups they possess. Monohydric alcohols have one hydroxyl group present in the alcohol structure. Dihydric alcohols have two hydroxyl groups present and are also called glycols. Trihydric alcohols or triols have three hydroxyl groups present and polyhydric alcohols or polyols have more than three hydroxyl groups.

Examples are

$\text{C}_2\text{H}_5\text{OH}$ - Ethanol - Monohydric alcohol

$\text{HOCH}_2\text{CH}_2\text{OH}$ - Ethane-1,2-diol - Dihydric alcohol





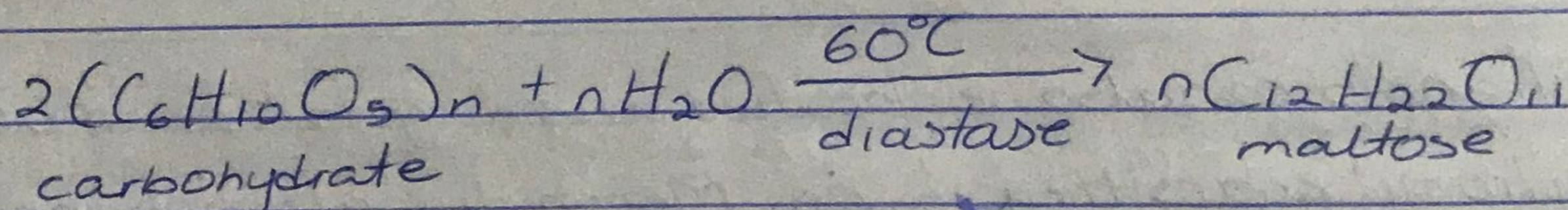
4-methyloctan-4-ol

where CH_3MgCl (Methylmagnesium chloride) is the named Grignard reagent

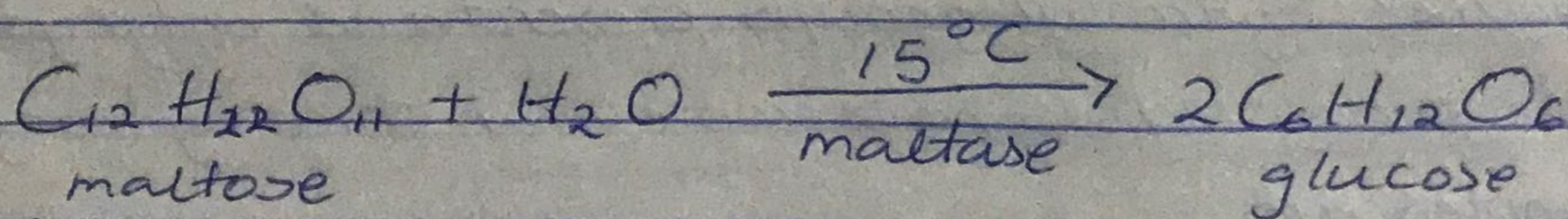
3) Industrial Manufacture of Ethanol

Ethanol can be industrially produced through the process of fermentation with a yield of 95%.

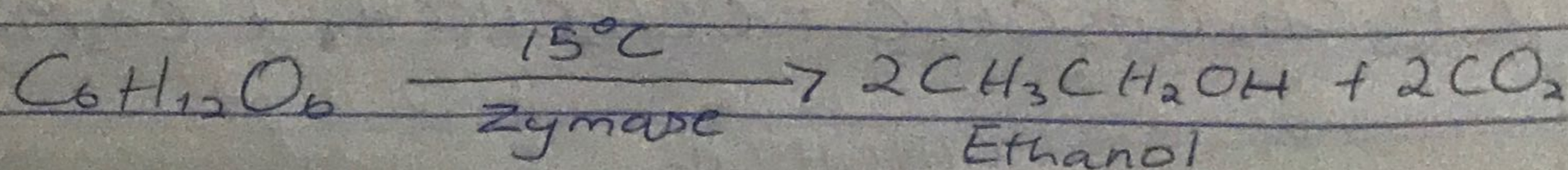
- (i) Starch containing materials are warmed with malt to 60°C for a specific period of time and are converted to maltose by the enzyme diastase contained in malt.



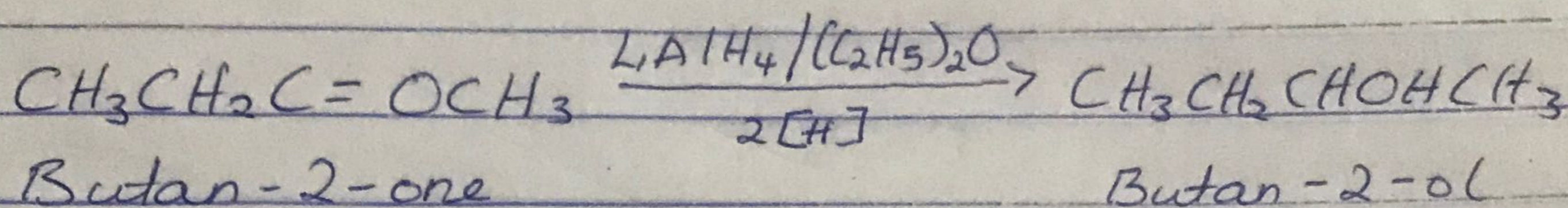
- (ii) The maltose is broken down into glucose on addition of yeast which contains enzyme maltase at 15°C



- (iii) The glucose at 15°C is converted into alcohol by enzyme Zymase contained into yeast



4 Reduction of Alkanone gives a Secondary Alcohol (2°)



(ii) Reduction of Alkanal gives primary alcohol (1°)

