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Matric NO: 19/MHS01/029

Dept: MBBS Course: CHM102

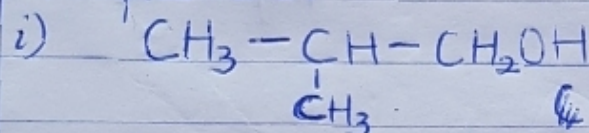
Date: 02-04-2020 Assignment

Q. Discuss the two major classification of Alkanols. Give 2 examples each for each class.
Solution

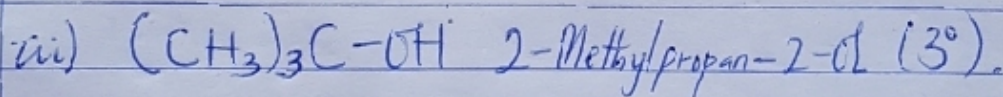
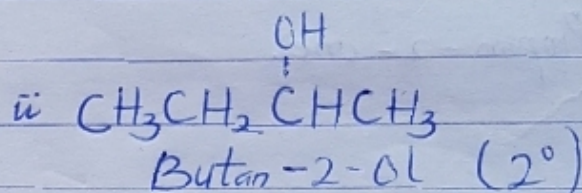
The two major classification of alkanols/alcohols are:

(A) Based on the number of hydrogen atoms attached to the carbon atom containing the hydroxyl (-OH) group. If the number of hydrogen atoms attached to the carbon atom bearing the hydroxyl (-OH) group are three or two, it's called primary (1°) alcohol. If it's one hydrogen atom, it is called secondary (2°) alcohol and if no hydrogen atom is attached to the carbon atom bearing the (-OH) group, it is called a tertiary (3°) alcohol.

Examples are:

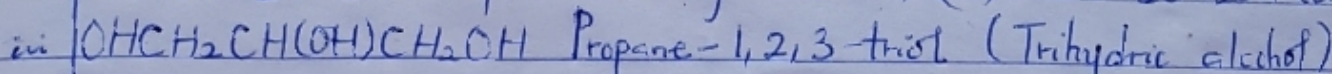
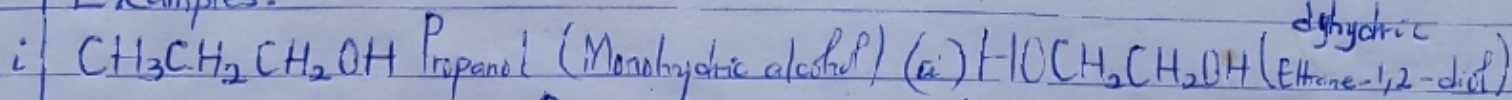


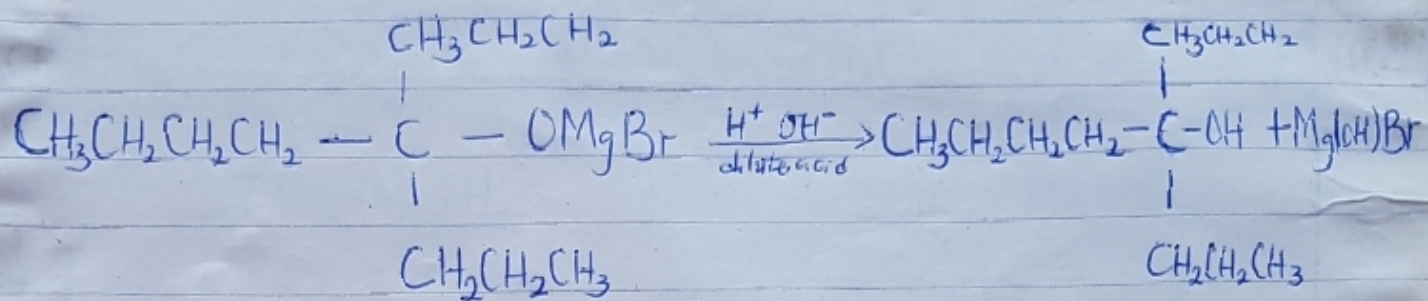
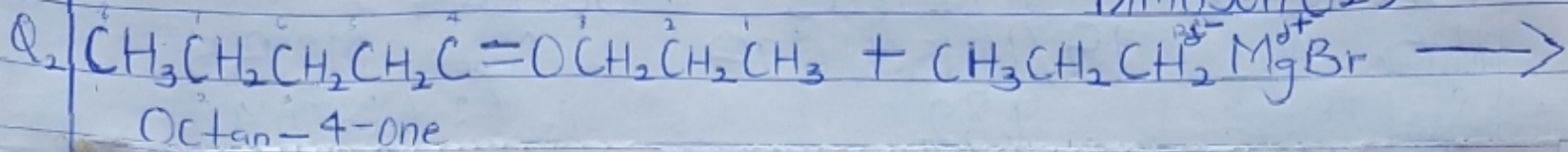
2-methylpropan-1-ol (1°)



B Based on the number of hydroxyl groups they possess. Monohydric, dihydric (also called glycols) and trihydric (triols) ^{alcohols} have one, two, ~~and~~ ^{three} hydroxyl group present in their alcohol structures respectively. Polyhydric alcohols/Polyols have more than three hydroxyl groups.

Examples:

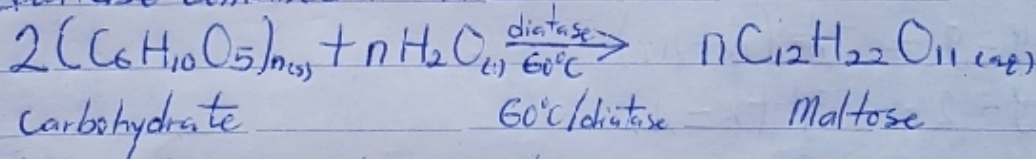




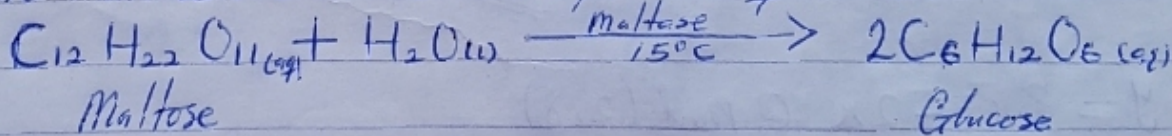
Q₃ ~~Disc~~ Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

Solution

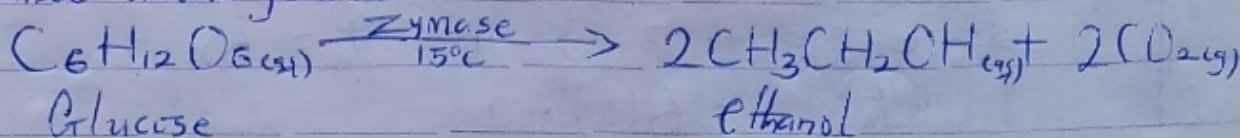
Carbohydrates such as potatoes, rice, maize etc. are major natural raw materials used in the preparation of ethanol in many industries. The starch granules are warmed with malt to 60°C for a specific period of time. They are then converted into maltose by the enzyme diastase contained in malt.



The Maltose is then broken down into glucose on addition of yeast which contains the enzyme maltase and at about temperature of 15°C.



The glucose at constant temperature of 15°C is then converted into alcohol by the enzyme Zymase contained also in yeast.

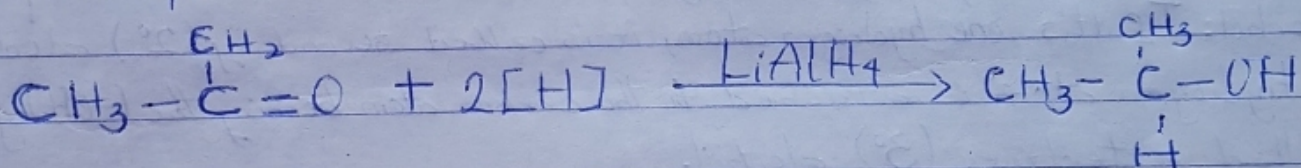
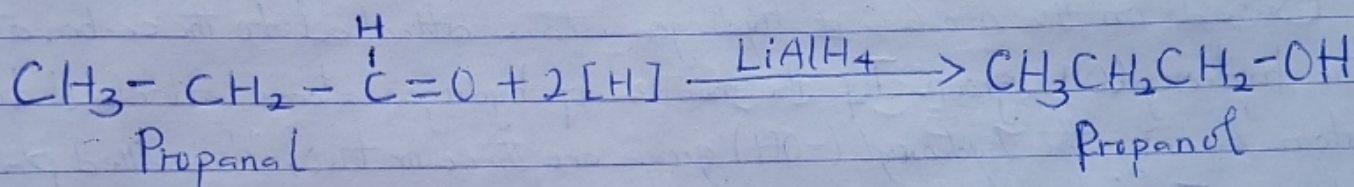


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Q4 Determine the product obtained in the reduction of Alkanone and Alkanal. Use a specific example for each and show the equation of reactions.

Solution

Alkanals are reduced to primary alkanols while alkanones are reduced to secondary alkanols by reaction with hydrogen in the presence of a platinum or nickel catalyst or with complex metal hydride, such as lithium tetrahydridoaluminate (I) (LiAlH_4) or sodium tetrahydridoborate (III) (NaBH_4).



Propan-2-one

Propan-2-ol