

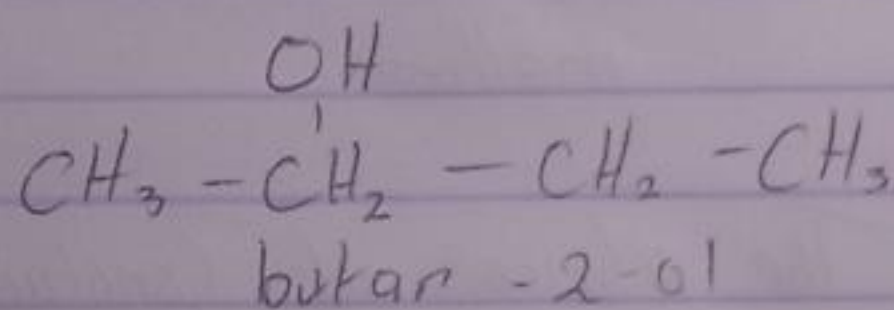
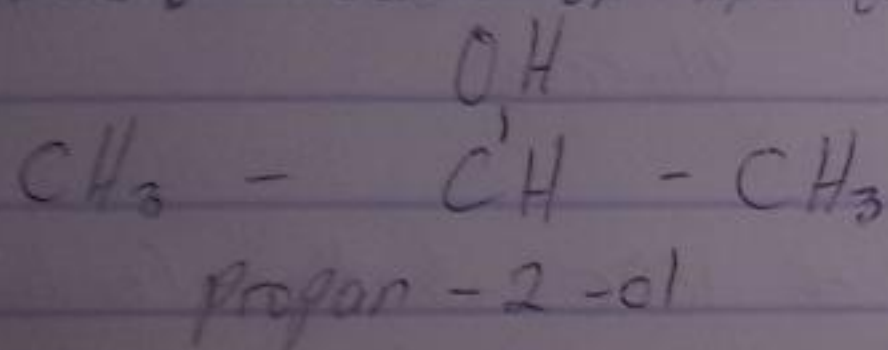
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 Department \Rightarrow Computer Engineering
 Mat. No \Rightarrow 19/ENLC102/061
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① Discuss the two major classification of Alkanols. Give two examples each for each class.

Answers

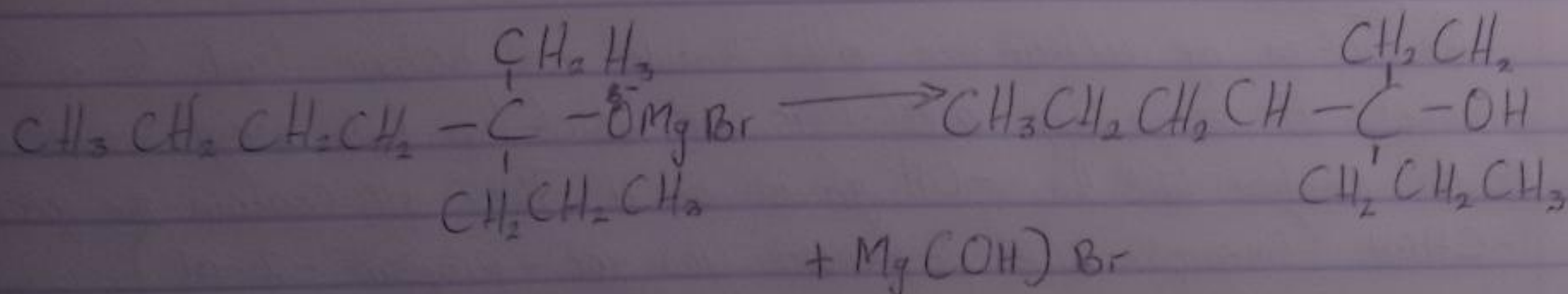
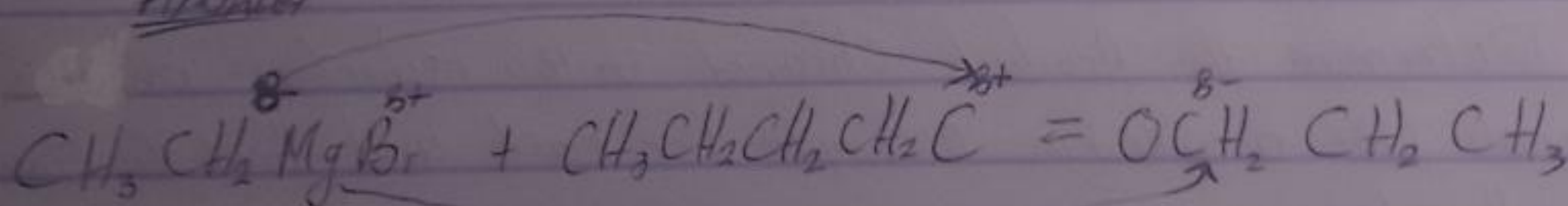
Primary alcohol is an alcohol which has the hydroxyl group connected to a primary carbon atom. It can also be defined as a molecule containing a CH_2OH group. Example of primary alcohol includes ethanol and butanol.

Secondary alcohol are those where the carbon atom of the hydroxyl group is attached to two alkyl groups on either side. The two alkyl groups present may be either structural identical or even different. Some of the examples are:



② In the Grignard Synthesis of Alkanols, react a named Grignard reagent with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$. Show the reaction steps

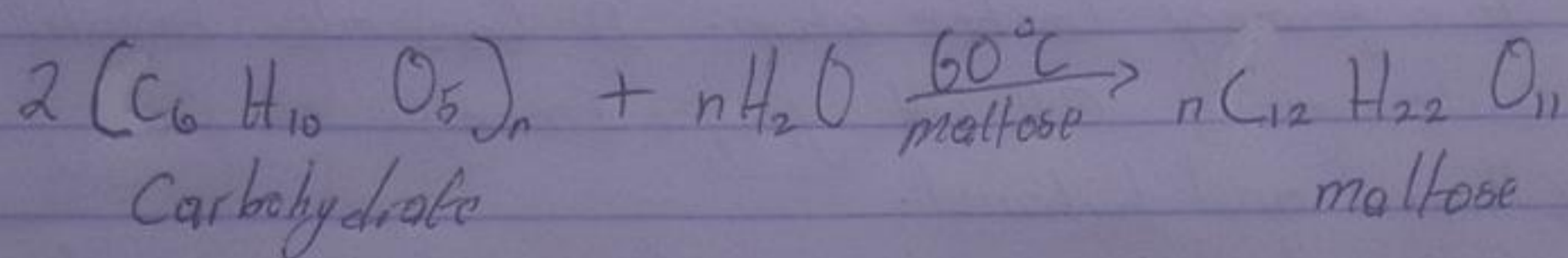
Answer



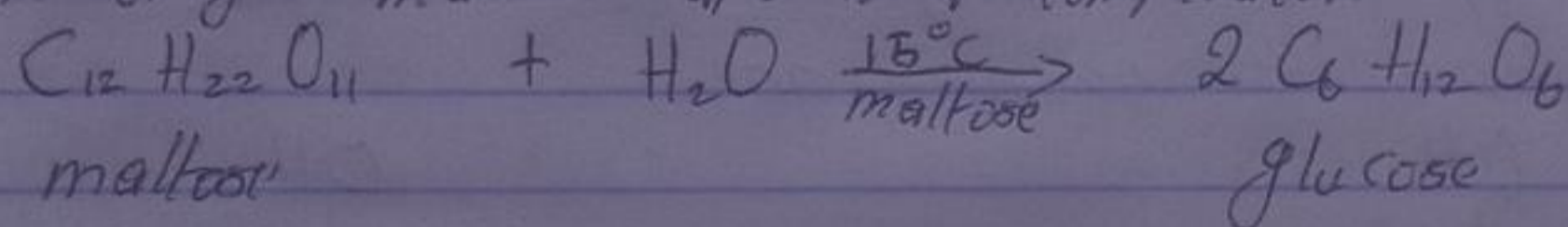
③ Discuss the industrial manufacture of ethanol showing all reaction equations and necessary enzymes and temperature of reaction.

Answer

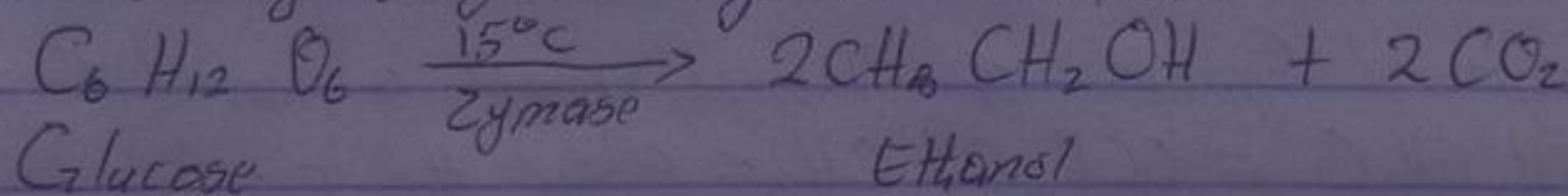
Carbohydrate such as starch are major group of natural compound that can be made to yield ethanol by biological process of fermentation. Enzymes found in yeast break down the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing materials like potatoes, molasses on warming with malt to 60°C for a specific period of time are converted into maltose by the enzymes diastase contained in the malt.



The maltose is broken down into glucose on addition of yeast which the enzyme maltase and at a temperature of 15°C



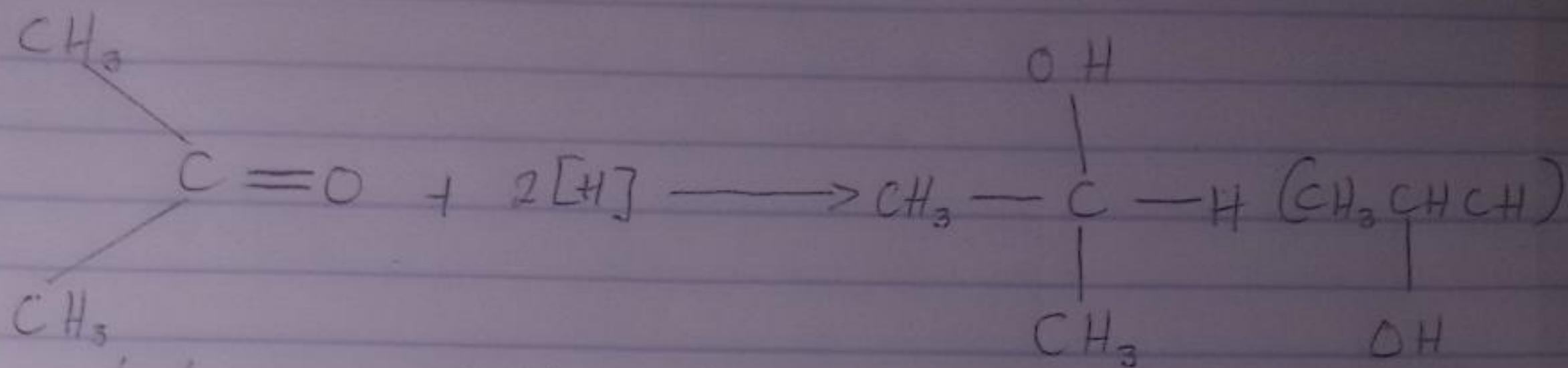
The glucose at constant temperature of 15°C is then converted into alcohol by enzyme zymase contained also in yeast.



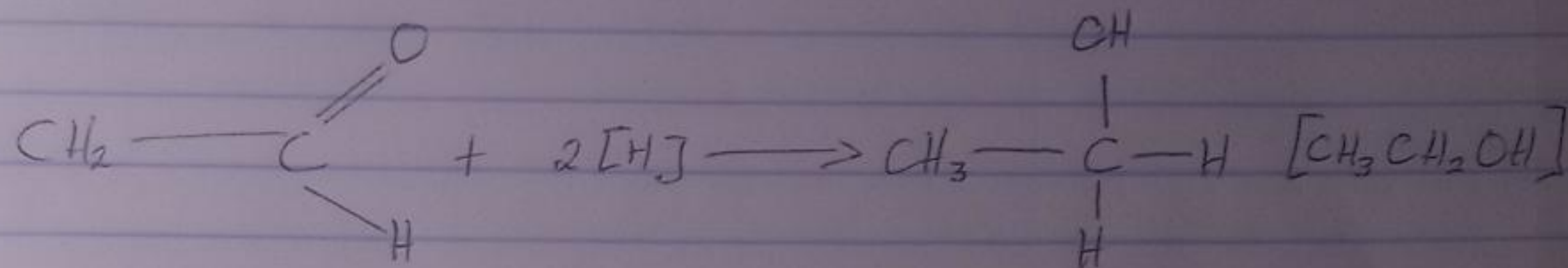
④ Determine the product obtained in the reduction of Alkanone and Alkanal. Use a specific example for each and show the equation of reaction.

Answer

Reduction of alkanone also known as ketone leads to a secondary alcohol. A secondary alcohol is one which has two alkyl groups attached to the carbon with the -OH group on it. They all contain the grouping -CHOH (example with propanone you get -propan-2-ol)



The reduction of an Aldehyde: for example with ethanol you get ethanol



The H in square bracket means "hydrogen from a reducing agent" in general form, reduction of an aldehyde leads to a primary alcohol. A primary alcohol is one which only has one alkyl group attached to the carbon with the -OH group on it. They all contain the grouping -CH₂OH.