

## Alcohol

DATE: \_\_\_\_\_

Alcohols are compounds in which hydroxyl group (-OH) is attached to saturated carbon atom. e.g.  $\text{CH}_3\text{-OH}$ ,  $\text{CH}_3\text{CH}_2\text{OH}$ .

Classification:-

They are classified into two ways.

(a) According to the methyl group

(b) According to the hydroxyl group

(a) On the basis of nature of carbon

atom attached with -OH group of mono-

hydric alcohol can be further classified

as  $1^\circ$  (Primary alcohol),  $2^\circ$  (Secondary

alcohol)  $3^\circ$  (Tertiary alcohol) depending

on the no. of carbon atom bound to the

hydroxyl-bearing carbon.

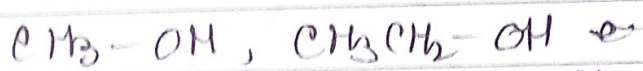
DATE: primary alcohol  $\rightarrow$   
 $R-OH$  R may be H or alkyl gr.

secondary alcohol  $\rightarrow R-CH_2-OH$   
 $R_2-CH-OH$

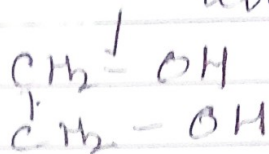
tertiary alcohol  $\rightarrow R_3-CH-OH$

(40) According to the hydroxyl group -

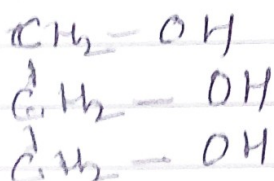
(i) Monohydric alcohol - The compound contains one  $-OH$  gr.



(ii) ... alcohol - contains two  $-OH$  gr.



(iii) Trihydric alcohol - These contain 3  $-OH$  gr.



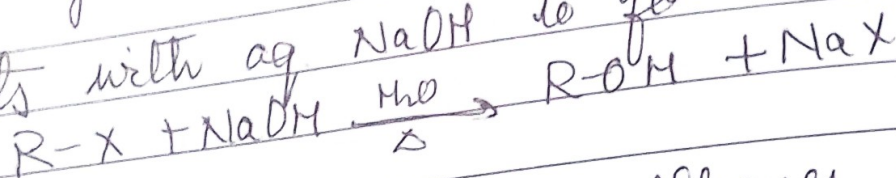


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## Methods of Preparation —

(i) Hydrolysis of alkyl halide — Alkyl halide

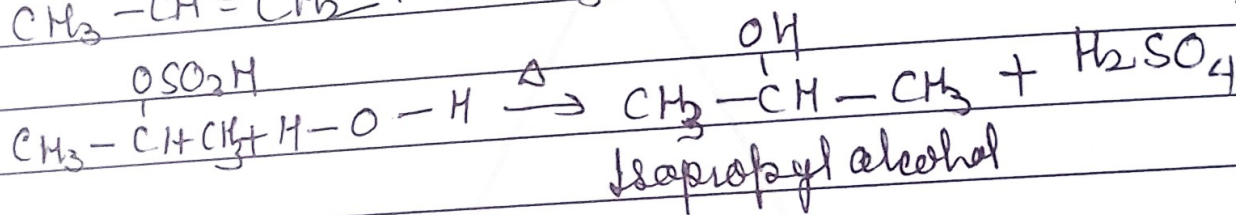
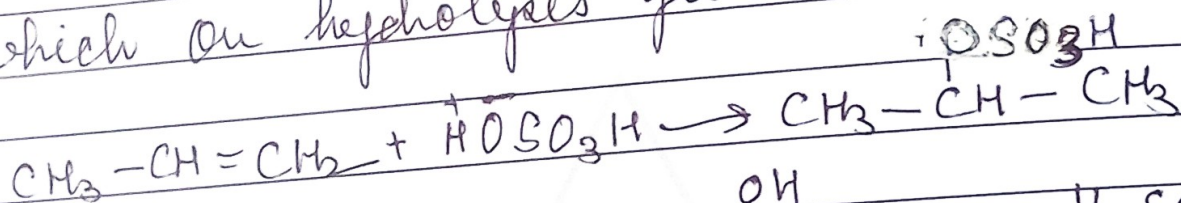
reacts with aq NaOH to form alcohol.



(ii) Hydrolysis of alkenes — Alkenes reacts with

seulphuric acid forms alkyl hydrogen sulphate

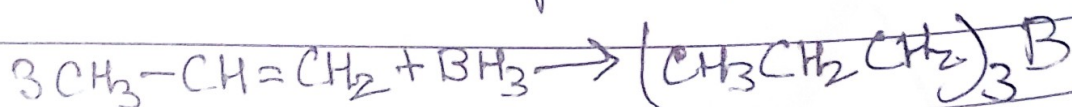
which on hydrolysis gives alcohol.



(iii) Hydroboration-oxidation of Alkene — Alkenes react

with diborane,  $B_2H_6$  to form trialkylboranes.

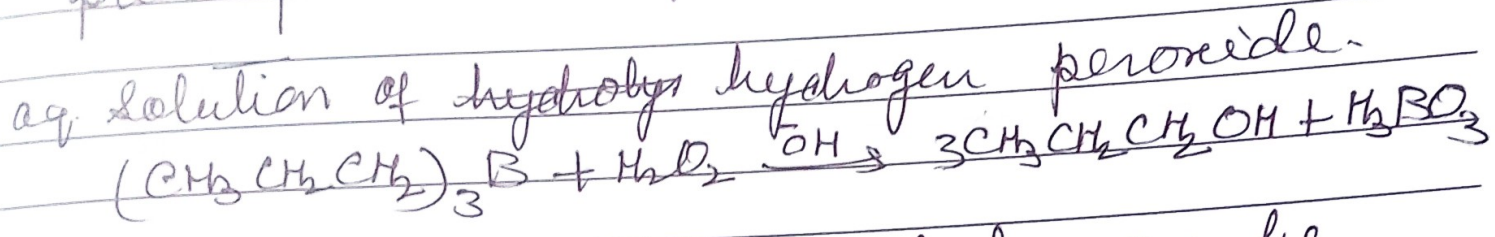
Diborane adds as borane  $BH_3$ . The positive part of  $BH_3$  is the boron, the negative part is hydrogen



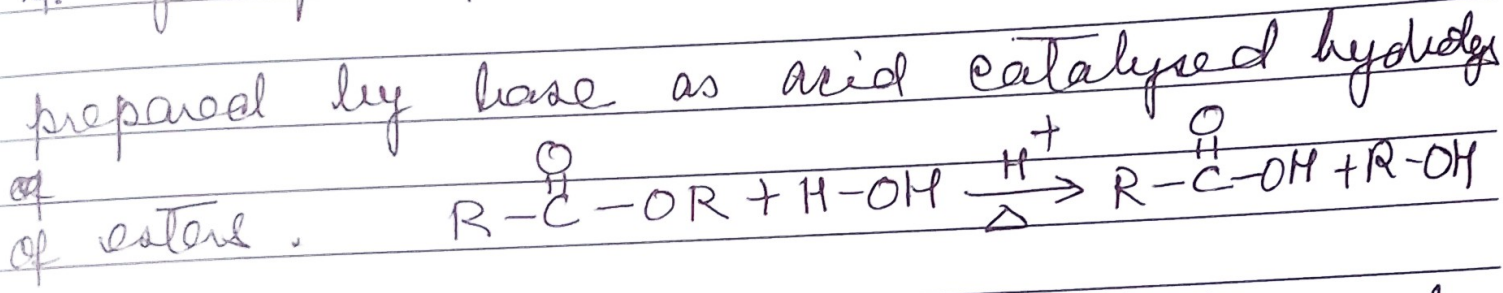
Propylene

Tripropylborane

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Trialkyl boranes are used for making primary alcohol by reaction with alkaline

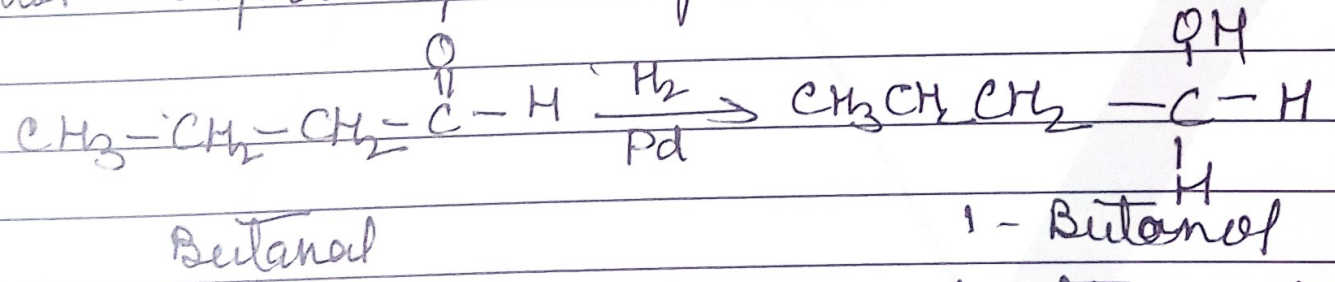


4. Hydrolysis of esters  $\rightarrow$  Alcohol may be prepared by base as acid catalysed hydrolysis



5. Catalytic hydrogenation of Aldehyde and ketones - Catalytic hydrogenation also

reduces aldehyde and ketone to 1<sup>o</sup> and 2<sup>o</sup> alcohol respectively. using  $H_2$  and Pd



Reduction of acyl compound with metal hydride.

