

1. Two major classification of alkanols, with two examples each.

- Ans Primary Alkanols: are those alkanol that the hydroxyl group is attached to a primary (terminal) carbon atom in the molecule it is characterized by $\text{-CH}_2\text{OH}$.
- Examples
- i) CH_3OH Methanol
 - ii) $\text{CH}_3\text{CH}_2\text{OH}$ Ethanol.

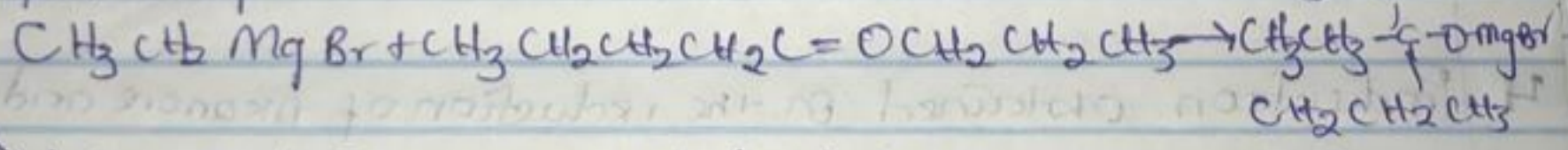
Secondary Alkanol: In a secondary alkanol the -OH group is on a secondary carbon atom: characterized by -CH(OH)-

- Examples
- i) $\text{CH}_3\text{CH(OH)CH}_3$ Propan-2-ol
 - ii) $\text{C(CH}_3)_2\text{CH}_2\text{OH}$ 2-methylpropan-2-ol

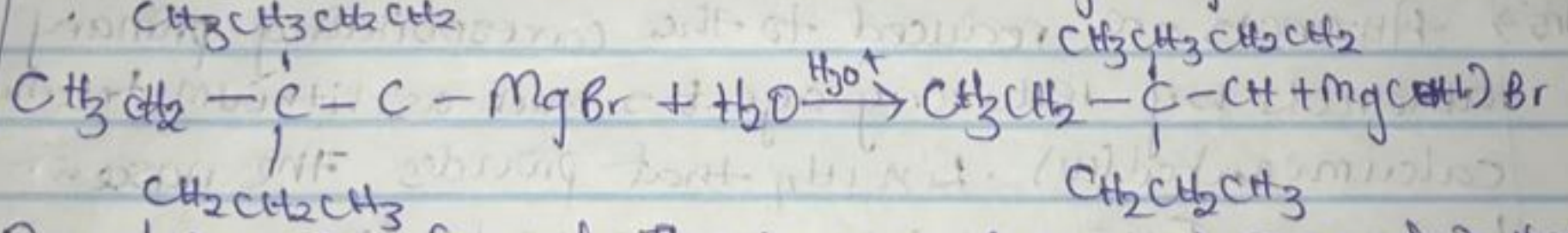
2. In the Grignard synthesis of Alkanols, react a named Grignard reagent with

$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$. Show the reaction steps.

first stage



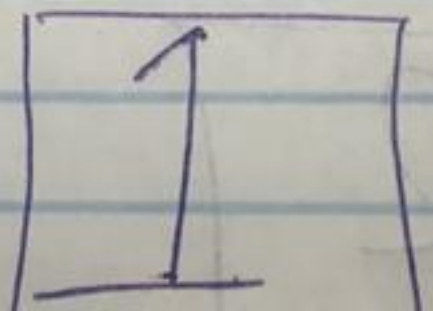
Dilute acid is then added to this to hydrolyze it



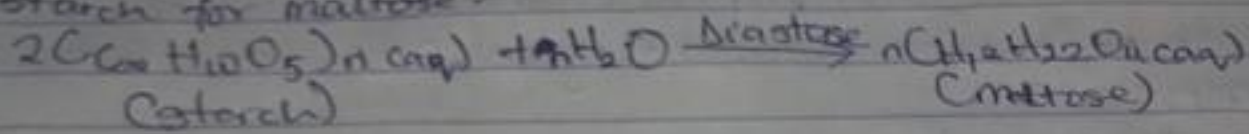
An alcohol is formed - The key of Grignard reagent is the ability to make complicated alcohols easily.

3. Industrial preparation of Ethanol.

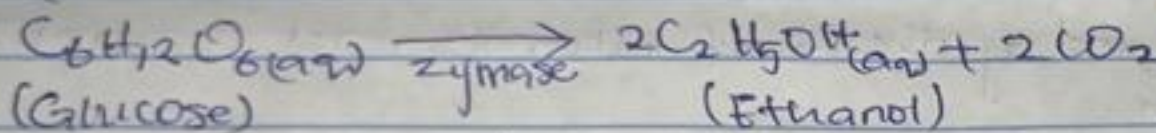
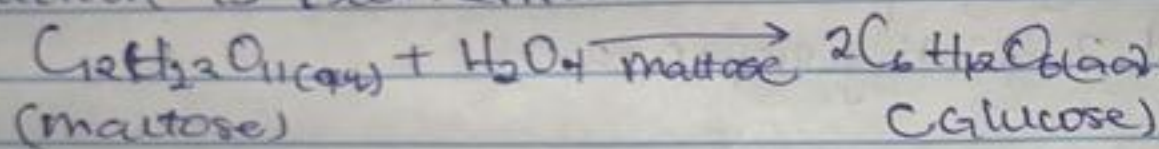
(a) The starch containing crop such as Cassava, is peeled crushed and steam-heated or pressure cooked to release with water, to obtain a mash.



b. The mash is treated with malt yeast, and warmed at 50°C for two hours. Enzyme diastase in the malt hydrolyses starch for maltose.



c. Yeast containing enzymes maltase and zymase is added to the mixture and kept at room temperature (about 27°C) for ~~four~~ ~~days~~ ~~to ferment~~ with the about three days. During this period, enzyme zymase permits glucose to ethanol with the evolution of carbon(IV) oxide. The reaction is exothermic.

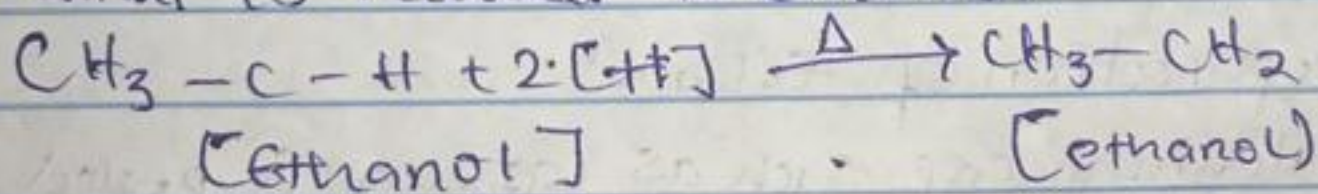


The mixture is distilled, to obtain 95% ethanol that boils at 78°C.

4 Production obtained in the reduction of alkanone and Alkanol:

Ans → Alkanones are reduced to the corresponding primary alkanols by reducing agents such as lithium tetrahydridoaluminate(III) $LiAlH_4$ that provides the nascent hydrogen, $[H]$, which causes reduction.

(a) Ethanal is reduced to ethanol



2

b Generally $R-CHO$ + $CAlkano$
This reagent
Alkanol.
 $-COH-CH_2$
the nas

