

NAME: OKEKE CHIGIZIE VICTOR

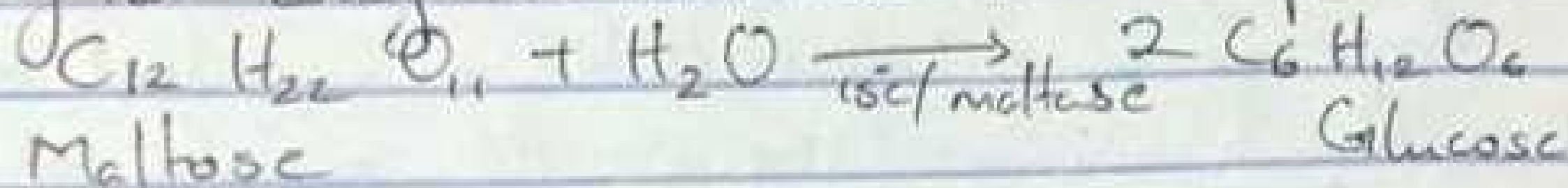
MATRIC NO: 191SCI14/013

DEPT: GEOLOGY

LEVEL: COOLVL

DATE: 04/04/2020

The maltose is further broken down into glucose by the enzyme maltase at a temperature of 15°C



The glucose is then converted into ethanol by the enzyme zymase (also contained in yeast) at temperature at 15°C



Glucose

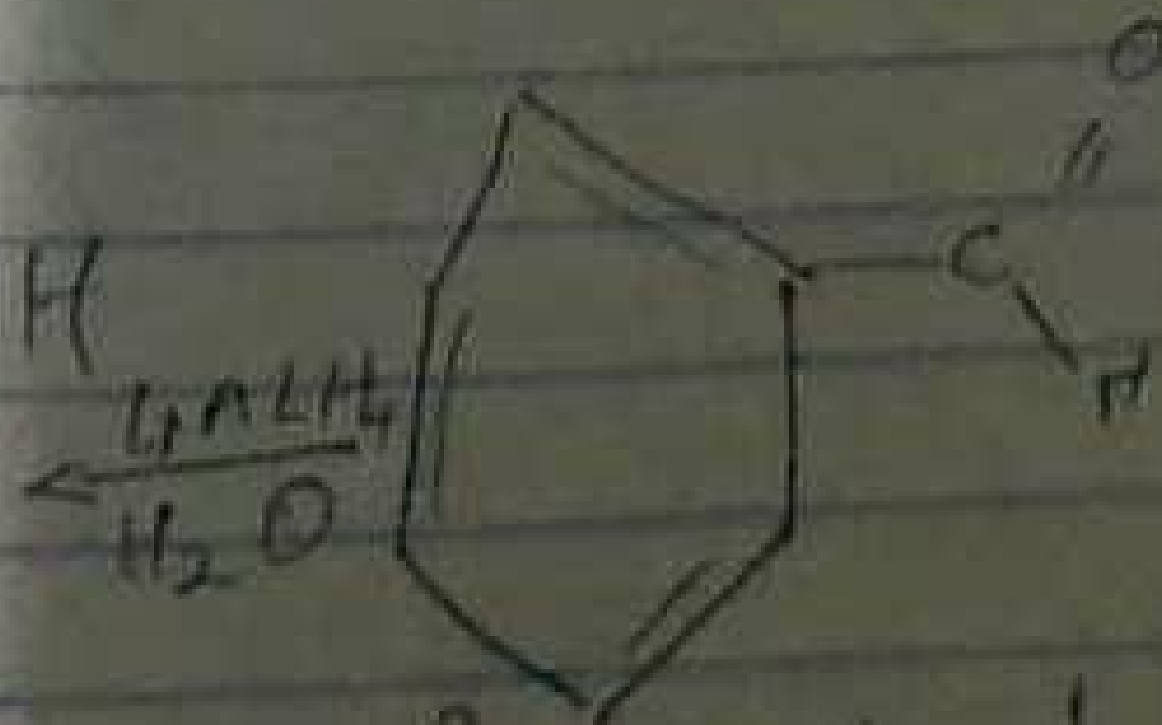
Ethanol

4 Reduction of Alkanol: Alkanol (Aldehyde) can be reduced to primary alcohols by reaction with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide or with complex metal hydride, such as lithium tetrahydridoaluminate (III) $[\text{LiAlH}_4]$ or sodium tetrahydridoborate (III) $[\text{NaBH}_4]$

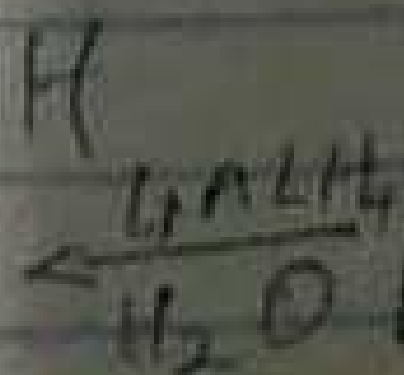
Example



Phenylmethanol



Benzaldehyde



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Two major classification of alcohols

Alcohols can be classified based on the number of hydrogen atoms which are attached to the carbon atom containing the hydroxyl group. If there are two or three hydrogen atoms attached to the carbon atom bearing the hydroxyl group, it is called a primary alcohol (1°). If there is one hydrogen atom, it is called secondary alcohol (2°). If no hydrogen atom is attached, it is called a tertiary alcohol (3°).

- $\text{CH}_3\text{CH}_2\text{OH}$ — Ethanol (1°)
- $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$

2. All

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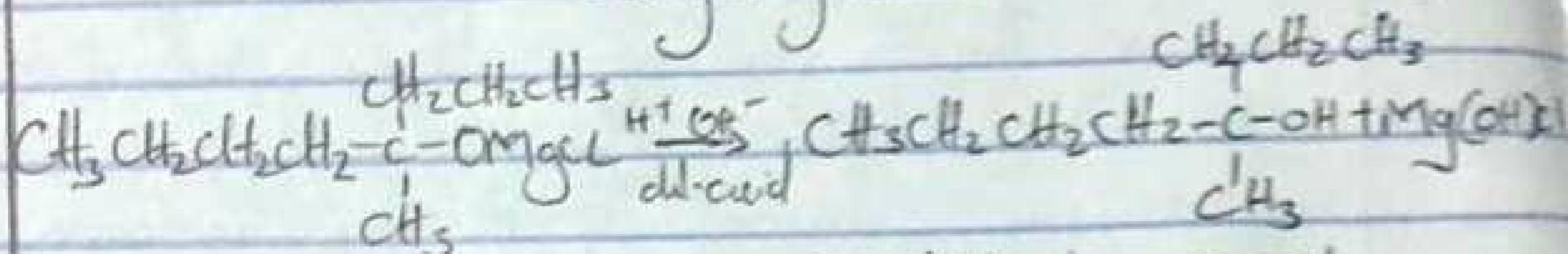
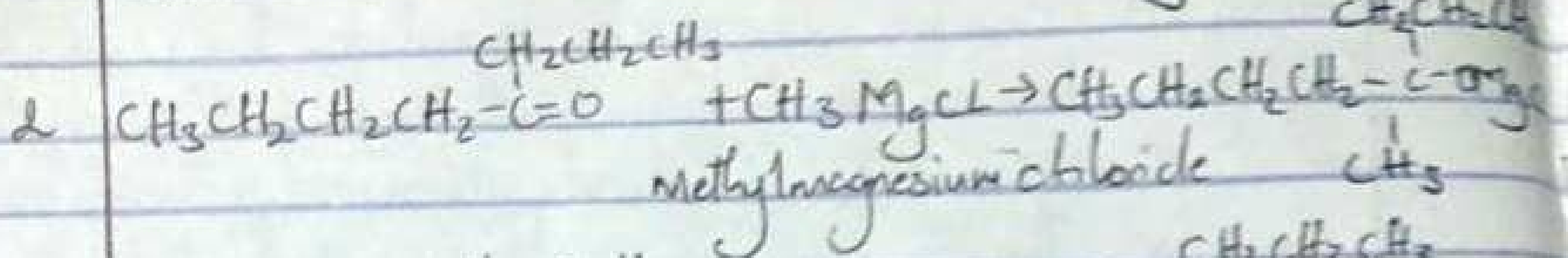
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Ethane-1,2-diol - $\text{HOCH}_2\text{CH}_2\text{OH}$ (Dihydric alcohol)

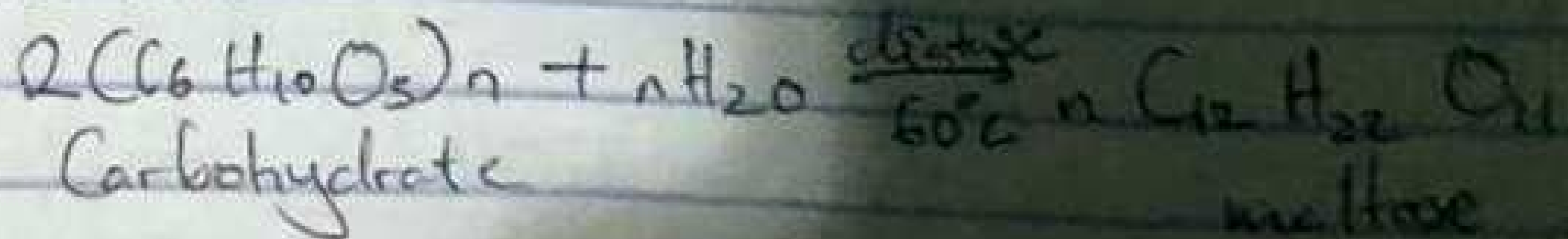


4-methyl octan-4-ol

- 3 Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

Fermentation is the biological process by which carbohydrates such as starch can be made to yield ethanol. The enzymes (biological catalysts) found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%.

The carbohydrate is warmed with malt at 60°C for a specific period of time to yield maltose by the enzyme diastase, which is contained in the malt.



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Reduction of Alkanones: Alkanone (ketone) are reduced to secondary alcohols by reaction with hydrogen in the presence of a platinum or nickel catalyst or with aluminium isopropoxide or with complex metal hydride such as lithium tetrahydridoaluminate (III) $[LiAlH_4]$ or sodium tetrahydridoborate (III) $[NaBH_4]$

Example

