material like potatoes, molasses on warming with malt to 60°C for a specific period of time are converted into maltose by the enzyme diatase contained in the malt

$$2(C_6H_{10}O_5)_n + nH_2O \xrightarrow{60^\circ C} nC_{12}H_{22}O_{11}$$

carbohydrate — maltose — maltose

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

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow[\text{maltase}]{15^\circ C} 2C_6H_{12}O_6$$

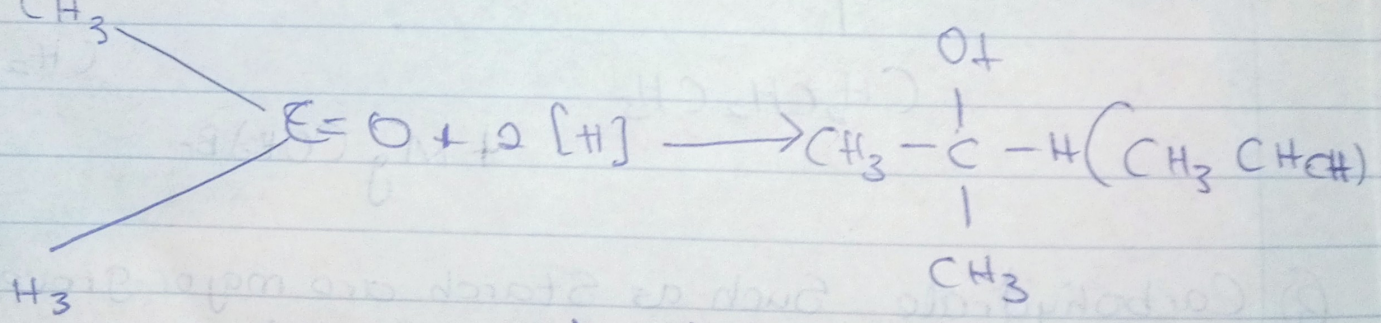
maltose — glucose

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

$$C_6H_{12}O_6 \xrightarrow[\text{Zymase}]{15^\circ C} 2CH_3CH_2OH + 2CO_2$$

Glucose — Ethanol

(4) 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 ethanal you get ethanol

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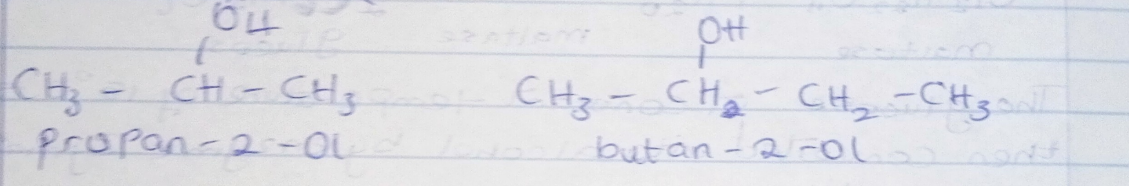
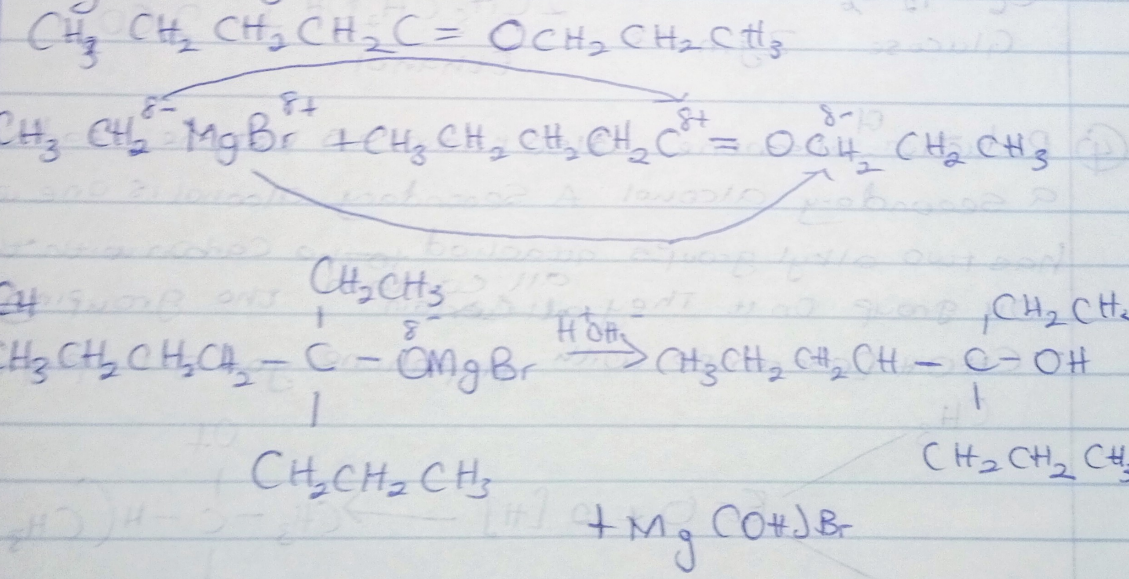
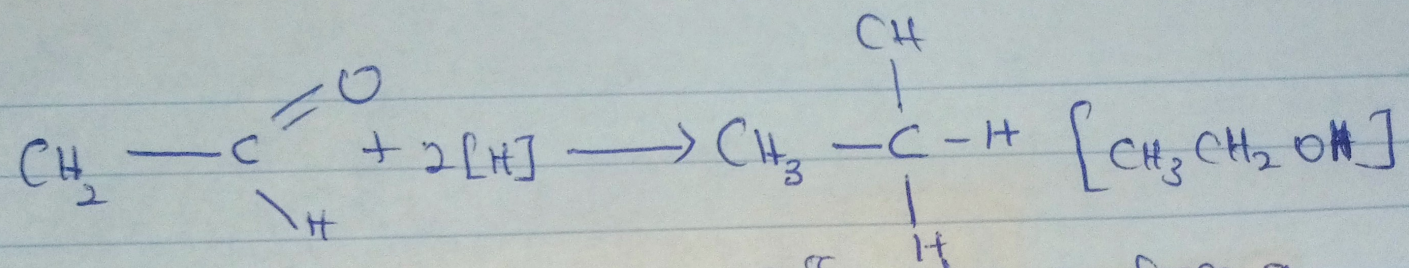
(1) Primary alcohol is an alcohol which has the hydroxyl group connected to a primary carbon atom. It can also be defined as a molecule containing a $-CH_2OH$ group. Example of primary alcohol include ethanol and butanol.
Secondary alcohol are those where the carbon atom of the hydroxyl group is attached to two alkyl group on either side. The two alkyl group present may be either structural identical or even different. Some of the example are



(2) Grignard Synthesis



(3) 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 breakdown the carbohydrate molecules into ethanol to give a yield of 95%. The starch containing



The H in square bracket means "hydrogen from a reducing agent" in general term, 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 containing the grouping $-CH_2OH$