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MHS

DENTISTRY

19/MHS09/026

CHEM 102

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

Ans:

Alcohols are have two major classifications:

a Classification based on the number of hydrogen atoms attached to the carbon atoms of the hydroxyl group. If two or three hydrogen atoms, it is called a primary alcohol (1°); if one hydrogen atom, it is called a secondary alcohol (2°) and if there are no hydrogen atoms, it is called a tertiary alcohol. e.g. $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$ Propan-2-ol (2°)

b Classification based on the number of hydroxyl groups they possess. If one hydroxyl group is present, they are called monohydric alcohols; if two hydroxyl groups are present, they are called Dihydric alcohols (Glycols); if three hydroxyl groups are present; they are called trihydric alcohols (Triols); and if more than three hydroxyl groups are present, it is called a Polyhydric alcohol. e.g. $\text{HOCH}_2\text{CH}_2\text{OH}$ Ethane-1,2-diol

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

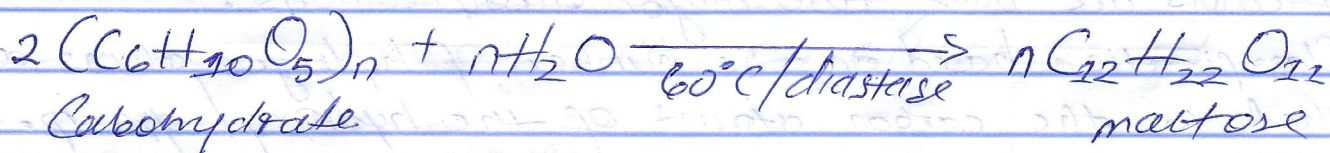
Ans:

The water solubility of alcohols decrease with increase in relative molecular mass. Hence, lower alcohols with up to three carbon atoms are soluble in water because these lower alcohols can form hydro-

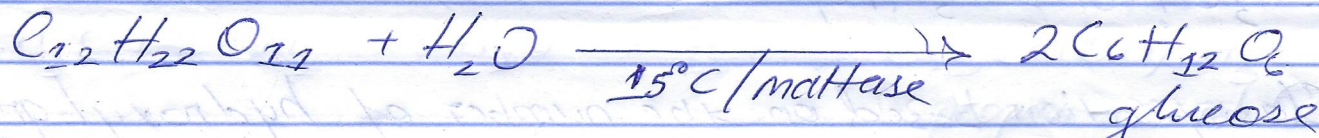
3 Show the three steps in the industrial manufacture of ethanol. Equations of reaction are mandatory.

Ans:

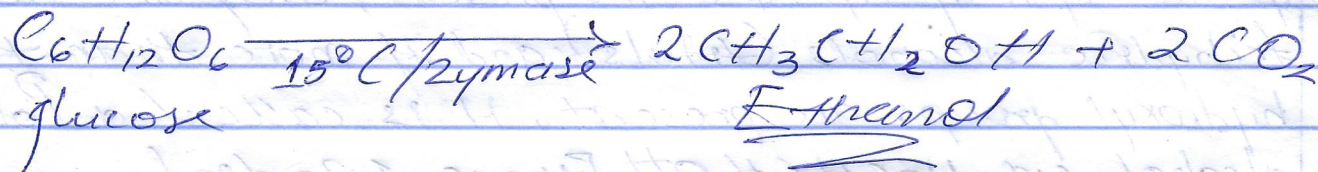
Firstly, carbohydrates such as starch containing materials on warming for a specific period of time with malt to 60°C are converted into maltose by the enzyme diastase contained in malt.



Then, glucose is formed on the addition of yeast which contains the enzyme maltase to the maltose, at a temperature of 15°C

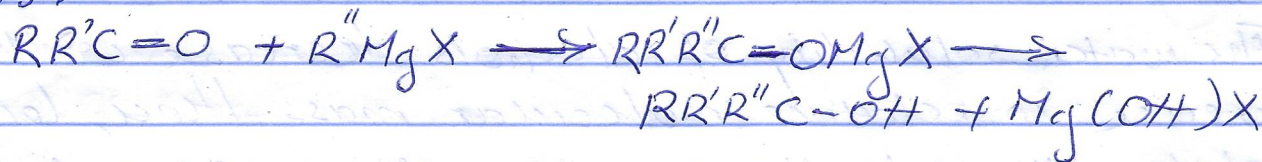


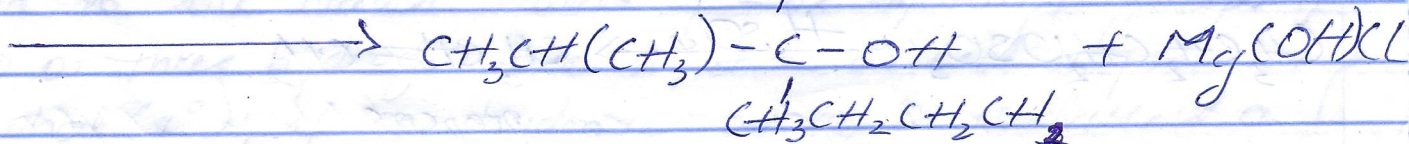
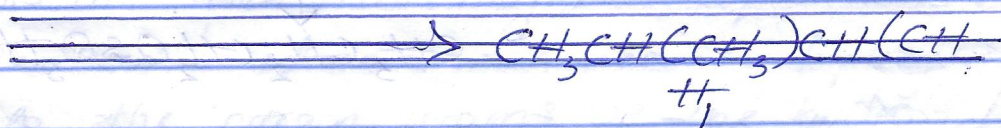
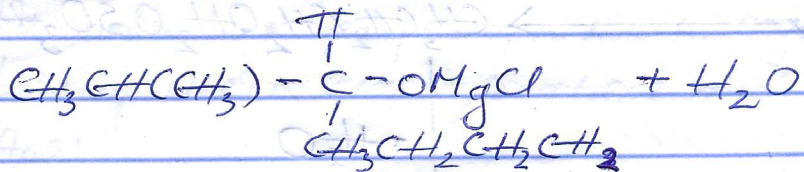
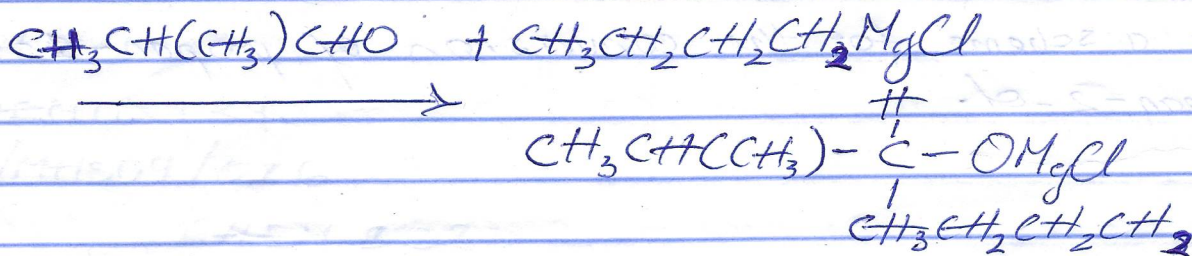
Finally, at a constant temperature of 15°C , glucose is converted into alcohol by the enzyme zymase present also in yeast.



4 Show the reaction between 2-methylpropanal and butylmagnesium chloride that is Grignard synthesis.

Ans:





2

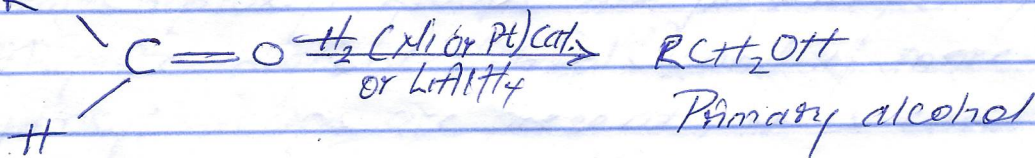
5 Incorrect question

6 Incorrect question

7 Show the reduction reaction of 2 methyl propanal

Ans 1

R



H

2 methyl propanal



2 methyl propanol (1°)

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

Ans!

