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DEPARTMENT :- NURSING

MATRIC NO :- RUMHS021004

COLLEGE :- MHS

Assignment

1) Discuss the two major classification of alkanols. Give two examples for each class

(i) Alkanols are classified based on the number of hydrogen atom attached to the carbon atom having the hydroxyl group. For instance if there are either two or three hydrogen atoms then it is called a primary alkanol, if it is just one hydrogen atom then it is called a secondary alkanol but if it doesn't have any hydrogen atom then it is called a tertiary alkanol.

Examples

Primary alkanols - ethanol $[\text{CH}_3\text{CH}_2\text{OH}]$ 1°

Secondary alkanols - propan-2-ol $[\text{CH}_3\text{CH}(\text{OH})\text{CH}_3]$ 2°

Tertiary alkanols - methyl propan-2-ol $[(\text{CH}_3)_3\text{COH}]$

(ii) Based on the number of hydroxyl groups they possess. Alkanols can also be classified based on the number of hydroxyl groups it contains. For instance alcohols that has only one hydroxyl group are called monohydric alcohols, then those alcohols that possess two hydroxyl groups are called dihydric alcohols and those that have three hydroxyl groups present in the structure of the alcohol. Dihydric alcohols are ^{also} called glycols.

Examples

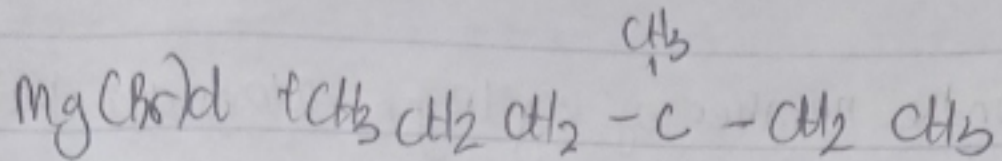
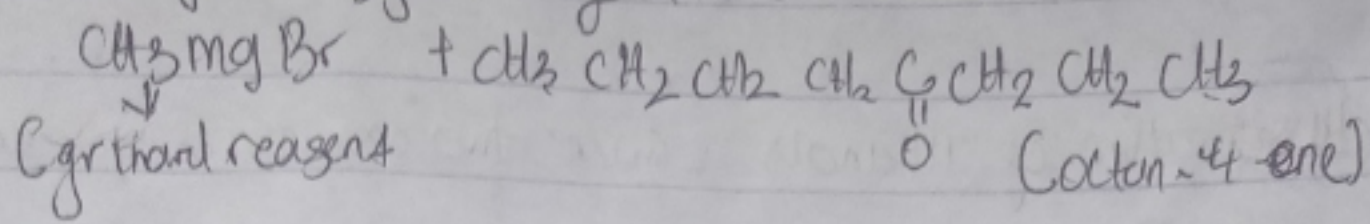
monohydric alcohols - $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$ (Butanol)

Dihydric alcohols - $\text{CH}_3\text{CHOHCH}_2\text{CH}_2\text{OH}$ [butane-1,3-diol]

Trihydric alcohols - $\text{CH}_2\text{OHCH}_2\text{CHOHCHOHCH}_3$ [petane-1,3,4-triol]

2 In the Grignard synthesis of alkanols, react a named Grignard reagent with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}(=\text{O})\text{CH}_2\text{CH}_2\text{CH}_3$ - show the reaction step

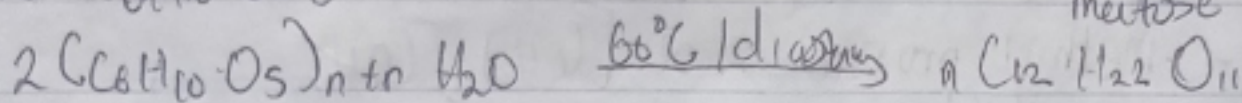
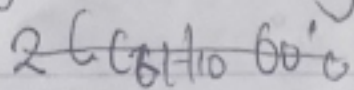
In the Grignard synthesis of alkanols



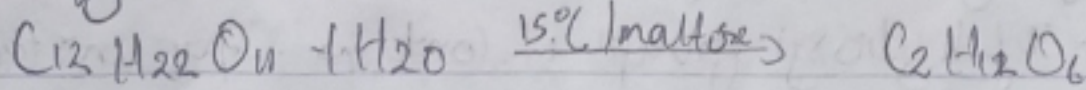
tert-butyl alcohol

3 Industrial manufacture of ethanol

carbohydrate is converted into maltose at the temperature at a temperature of 60°C and by the enzyme diastase

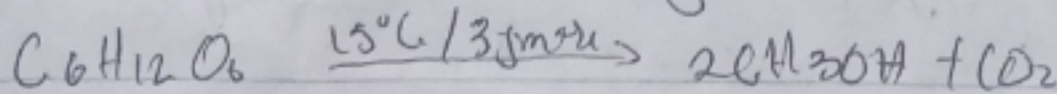


maltose is broken down into glucose on addition of yeast which contains the enzyme maltase at 15°C



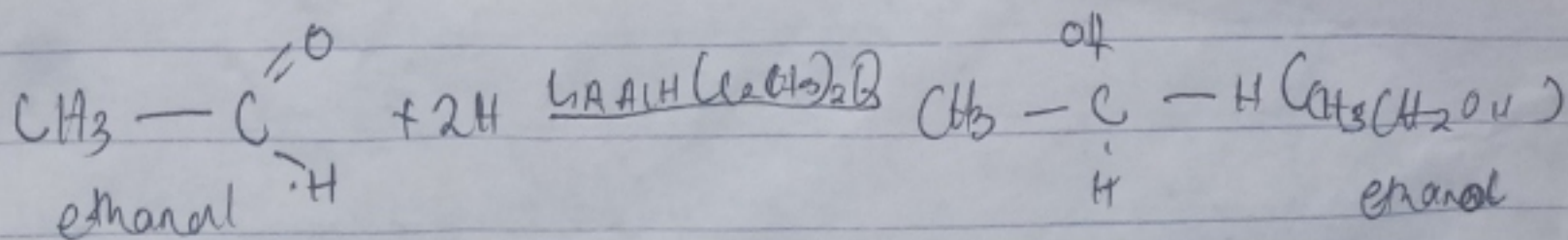
glucose

Glucose at constant temp 15°C is converted into alcohol with enzyme zymase contained in yeast



ethanol carbon dioxide

4 Determine the product obtained in the reduction of alkanone and alkanal use a specific example for each and show the equation of reaction.



the reduction of ketones and alkanol

This could also be done by using reduction agents as ~~lithium~~ lithium tetrahydridoaluminate (LiAlH₄) in ethoxyethane reacts to produce a secondary alcohol e.g. propanone to propan-2-ol.

