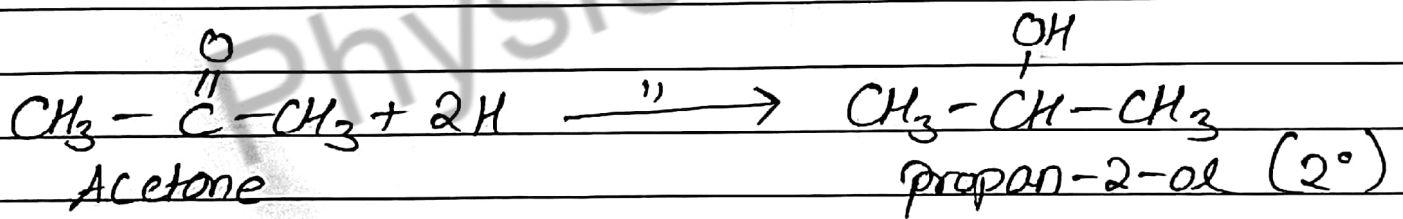
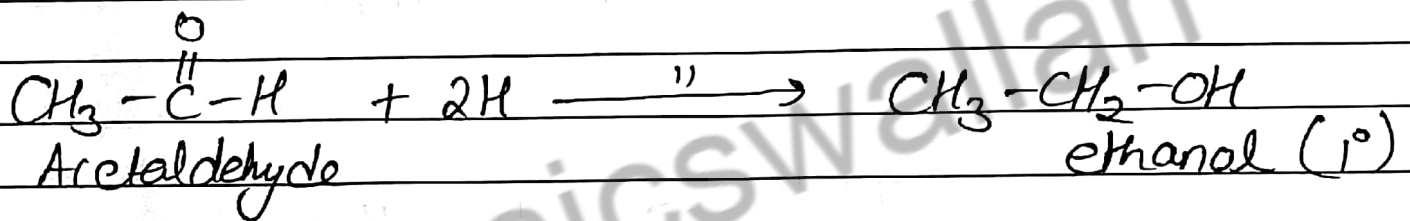
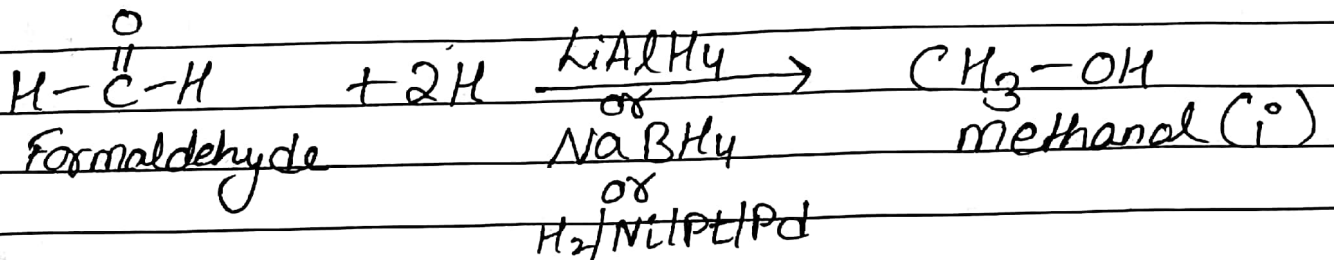


Preparation of Alcohols-2

From Carbonyl Compounds, Carboxylic Acid & its derivatives
By Reduction

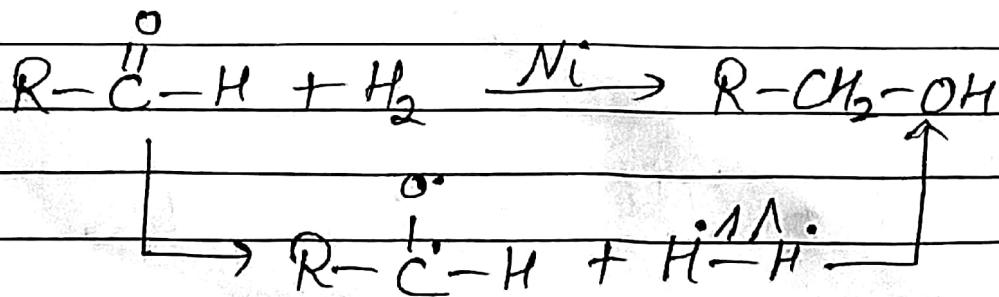
① Carbonyl Compounds $\text{—}\overset{\text{O}}{\parallel}{\text{C}}\text{—}$ \Rightarrow Aldehyde & Ketone



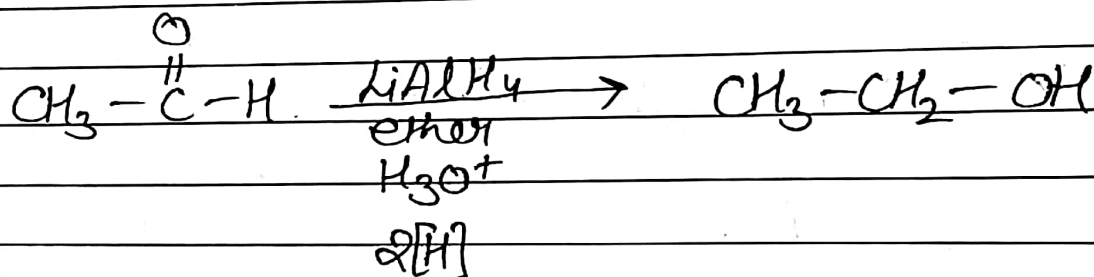
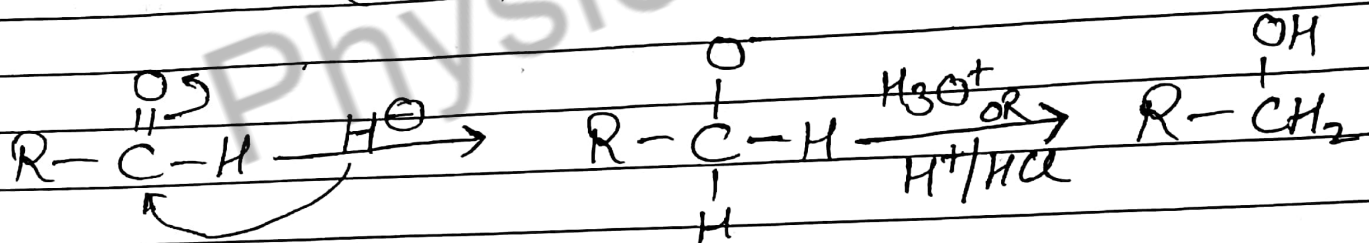
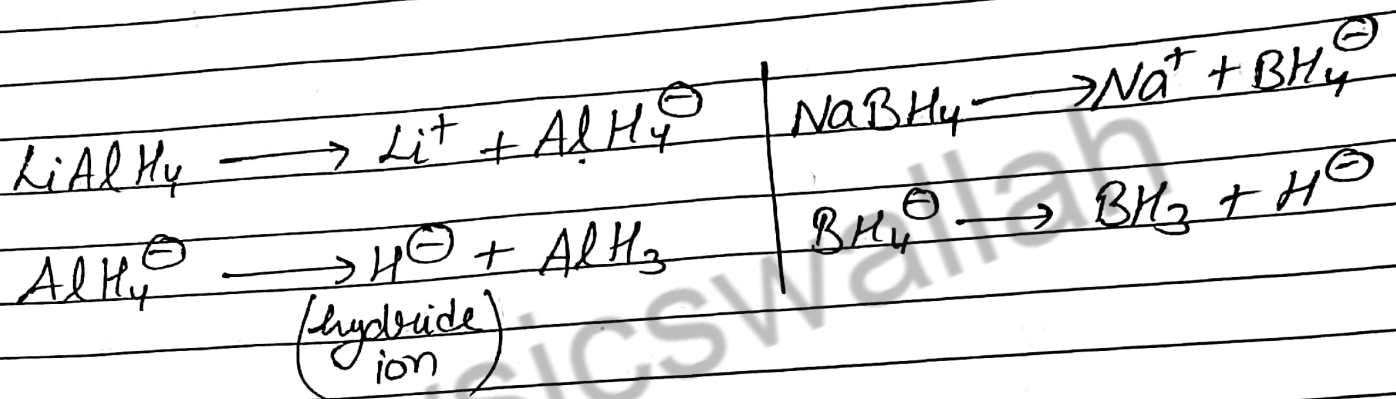
3° Alcohols cannot be obtained by this method.

Mechanism

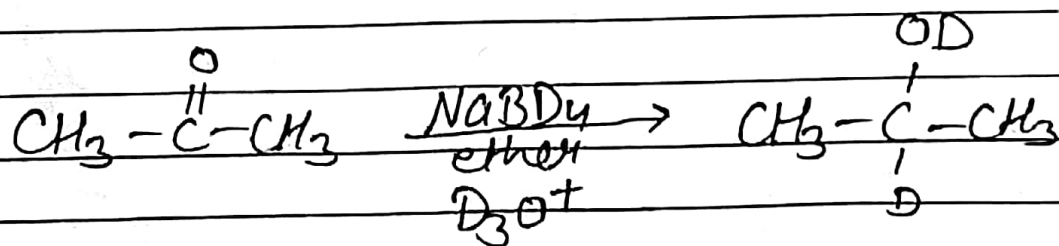
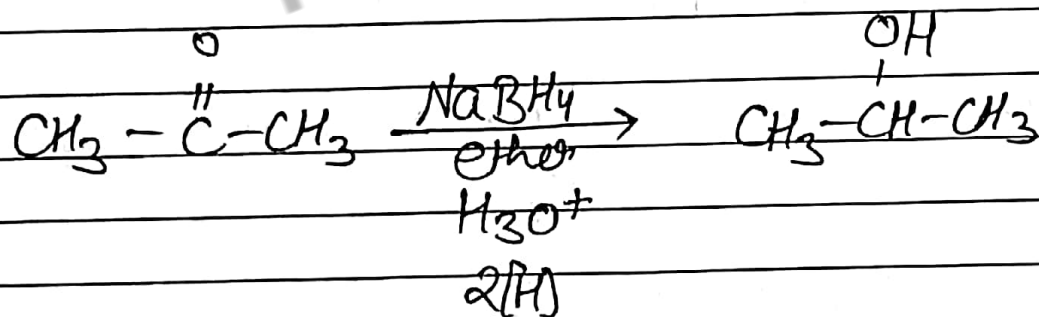
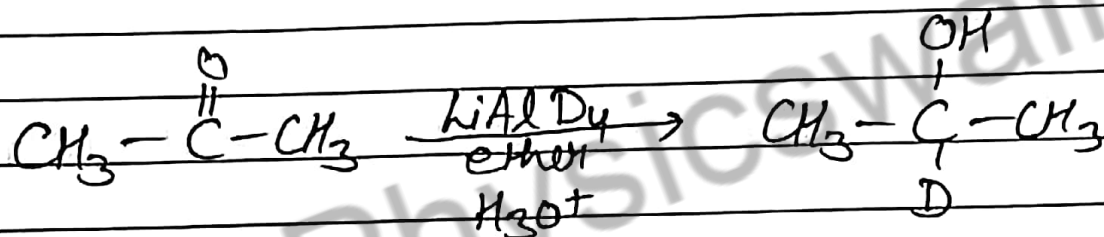
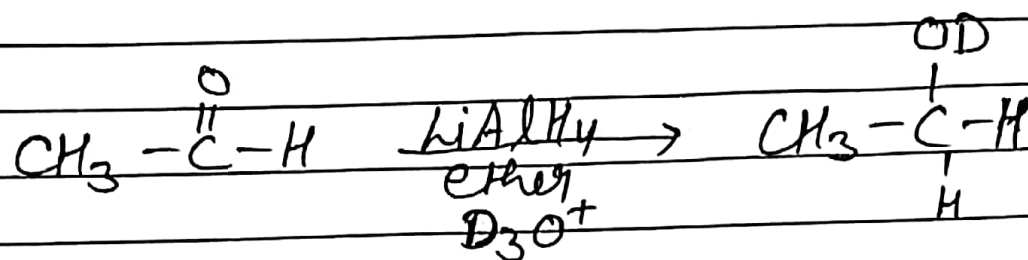
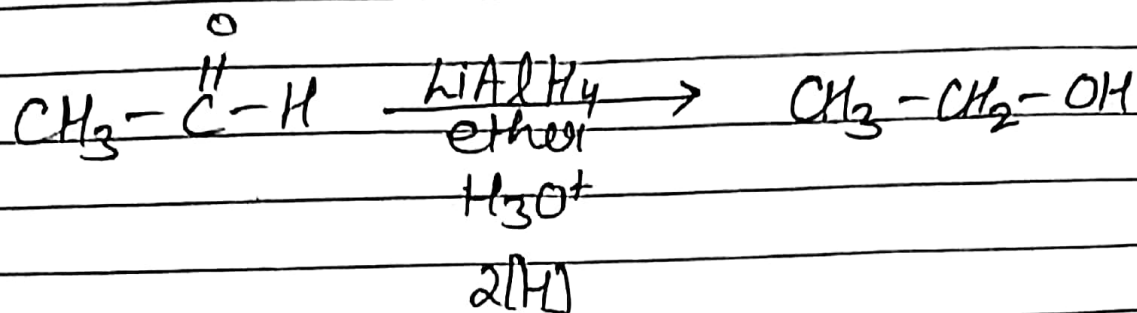
(i) with $H_2/PT/Ni/Pd \rightarrow$ free Radical



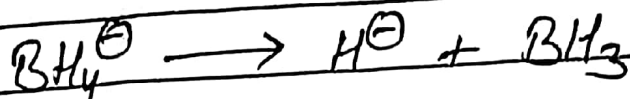
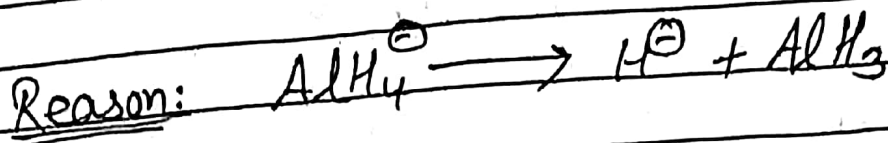
(ii) with LiAlH_4 or NaBH_4 (in solvent ether followed by Acidic hydrolysis)



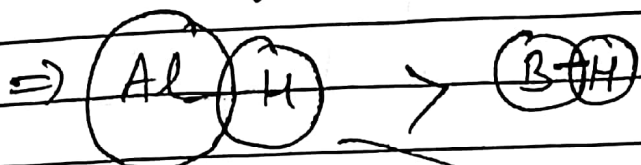
Note: H on 'C' atom comes from LiAlH_4 or NaBH_4 while H on 'O' atom comes from hydrolysis



Note: $\text{LiAlH}_4 > \text{NaBH}_4$
Reducing Agent



Al is greater in size than B

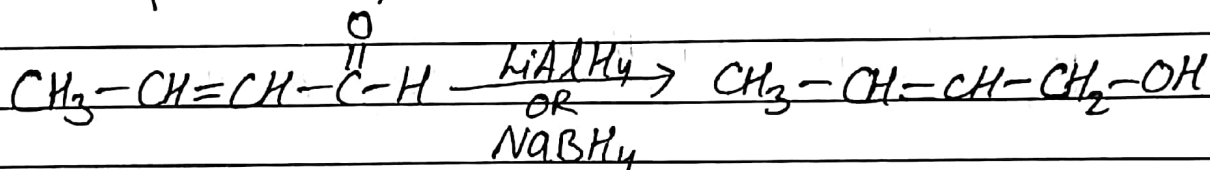


Bond breaks easily

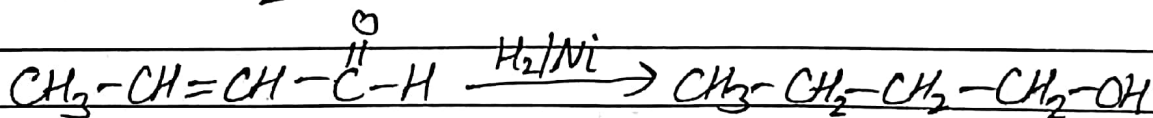
\rightarrow supplies H^- easily

but LiAlH_4 is costly so you see NaBH_4 at places

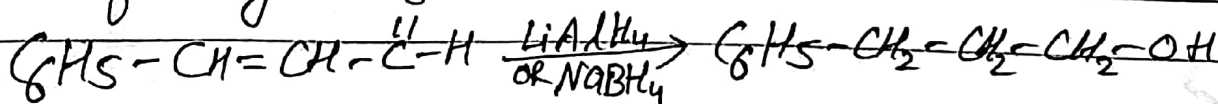
Note: LiAlH_4 & NaBH_4 cannot reduce $\text{C}=\text{C}$ (***)



whereas $\text{H}_2/\text{Ni}/\text{Pt}/\text{Pd}$ reduces $\text{C}=\text{C}$ also

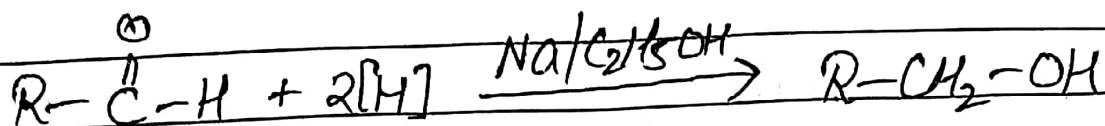


*** exception LiAlH_4 & NaBH_4 reduces $\text{C}=\text{C}$ only if phenyl is attached to $\text{C}=\text{C}$

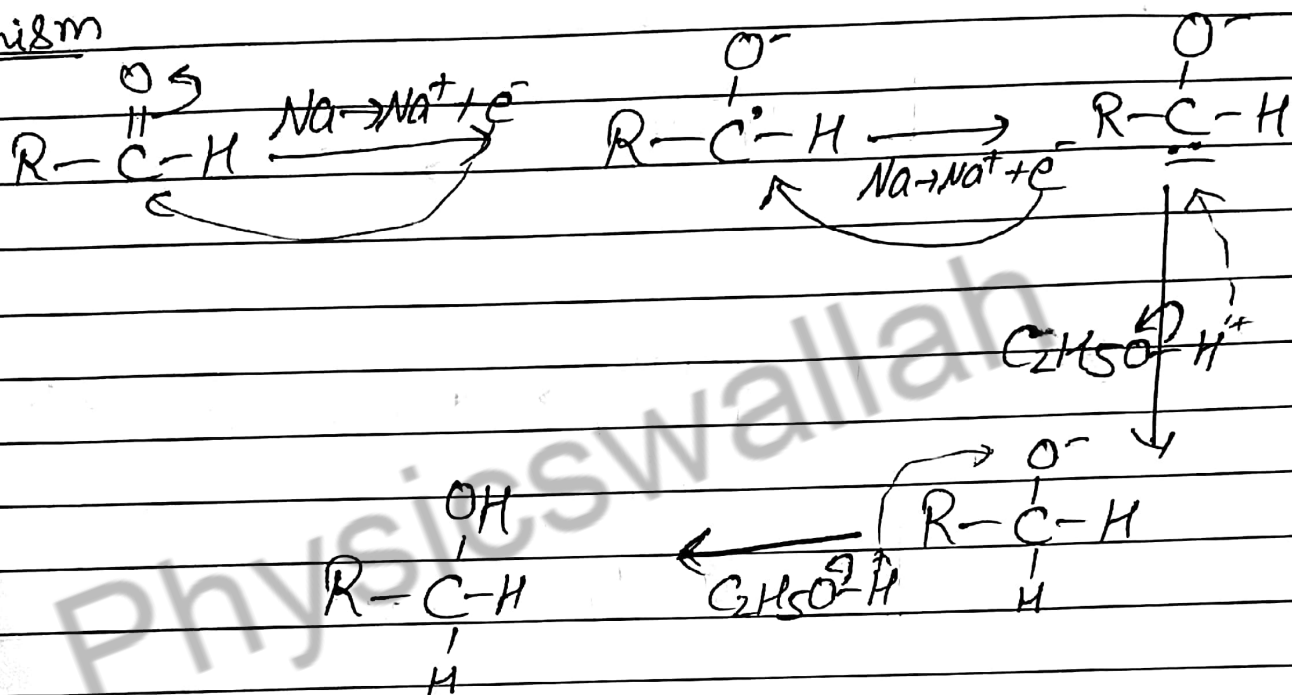


One More Reducing Agent $\text{Na/C}_2\text{H}_5\text{OH}$ is also used

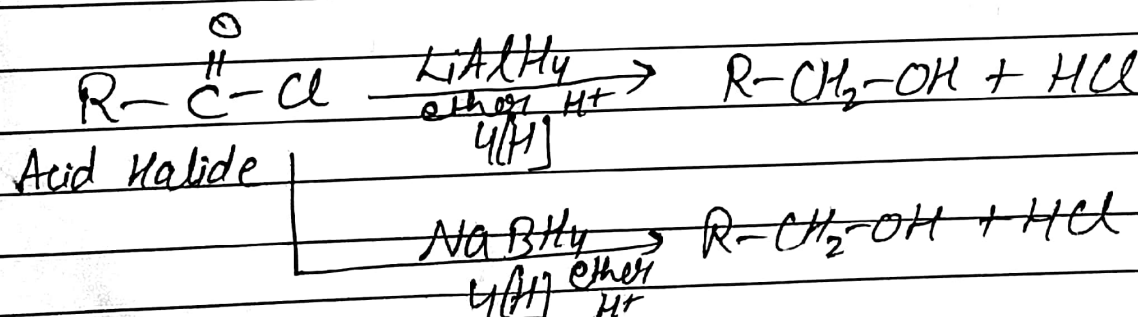
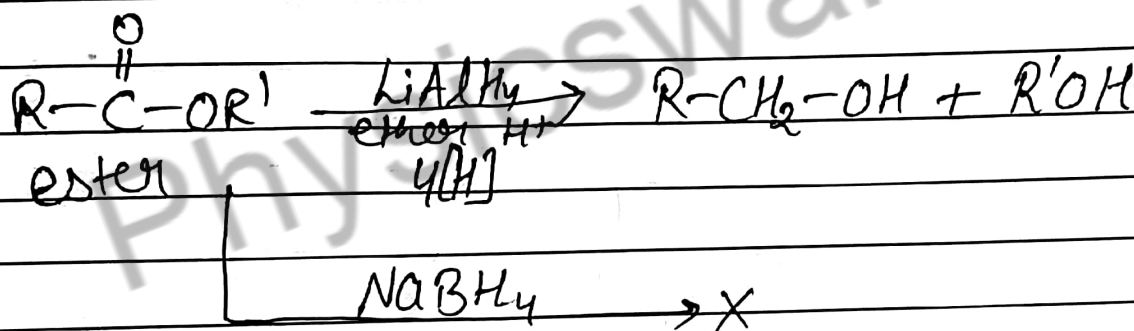
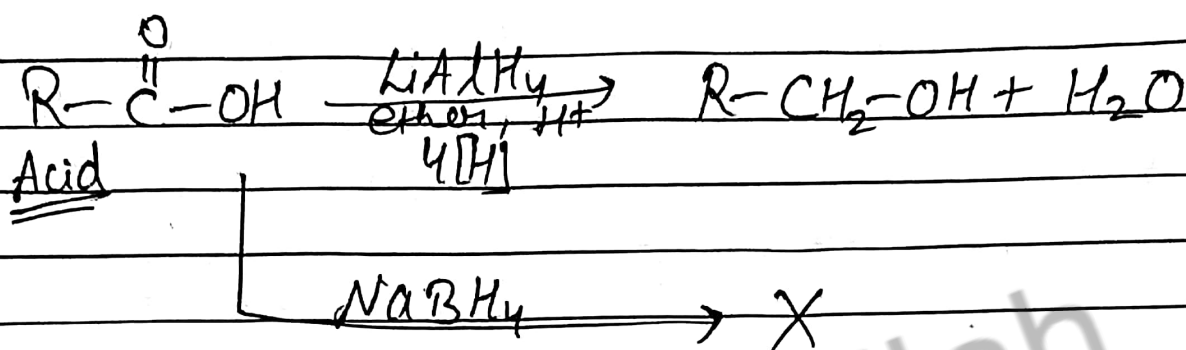
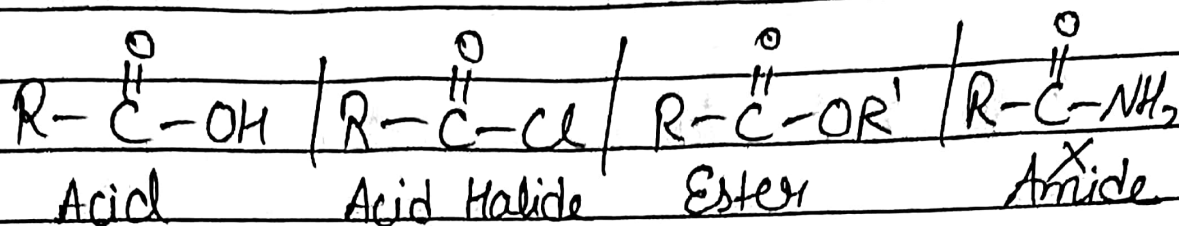
Bouveault Blanc Reduction



Mechanism



From Carboxylic Acid & its derivatives

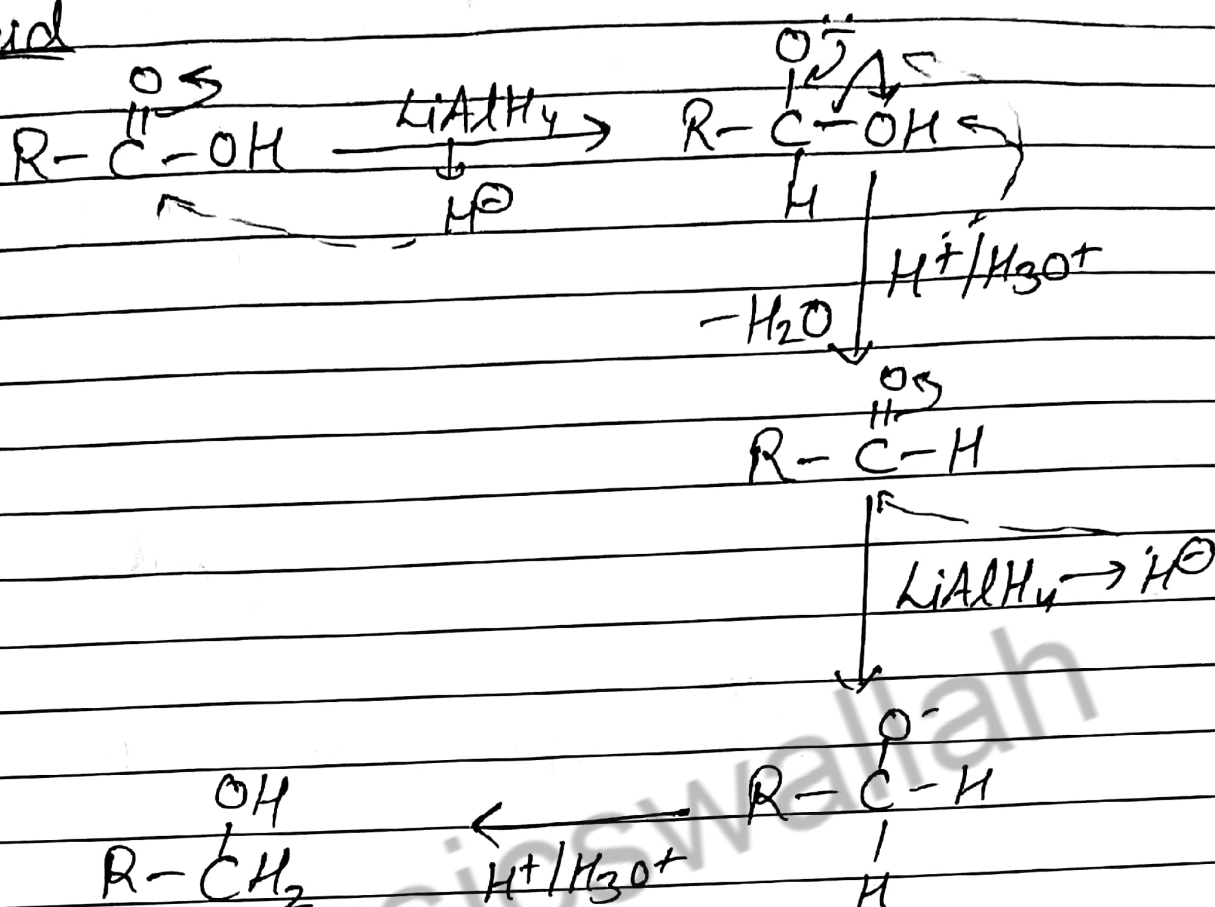


Only Acid Halide is Reduced by weak R.A. $NaBH_4$

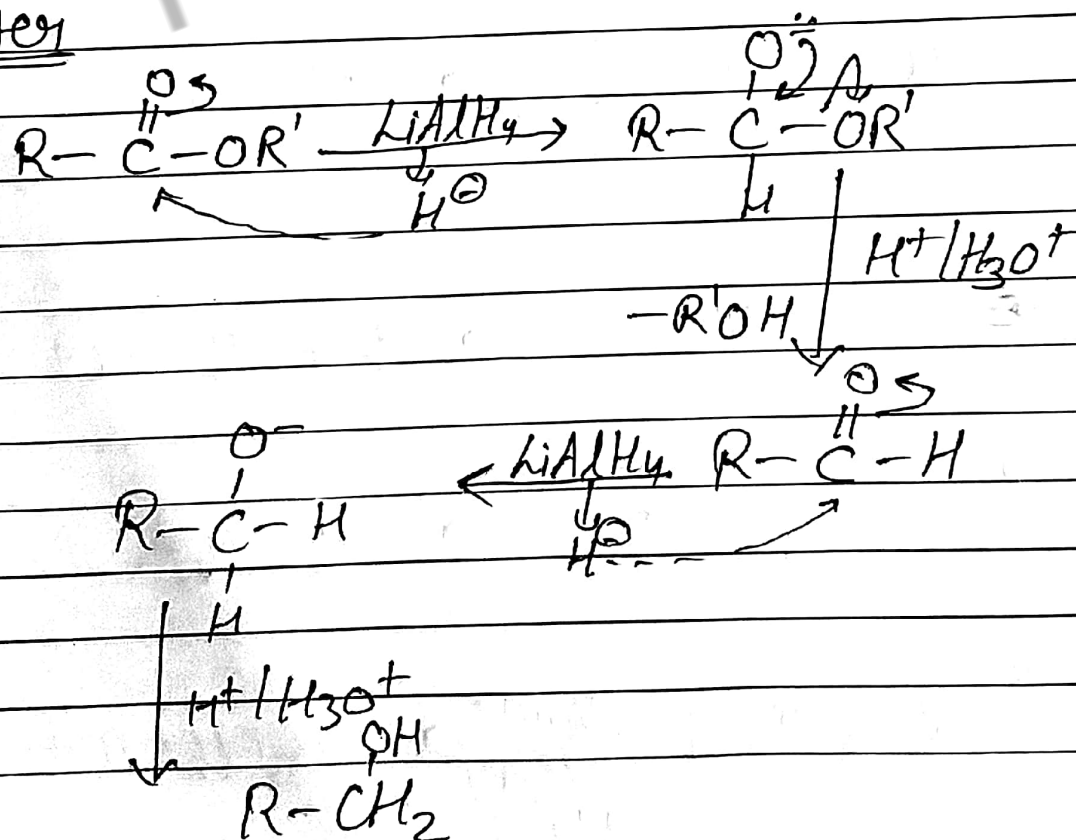


Mechanism:

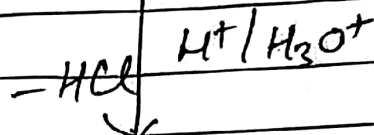
Acid



ester



Acid Halide



examples

