

Organic Chemistry Revision.

1. GOC & Isomerism
2. Hydrocarbons
3. Halo compounds
4. Alcohol, phenol, ether
5. Carbonyl compounds
6. Biomolecules
7. Amines.

Reduction:

Zn/acid, Zn - Cu/H₂O, Zn-Cu + Acid.

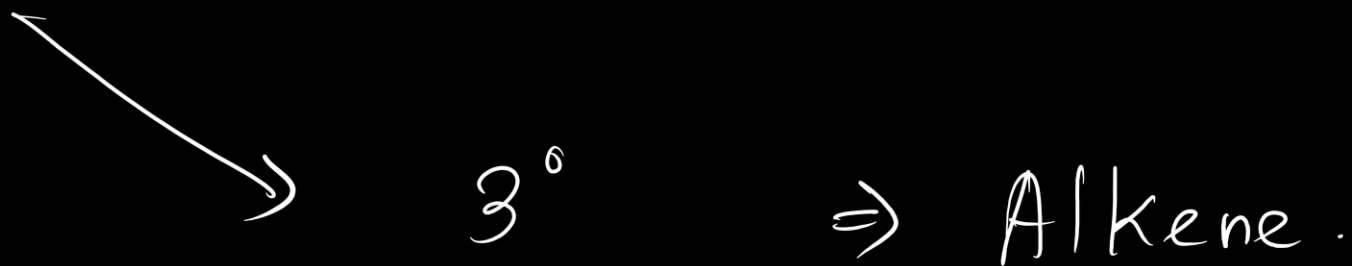
Zn/Cu/C₂H₅OH,

Na-Hg/Acid.

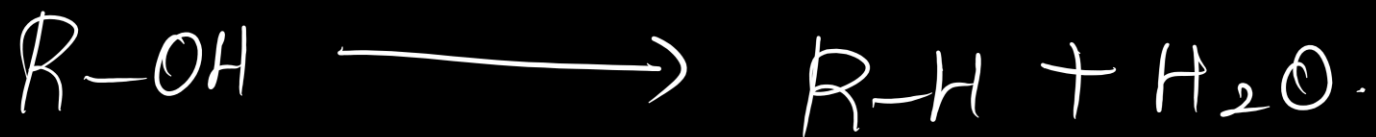
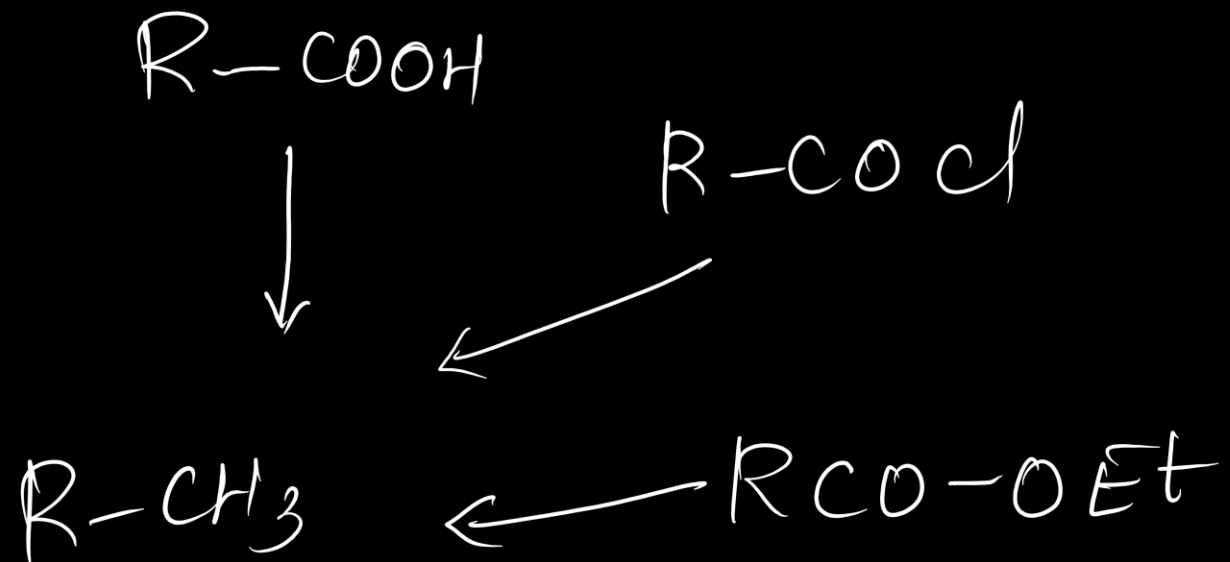


Franland Reagent.

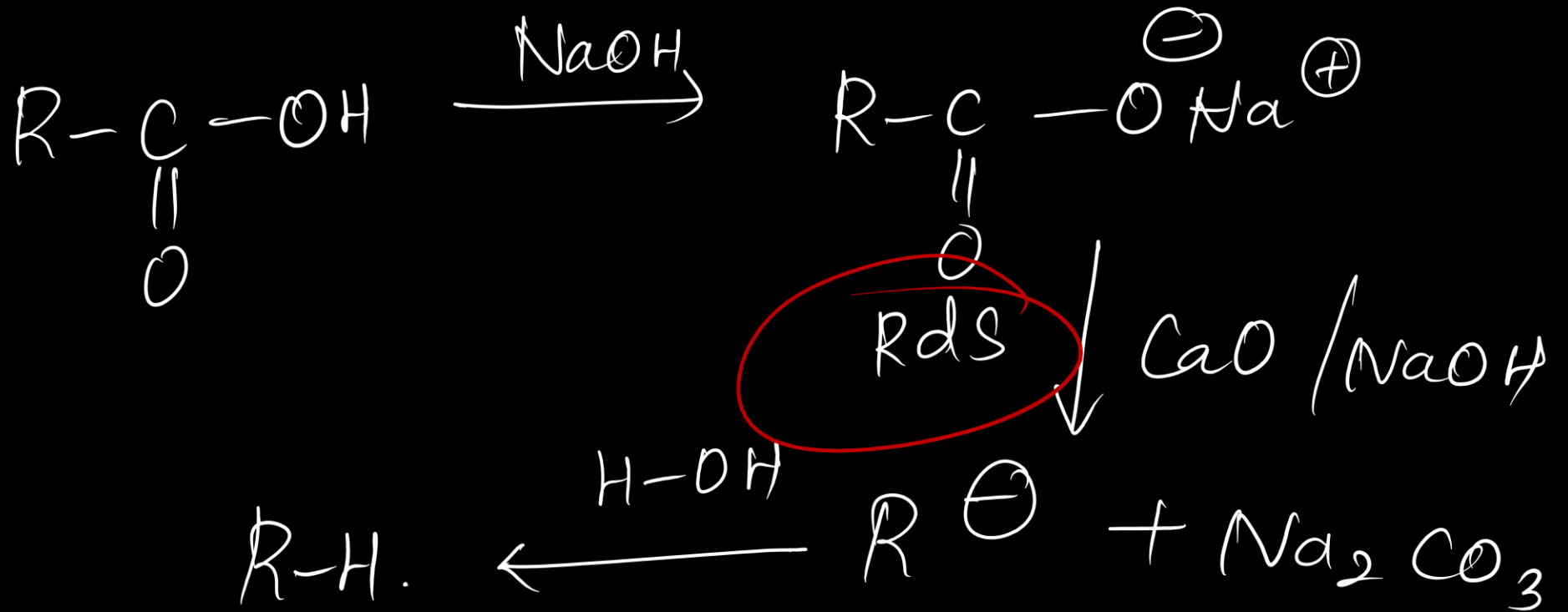




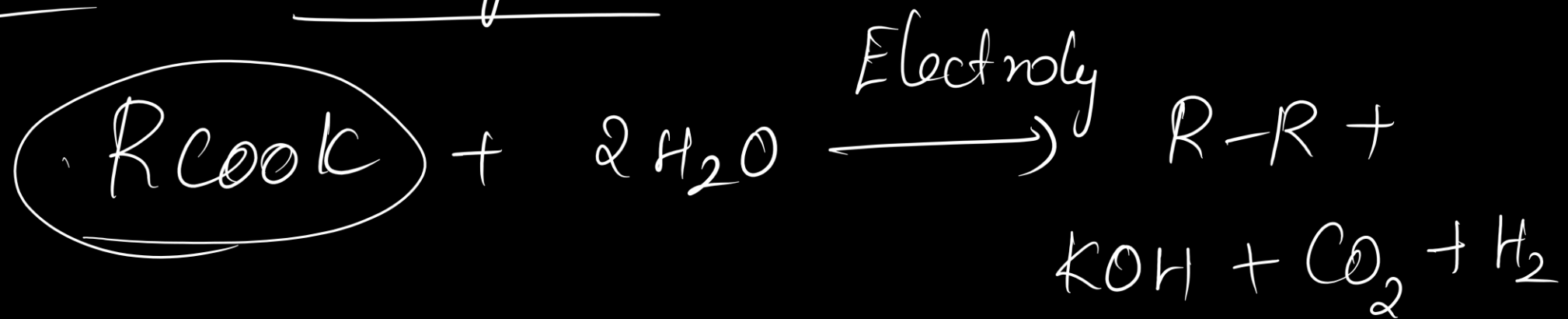
Red P / HI



Sodalime: Clue Point.



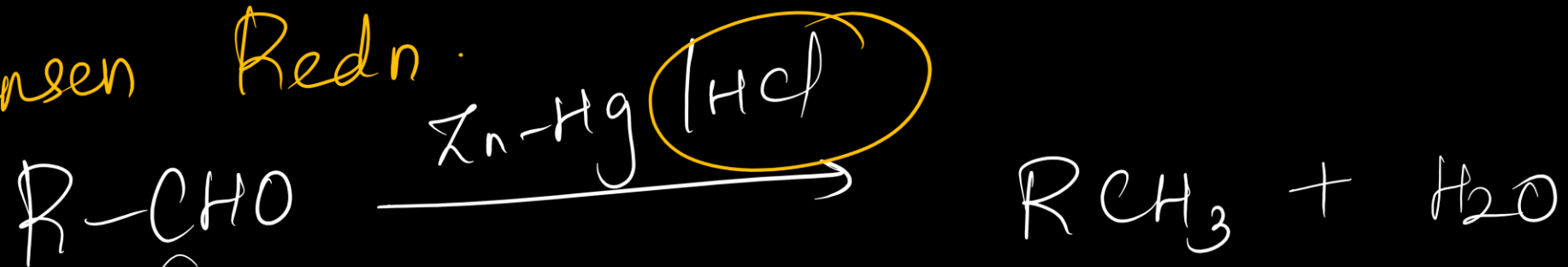
Kolbe's Electrolysis:



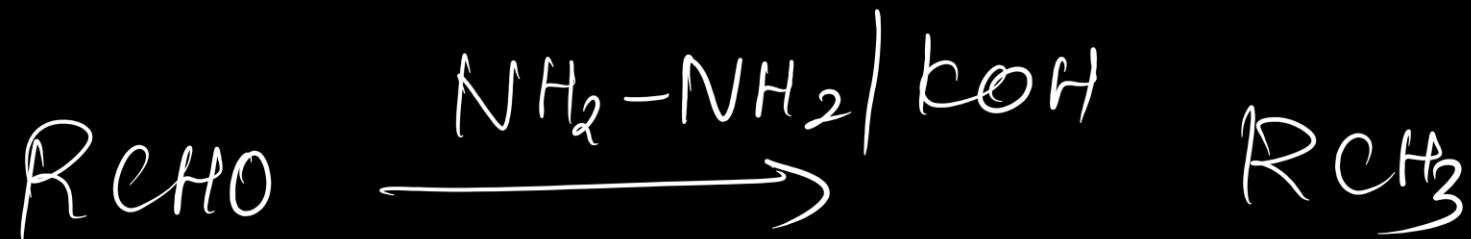
$n \Rightarrow$

$\searrow$ $2(n-1)$ Carbon atom.

Clemmensen Redn.



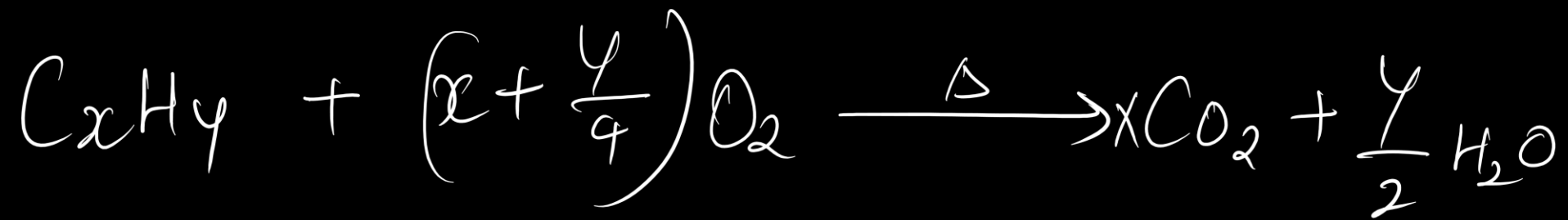
Wolff-Kishner Redn: Acid-Sensitive.



i) Monochlorination

ii) Aromatization.

iii) Combustion!



Alkene:

M.p.t $\Rightarrow$ trans $>$ cis

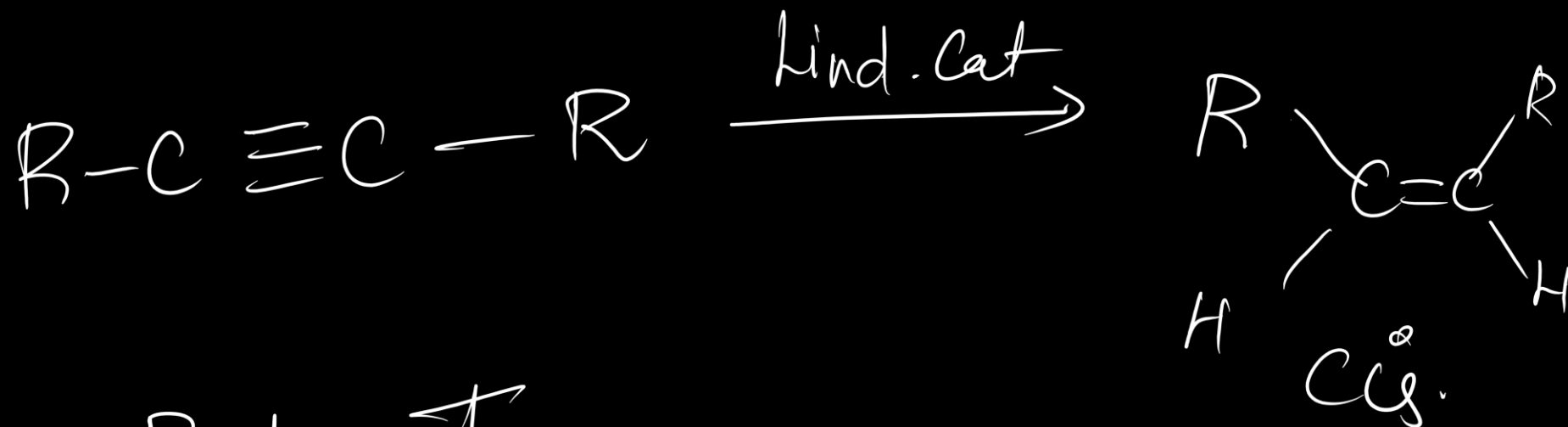
b.p.t $\Rightarrow$ cis $>$ trans.

Stability $\Rightarrow$ trans $>$ cis

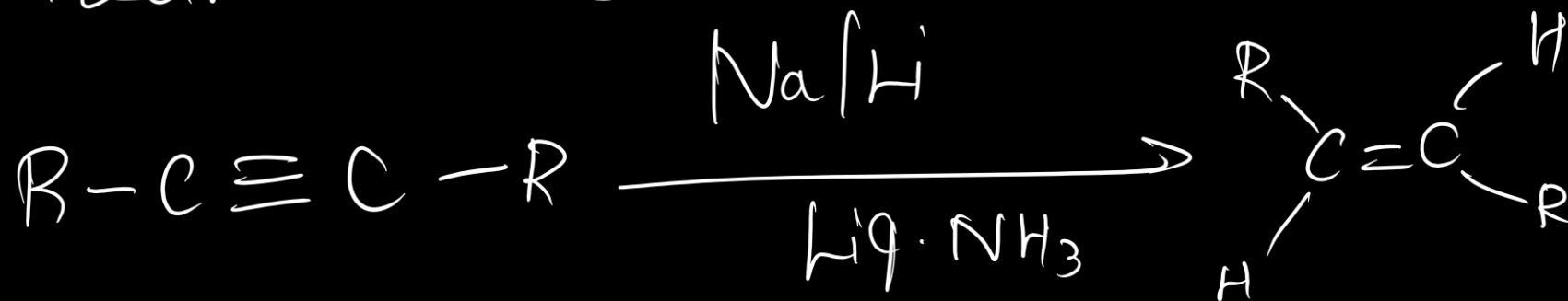
test $\Rightarrow$ Bromine water
Cold KMnO_4 $\searrow$ decolourises.

PPN

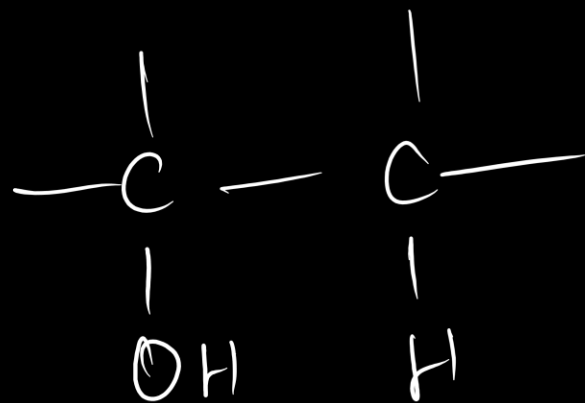
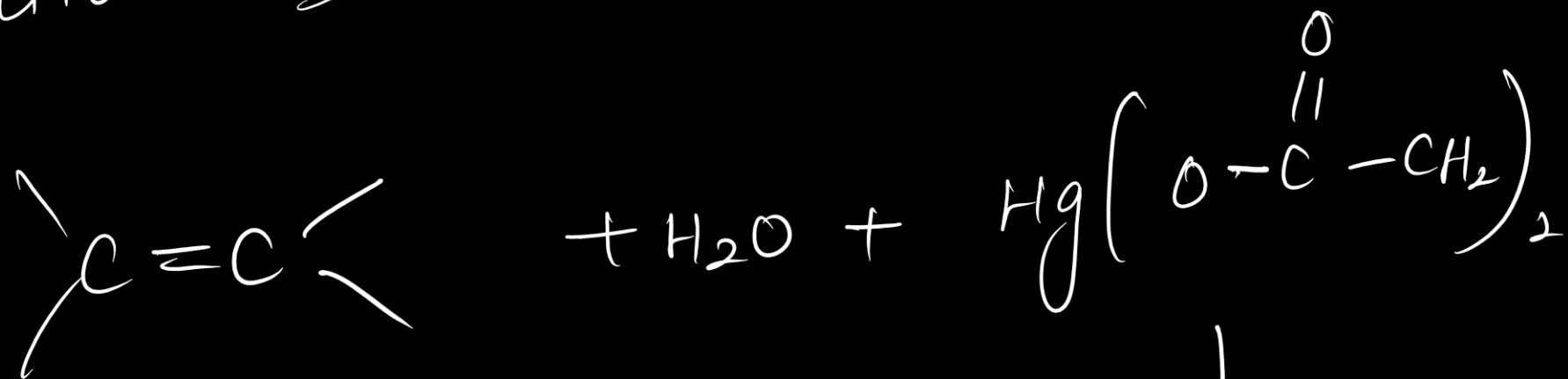
i) Lindlar's Catalyst $H_2/Pd - CaCO_3$

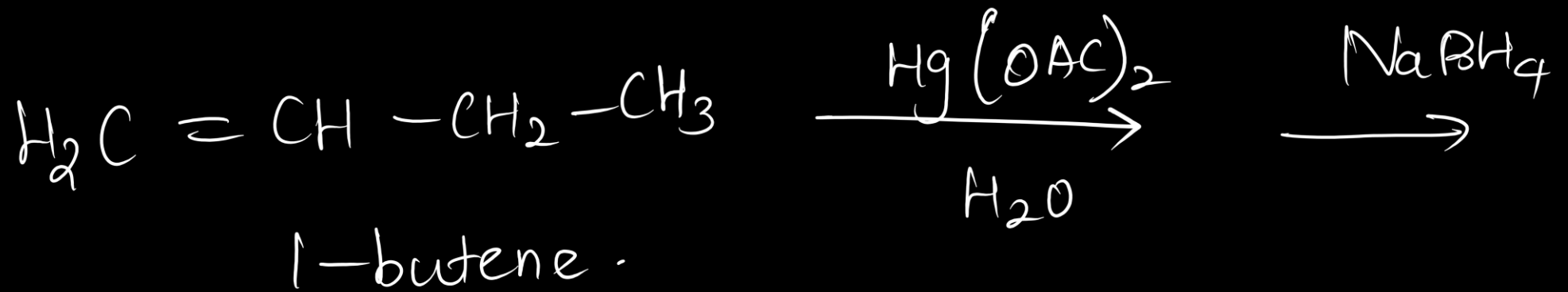


ii) Birch Redn: Trans



Oxymercuration - Demercuration.

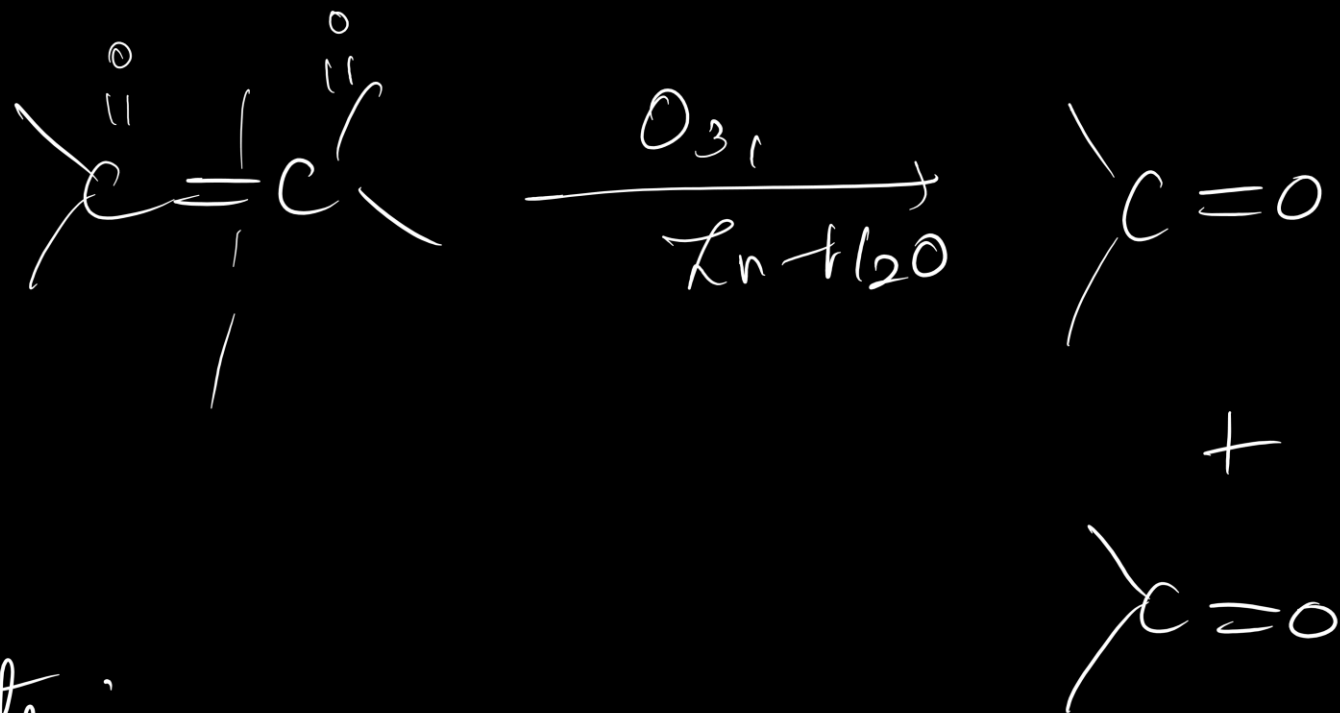




Hydroboration: (syn, Anti-Markovnikov)

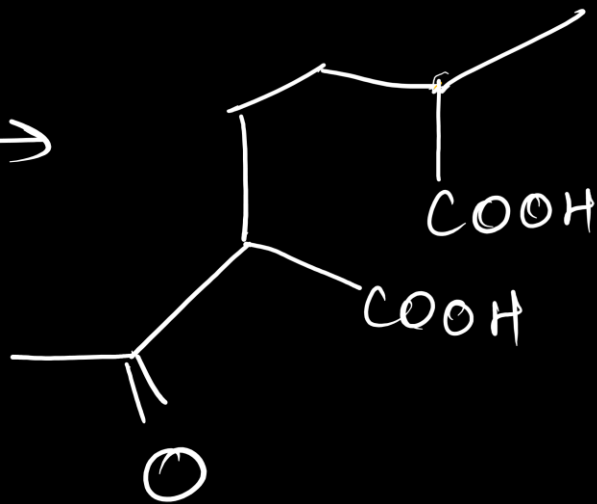
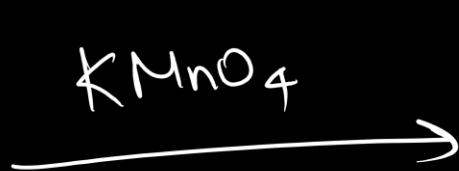
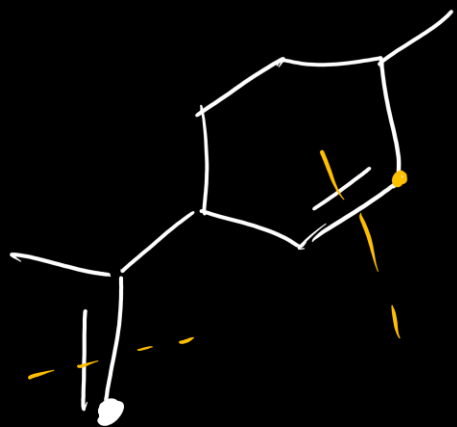


Ozonolysis:



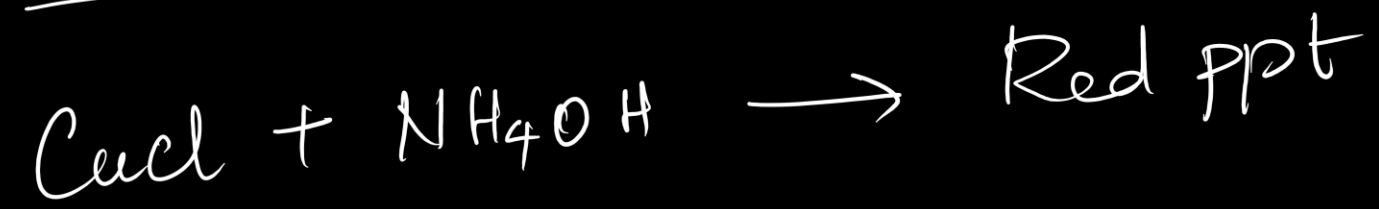
With Permanganate:



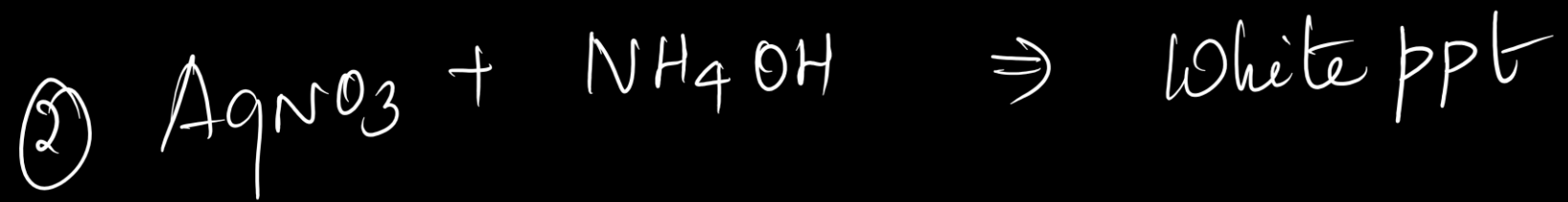


Alkynes (3)

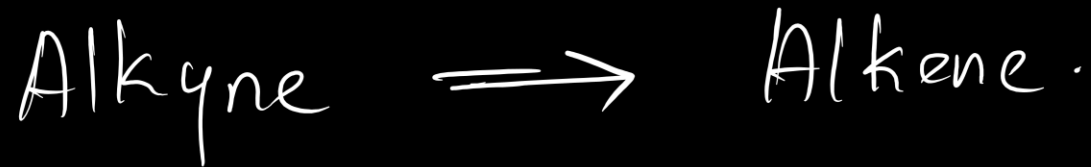
Terminal Alkynes:



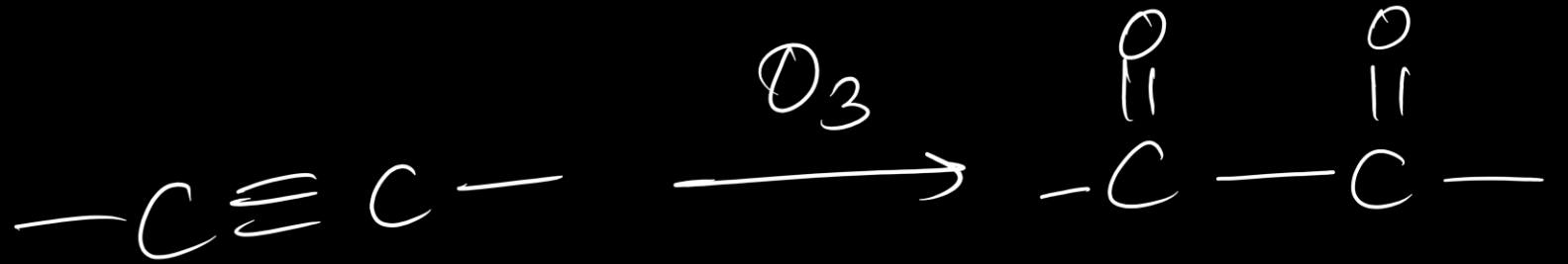
Red ppt



PPN:



Ozonolysis

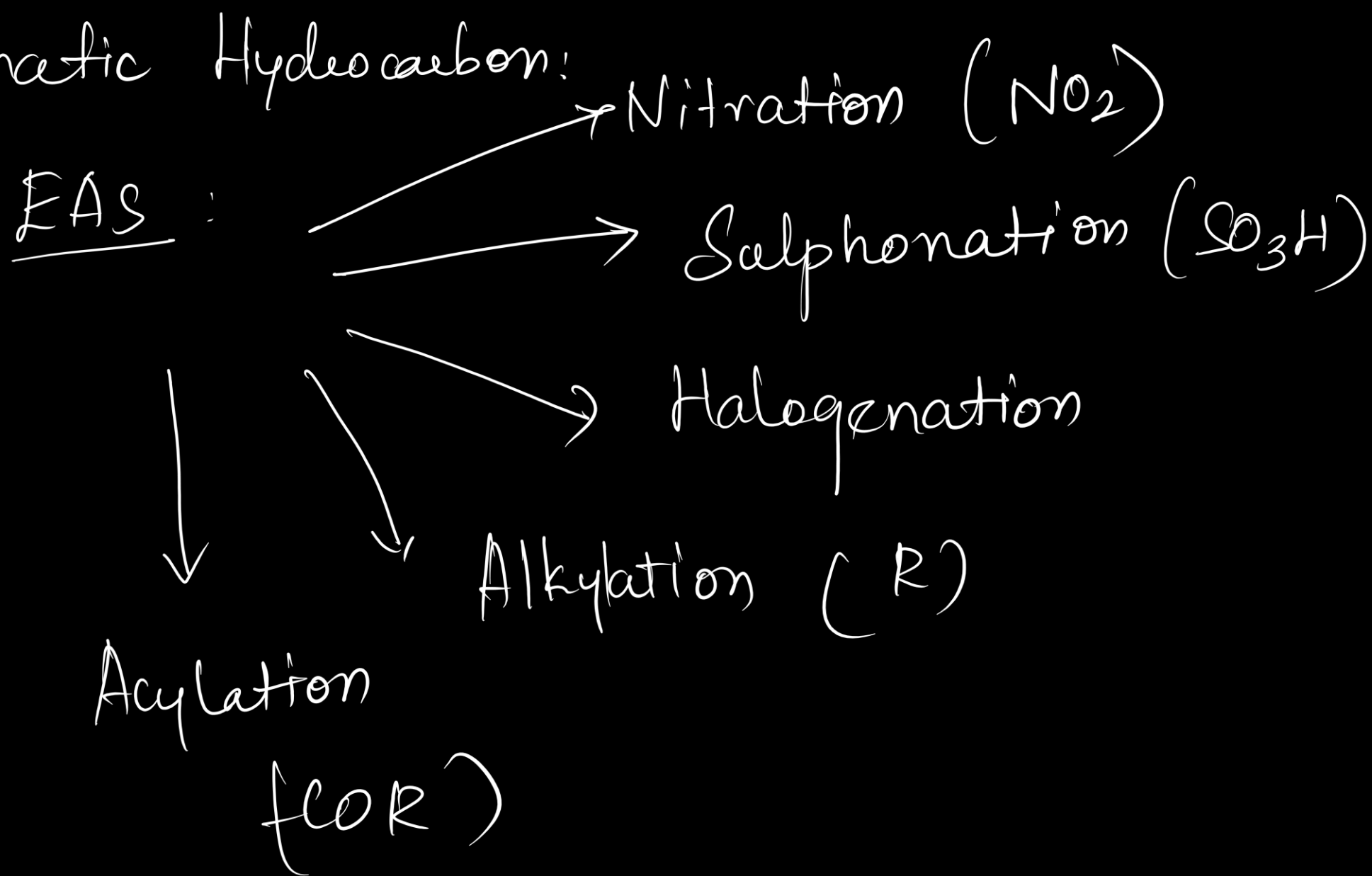


$KMnO_4$:



Aromatic Hydrocarbon:

EAS :



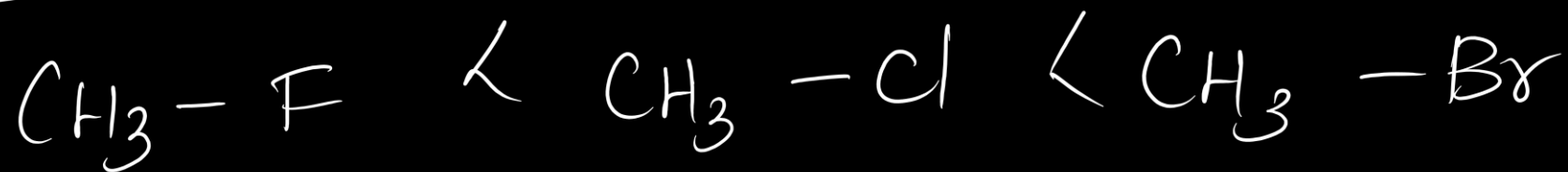
(EDG) O, para-directing grp.



m-directing grp :

(EWG)

Halo cpds'



1.39

B.L $\uparrow$ Strength $\downarrow$

Limited Seats Admission Open !!!

* Achiever Batch (1 year) 4999/-

* Visionaries Batch (2-4 years)

24x7

Doubt Session.

2027

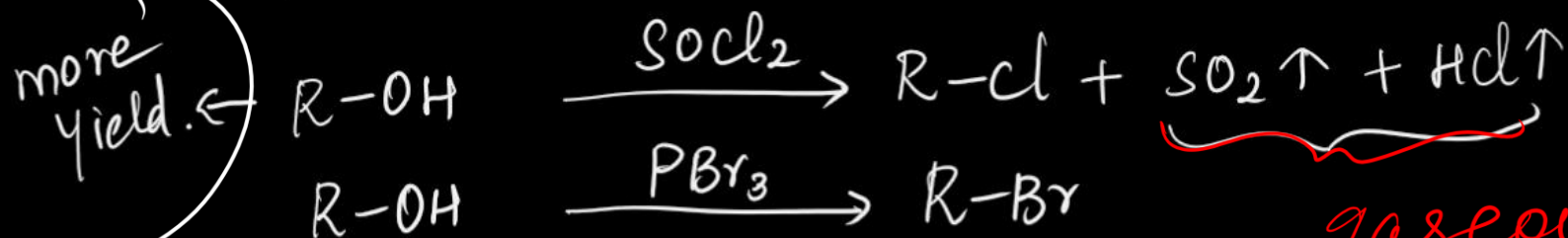
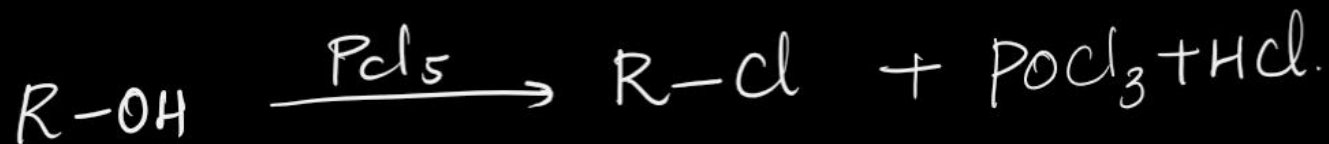
9999/-

Preparation of Haloalkanes.

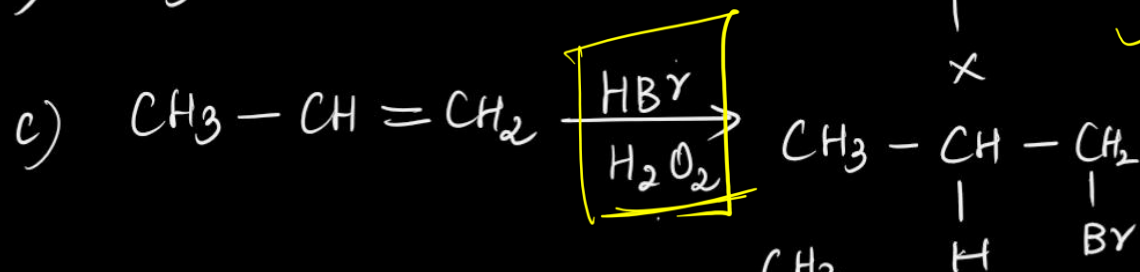
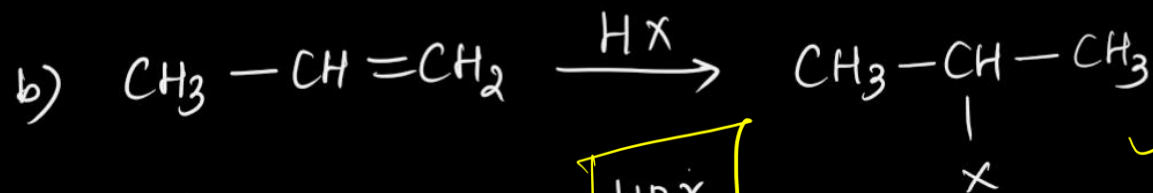
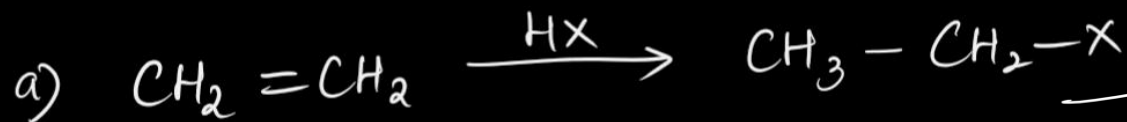
i) From Alcohol:



$3^\circ > 2^\circ > 1^\circ \Rightarrow$ timing.

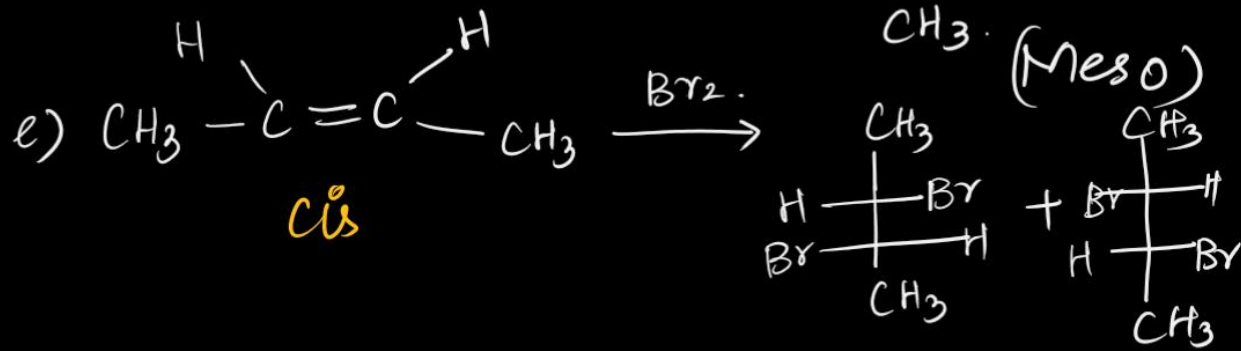
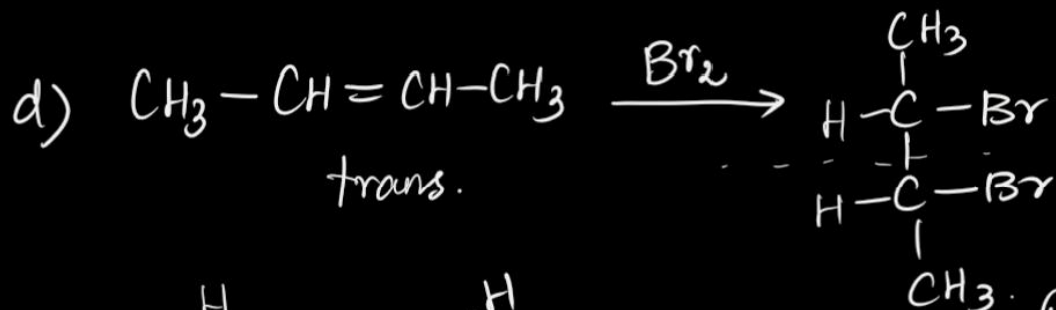


ii) From Alkene



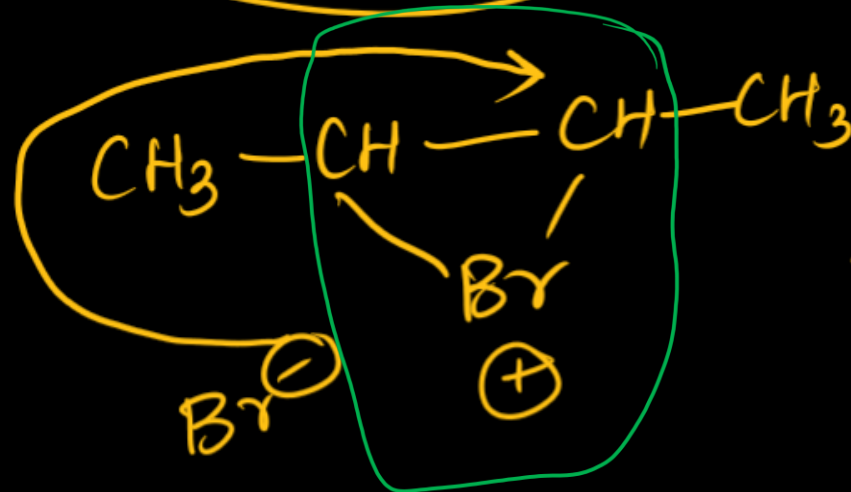
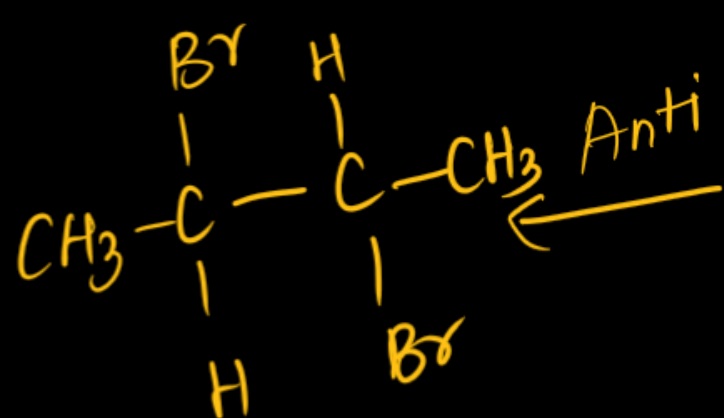
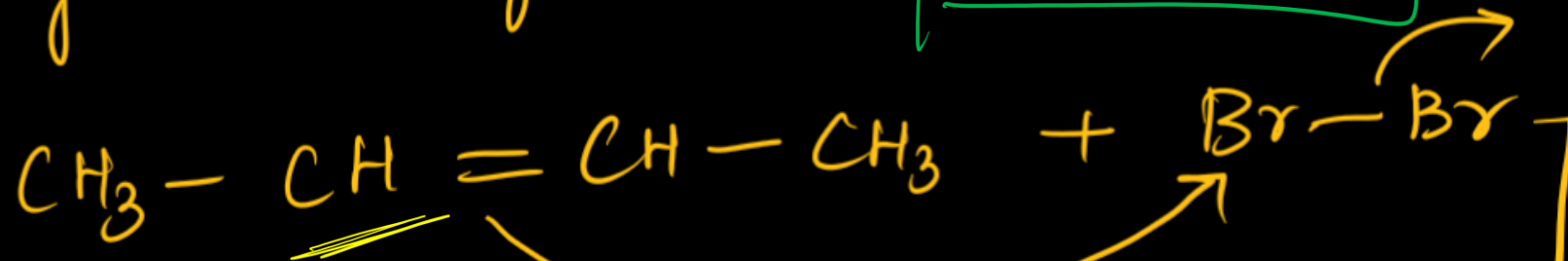
✓ Markovnikoff.

Anti-Markovnikoff

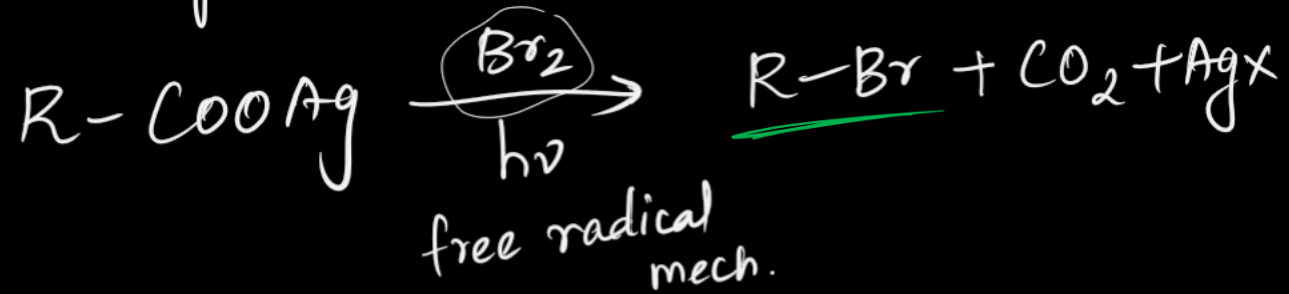


Racemix mixture.

Always Addn of $\text{Br}_2 \Rightarrow$ Anti Addn.

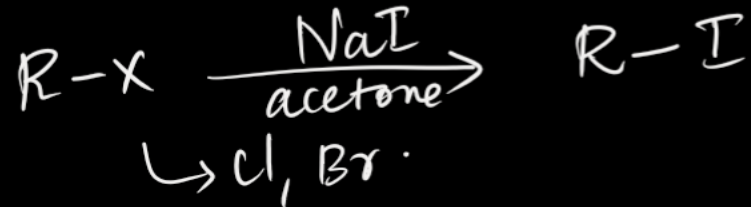


iii) From Ag Salt.



Hunsdiecker's Reaction.

iv) Finkelstein Rxn. Only for iodides.



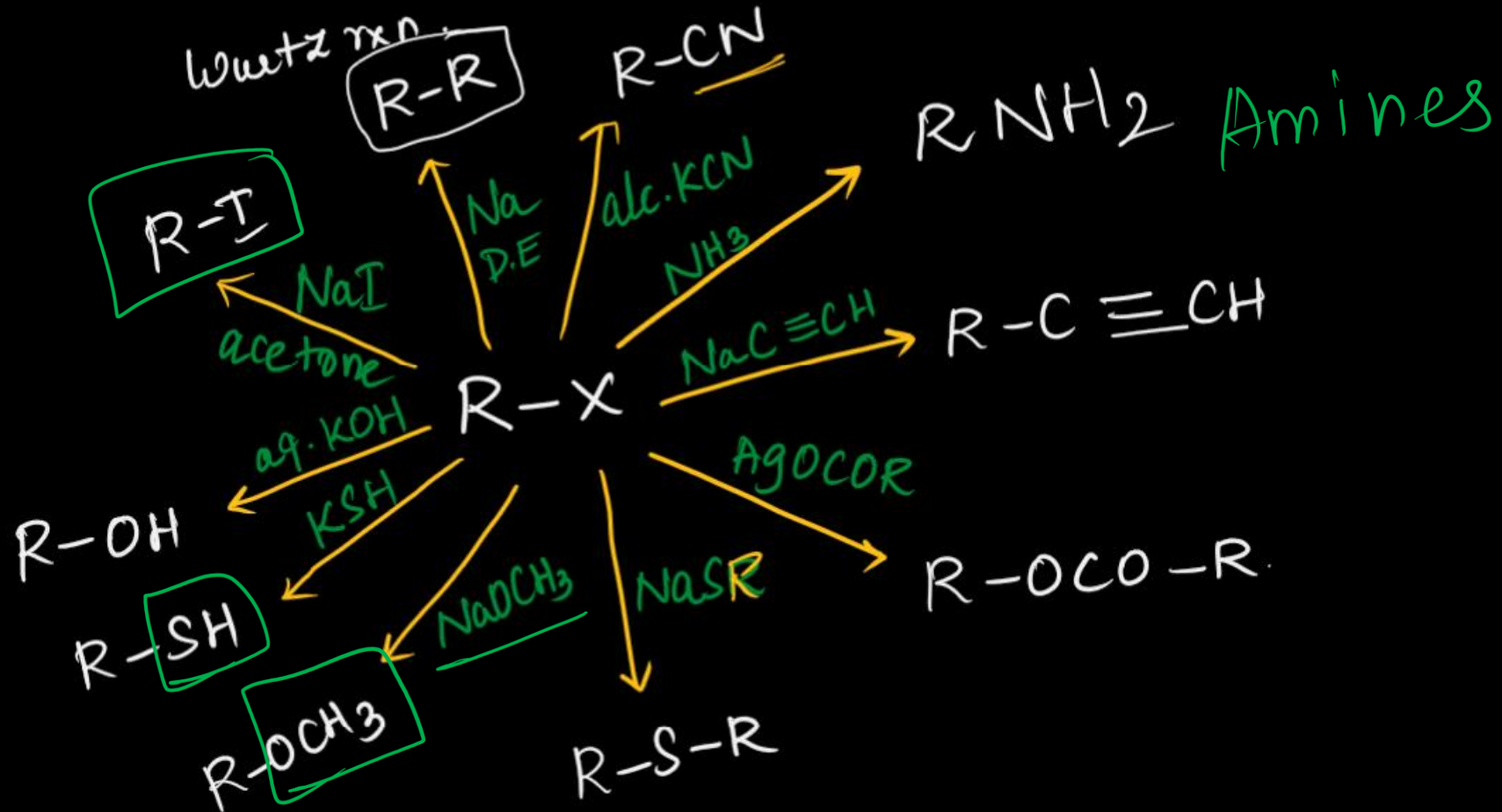
v) Swarts Reaction:

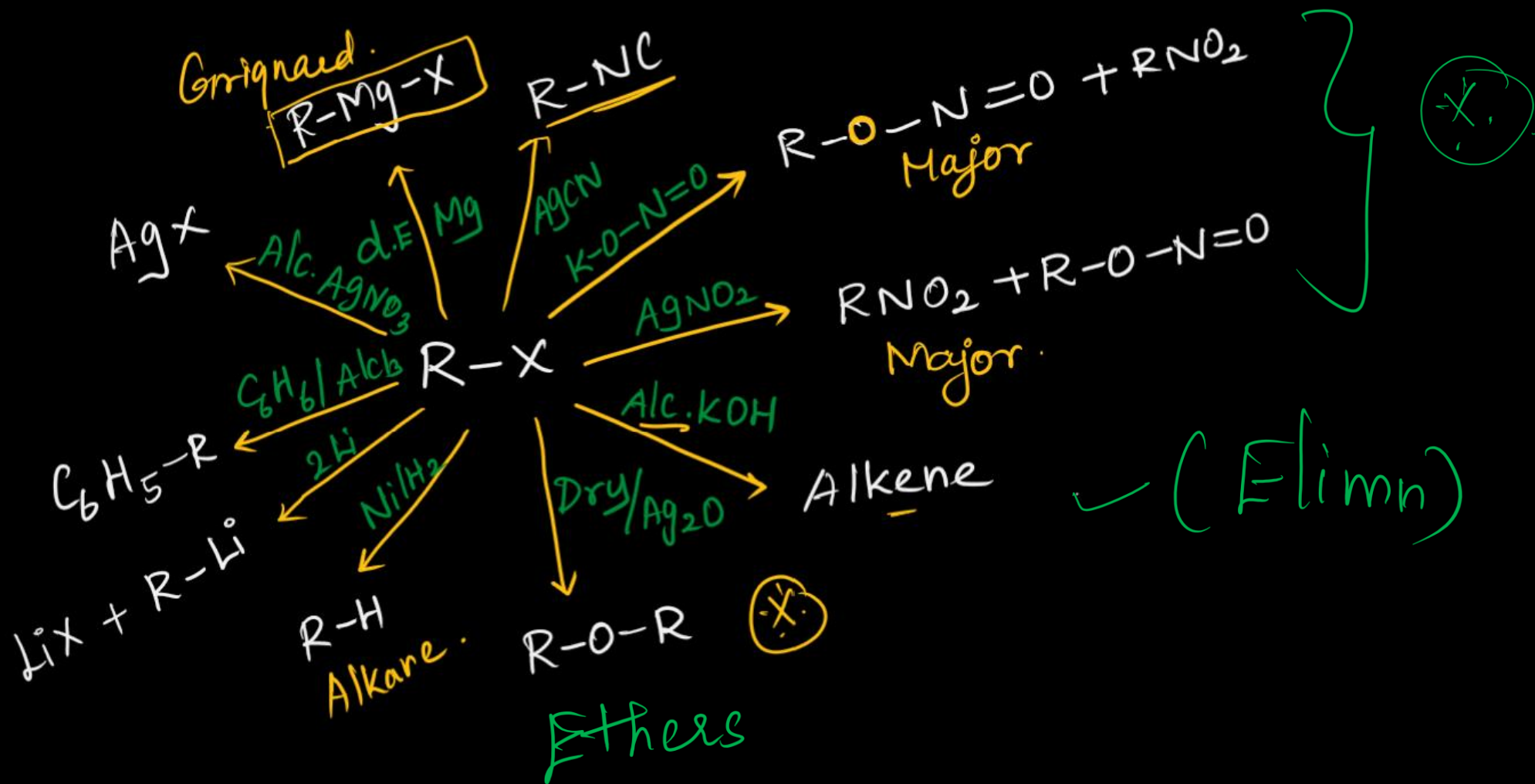
$$R-Cl \xrightarrow{Hg_2F_2} \underline{R-F.} \Rightarrow \text{fluorides.}$$

$Nu^\ominus$

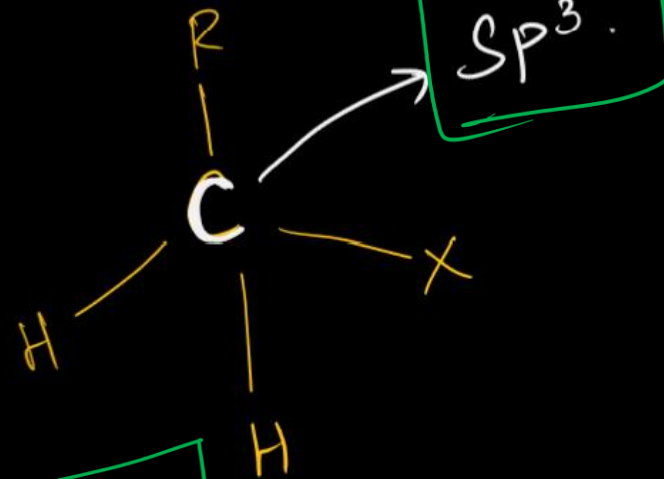
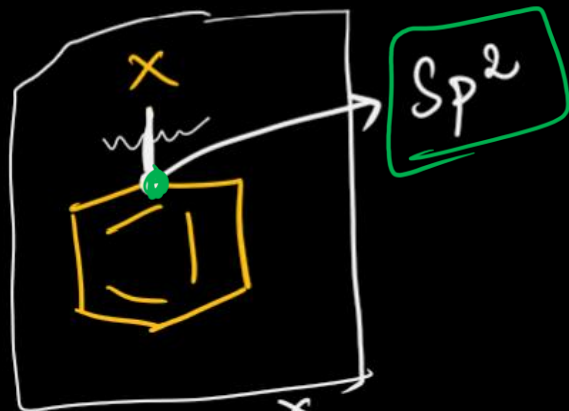


Properties.





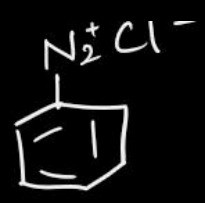
Halo arenes

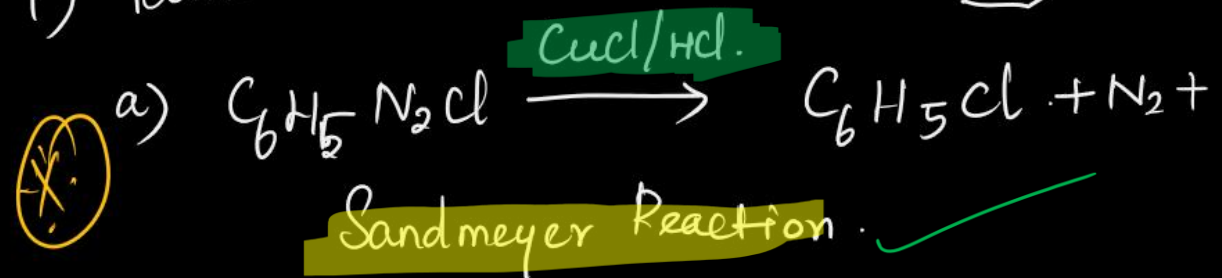


Partial
double
bond.



PPN

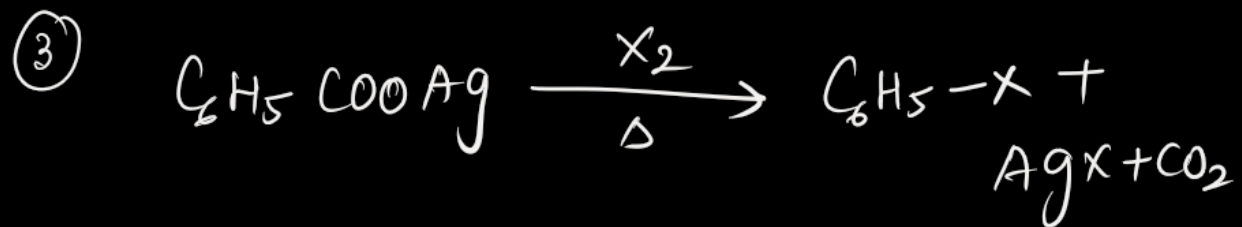
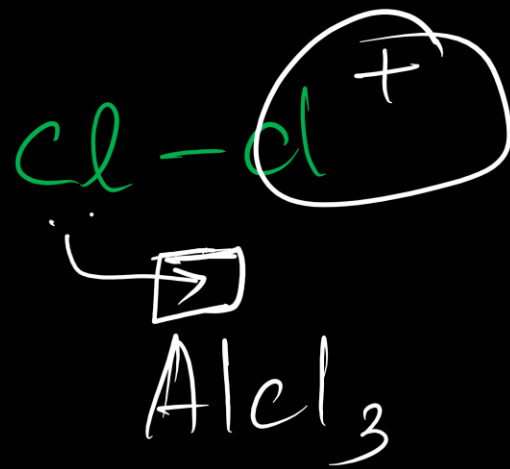
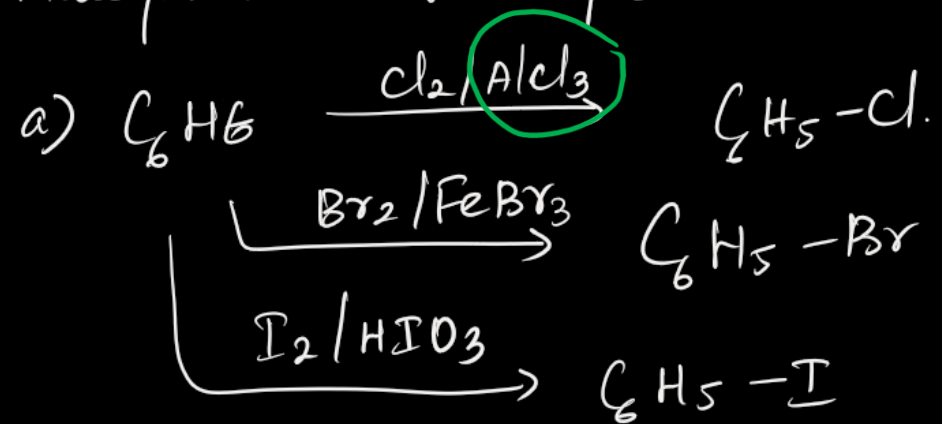
i) Benzene diazonium Salt: 



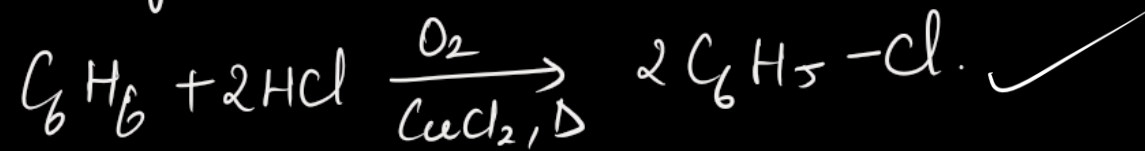
Balz-Schiemann Reaction.



ii) Halogenation: Electrophilic Substitution.



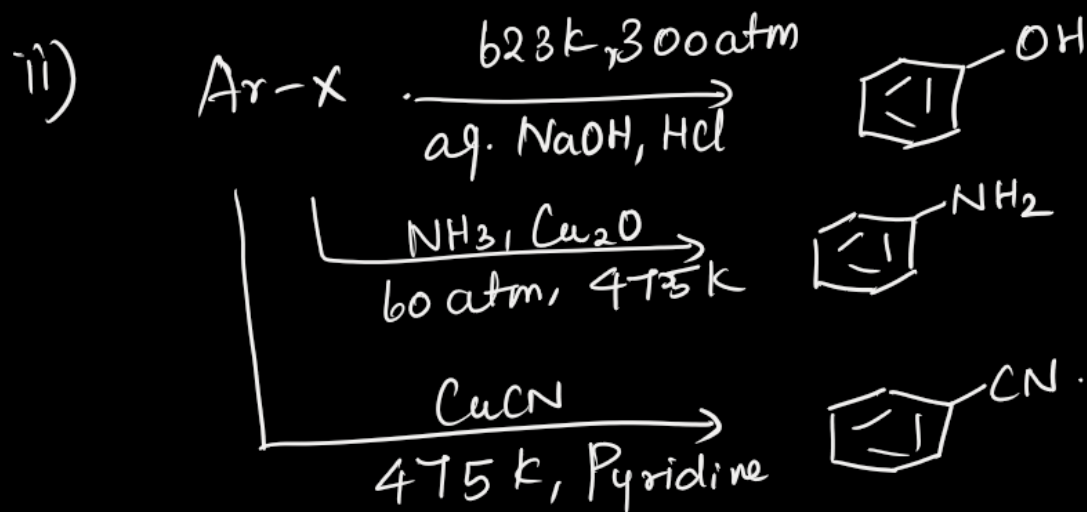
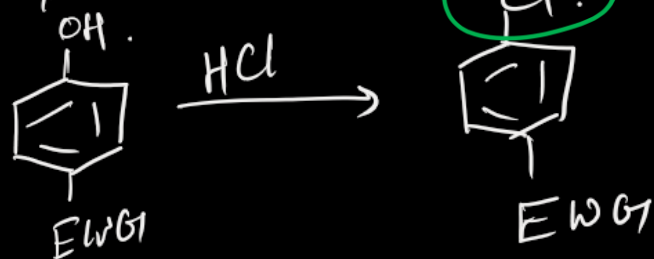
④ Raschig Process.



Properties:

i) Nucleophilic Substitution:

S_NAr

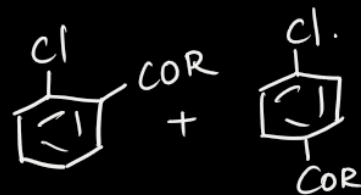


② Electrophilic

Aro. Subs:



RCOCl
 AlCl_3



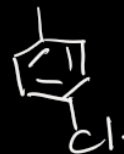
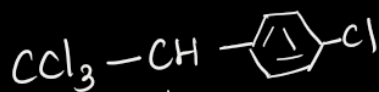
$\text{Cl}_2, \text{FeCl}_3$

o, p - dichloro

$\text{HNO}_3 + \text{H}_2\text{SO}_4$

o, p - nitrochloro

$\text{CCl}_3\text{-CHO},$
 H_2SO_4



DDT

③ Reaction with Metal:



Na

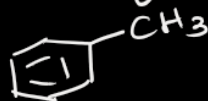
D.E



Fittig rxn.

$\text{Na}, \text{CH}_3\text{-Cl}$

D.E



Wurtz-Fittig rxn

Mg, THF

Ar-Mg-X

Ni-Al.

$\text{C}_6\text{H}_6.$

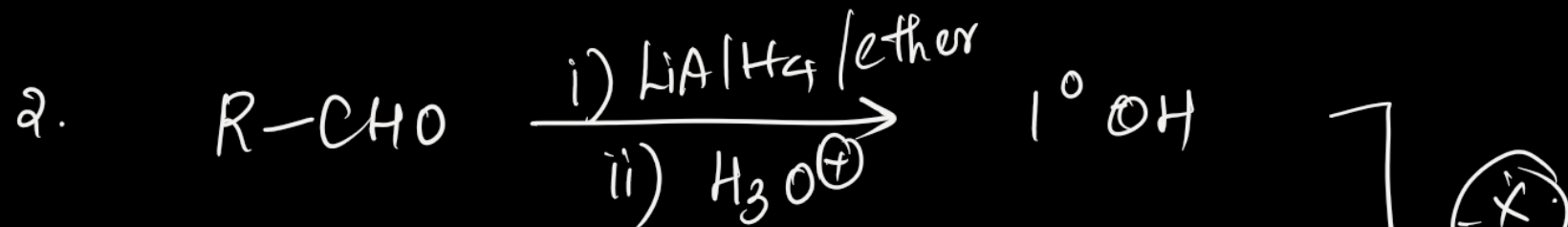
NaOH

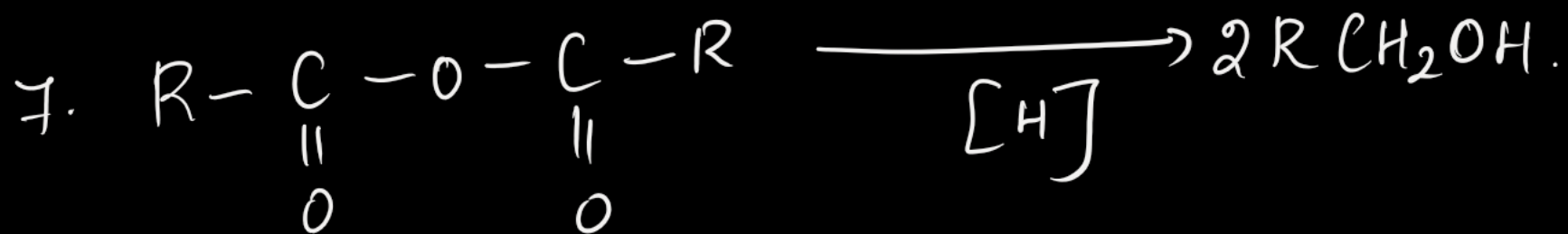
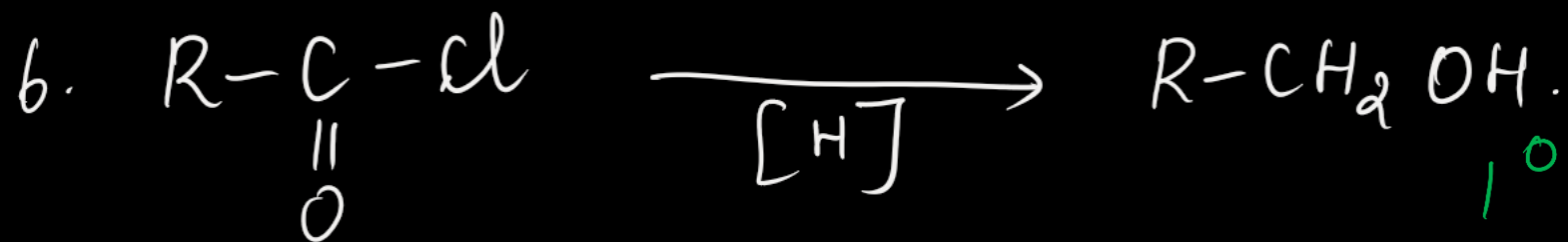
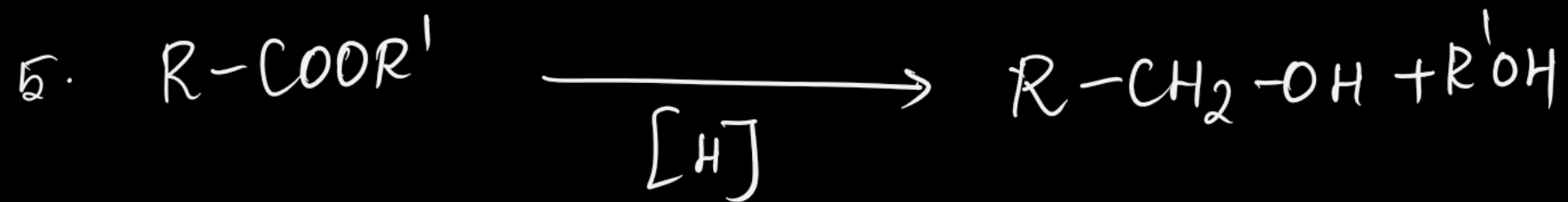
Grignard reagent.

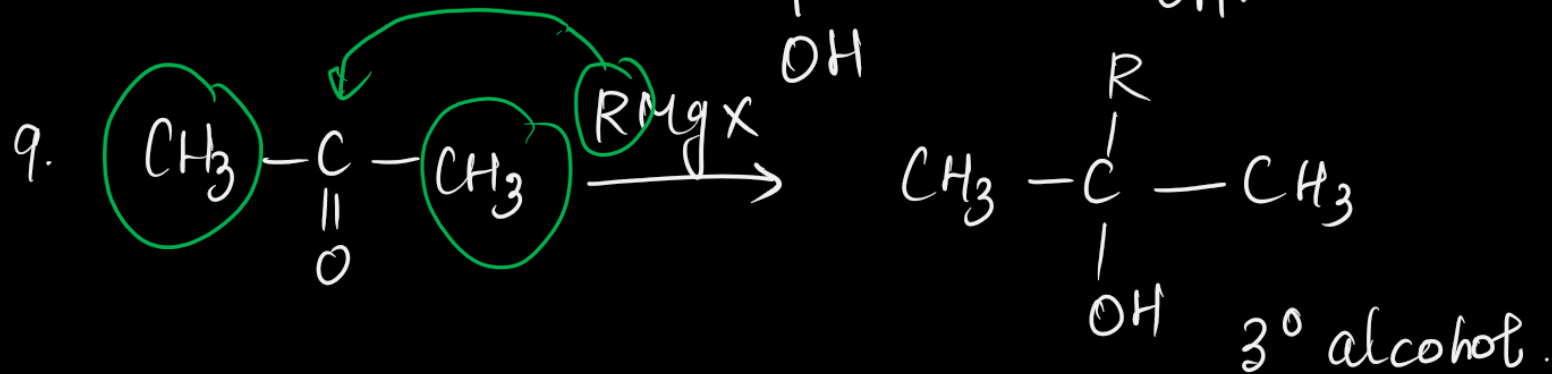
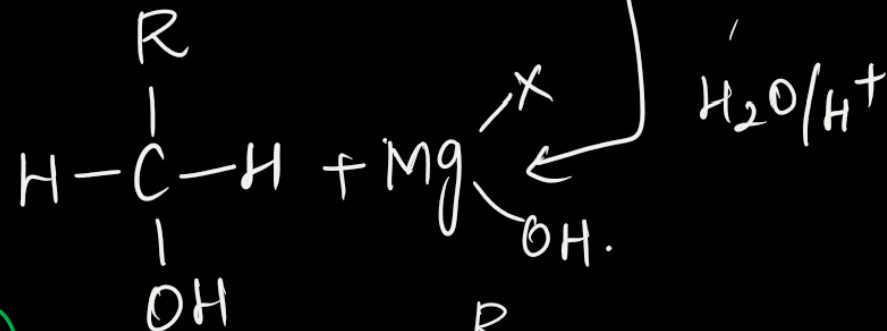
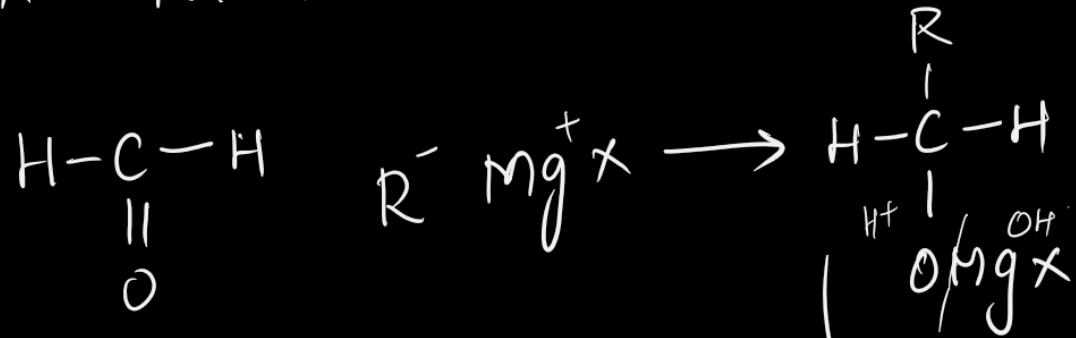
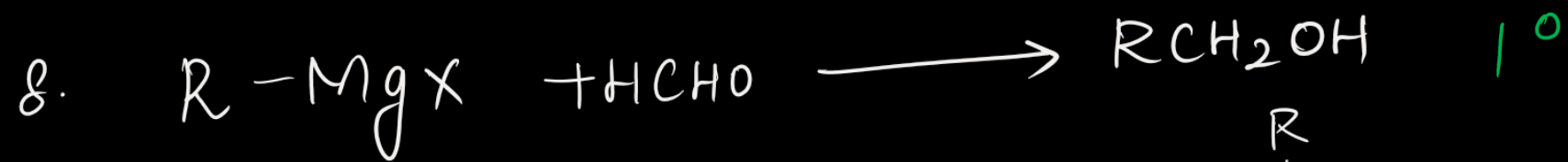
Uses

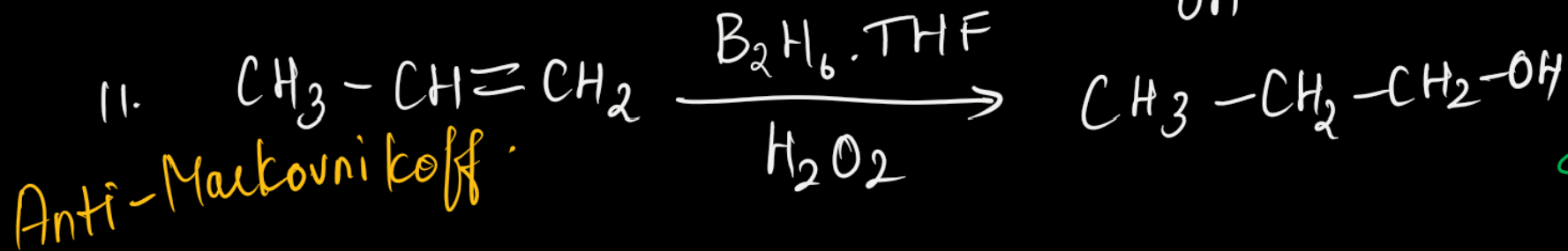
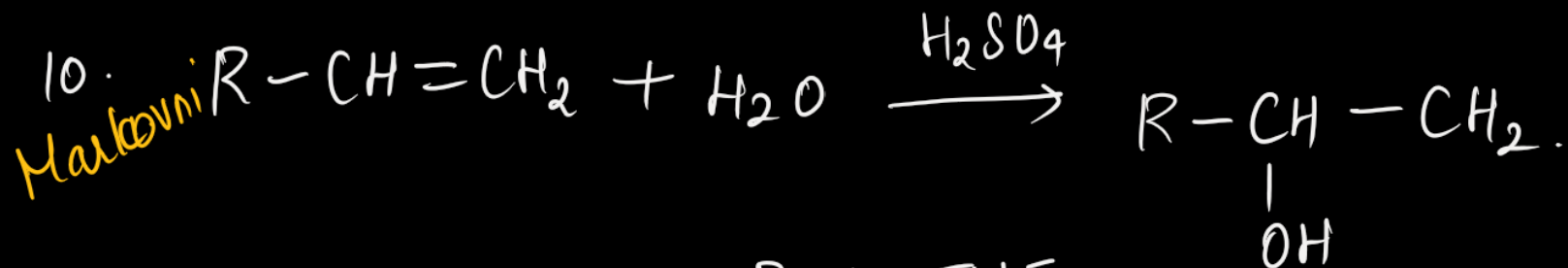
Alcohol phenol and Ether.

Preparation:

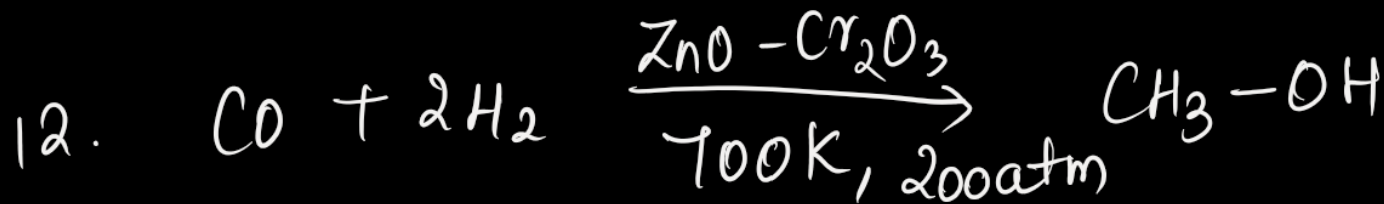




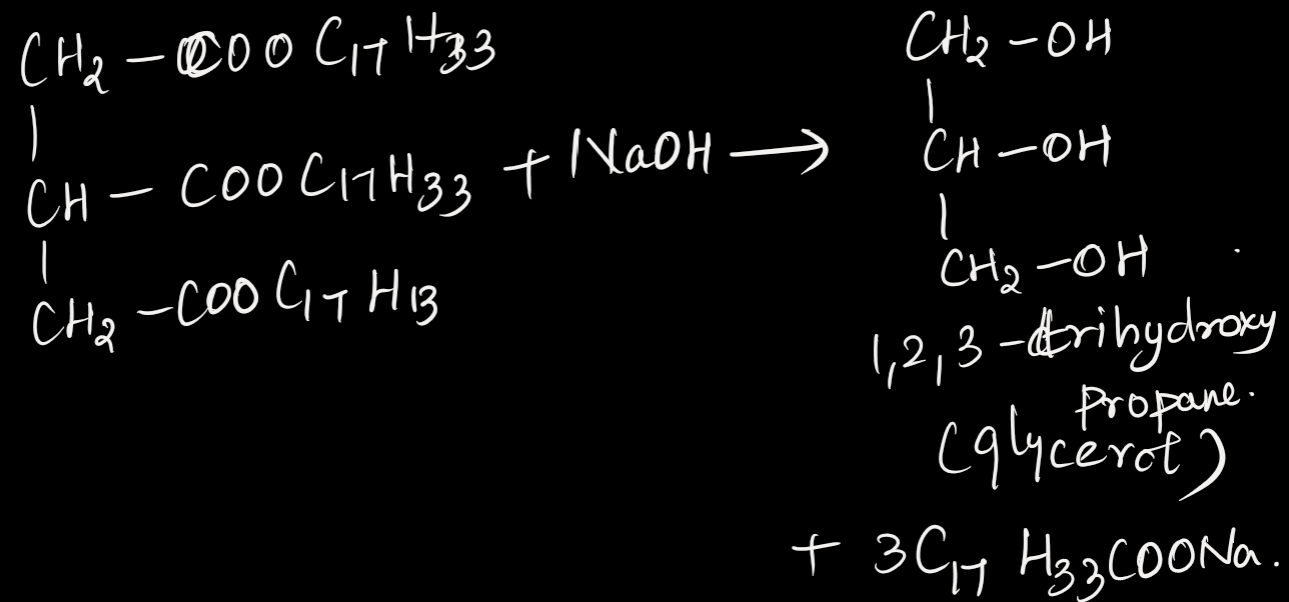
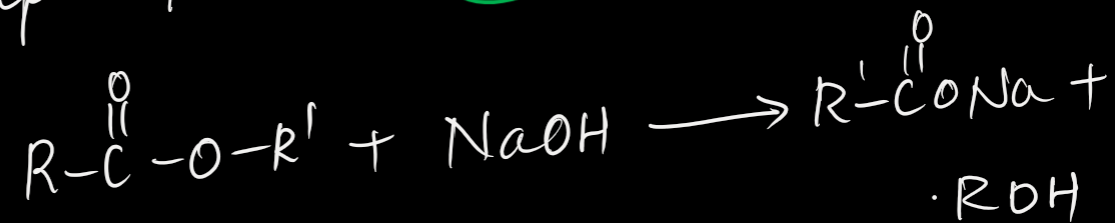




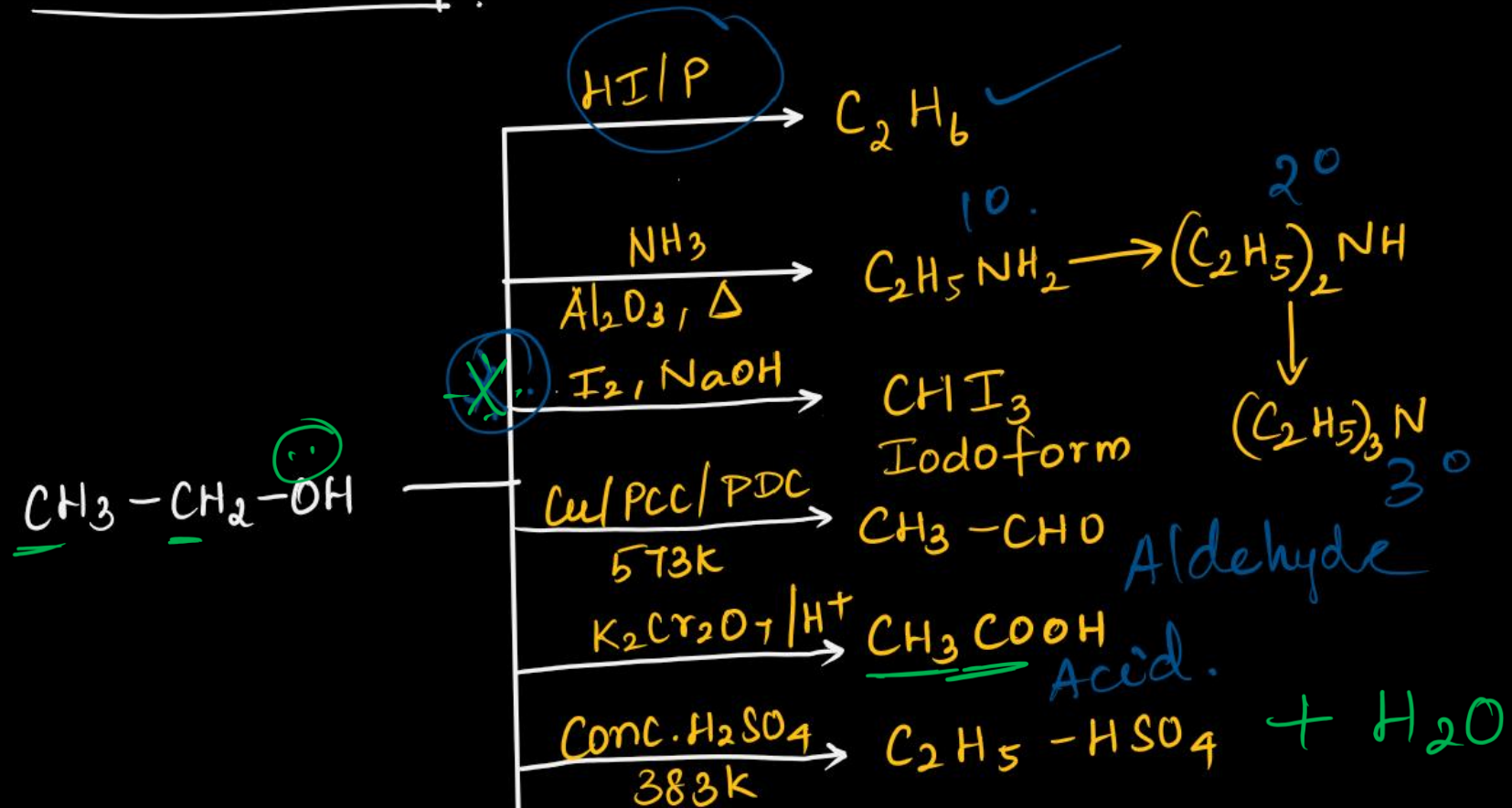
Syn Addn.

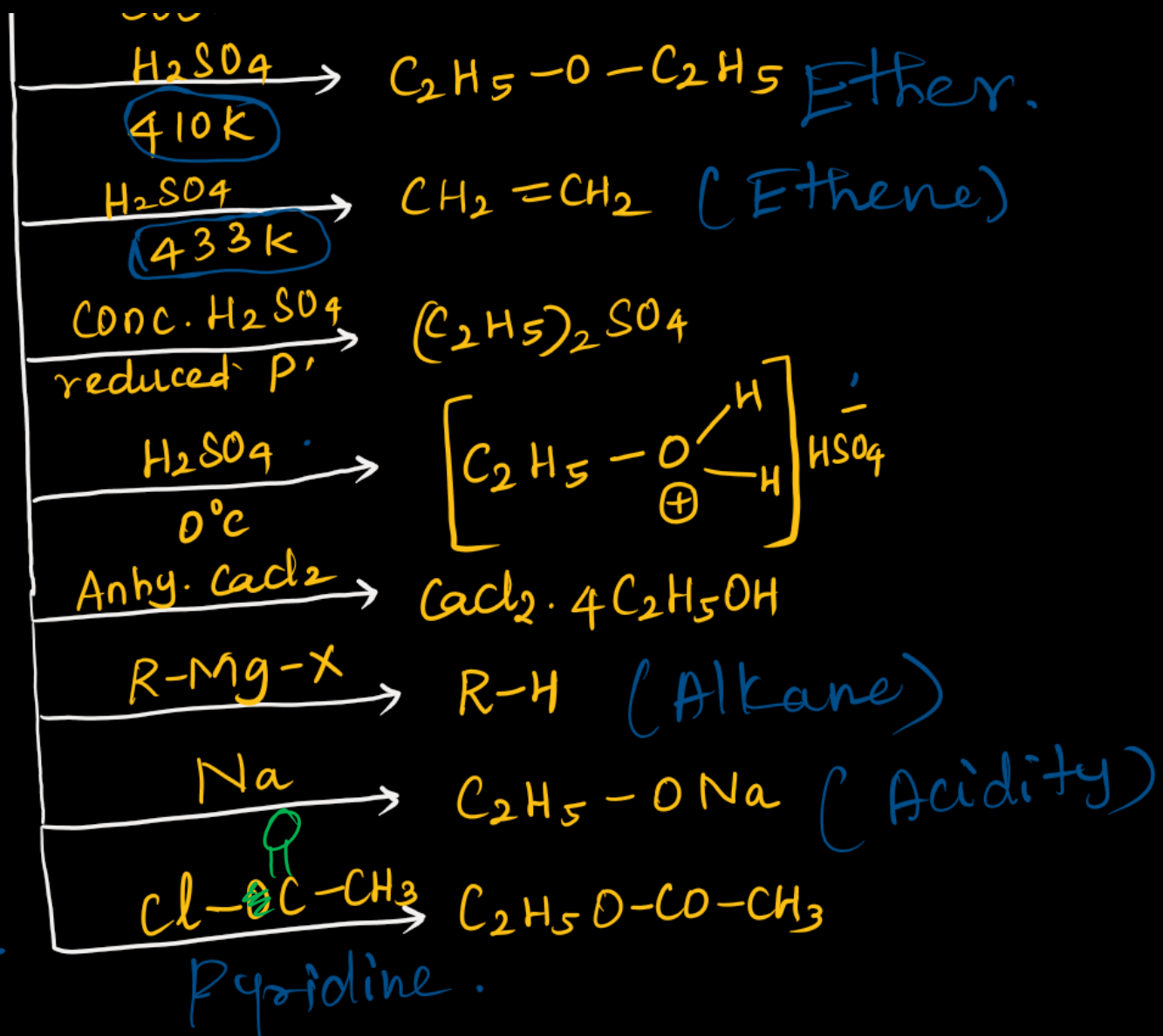


13. Saponification: 



Chemical Prop:

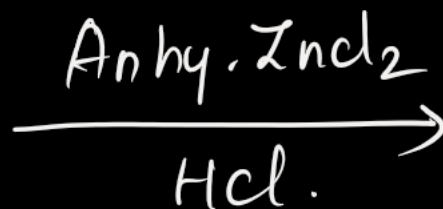




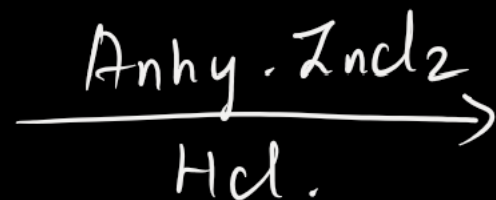
Lucas test:



1° OH

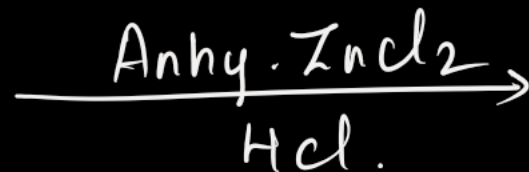


2° OH



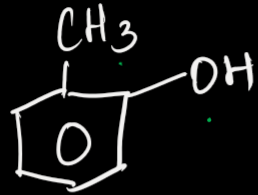
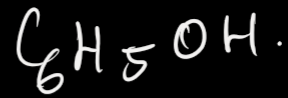
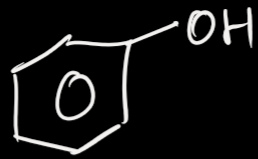
10-15 min.

3° OH

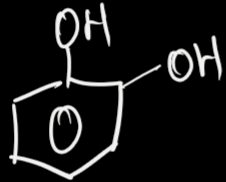


Immediate
turbidity.

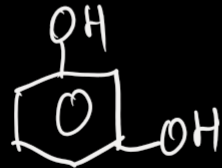
Phenols:



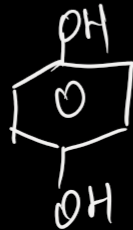
o-Cresol



Catechol. ✓

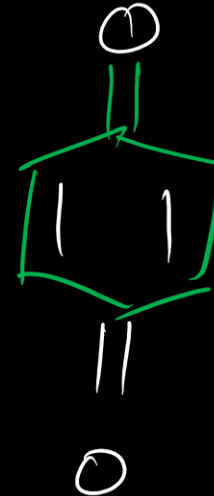


Resorcinol. ✓

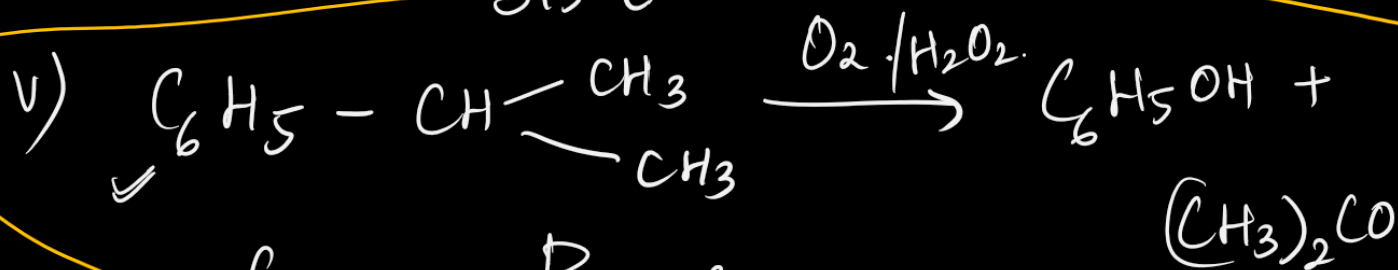
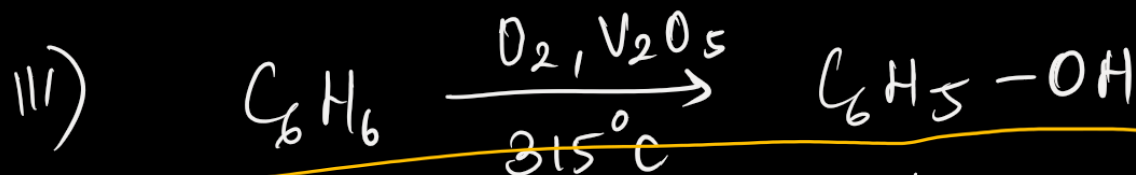
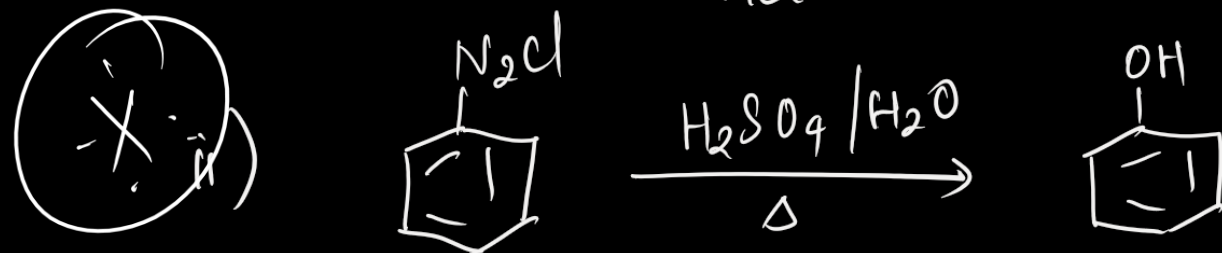
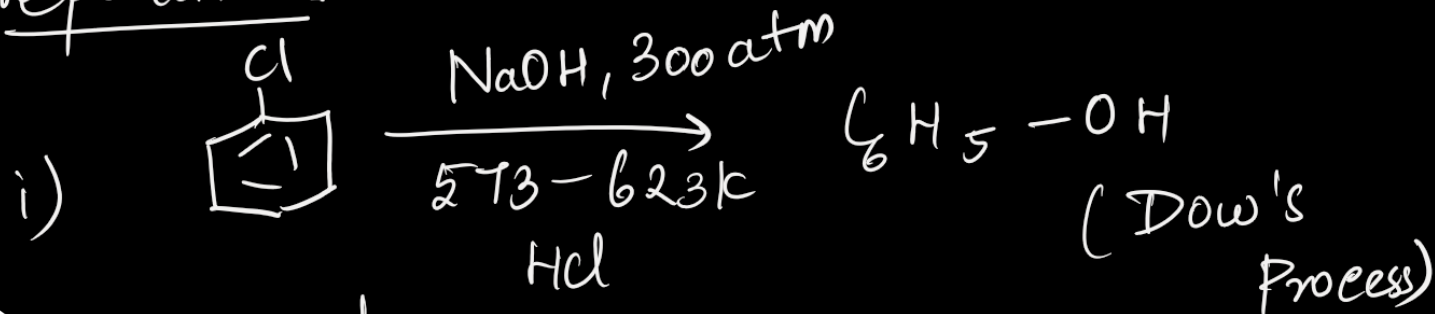


Quinol (or) ✓

Hydroquinone.



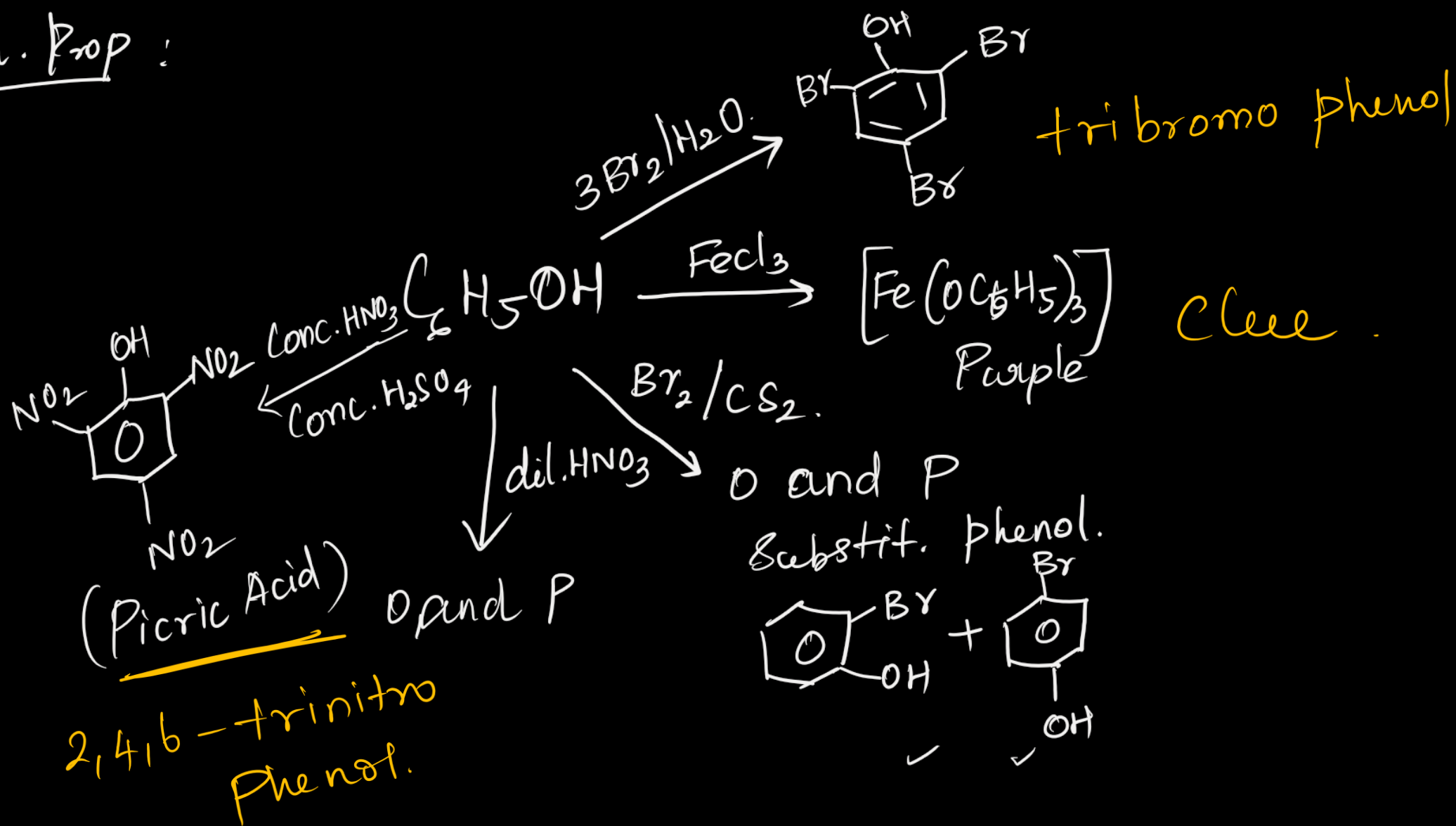
Preparation:



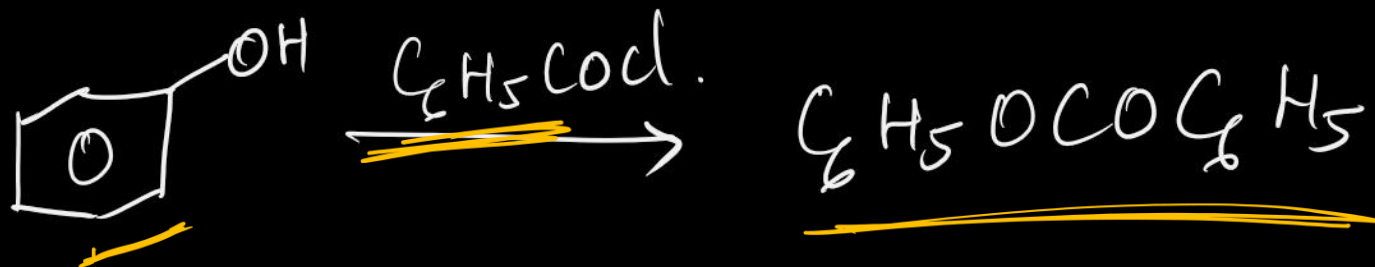
Cumene Process.



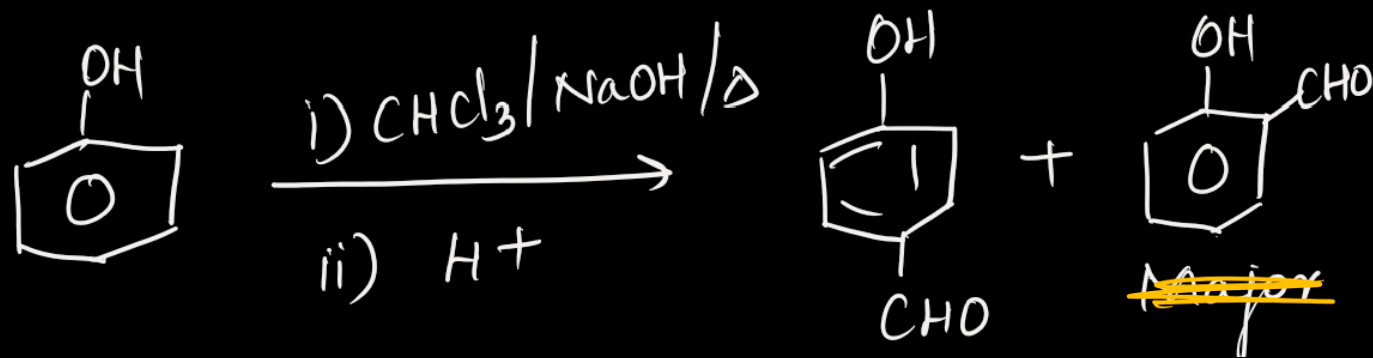
Chem. Prop :



i) Schoten - Bauman Reaction:



(X) ii) Reimer - Tiemann Reaction:

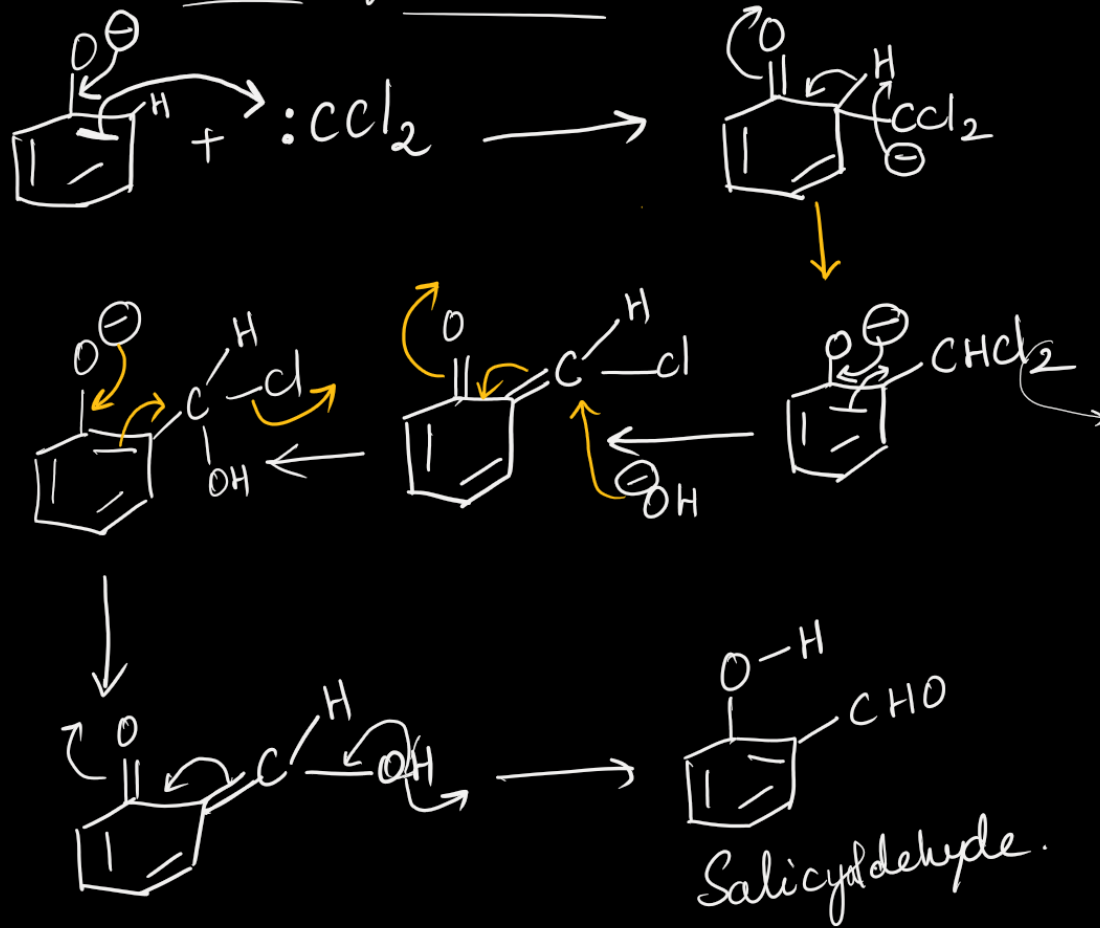


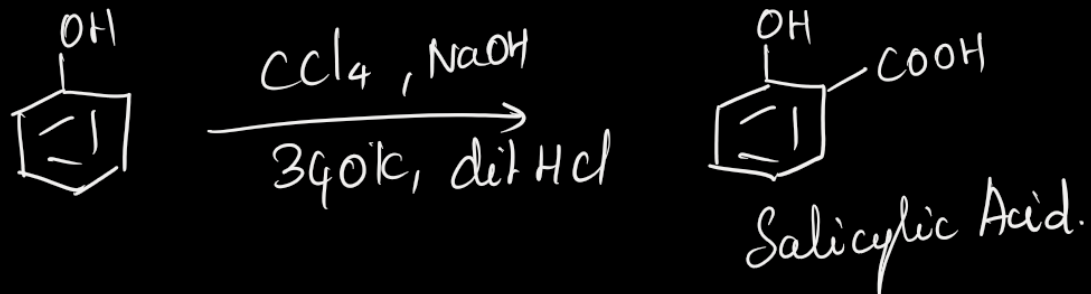
Mech

Step 1: Formn of Carbene.

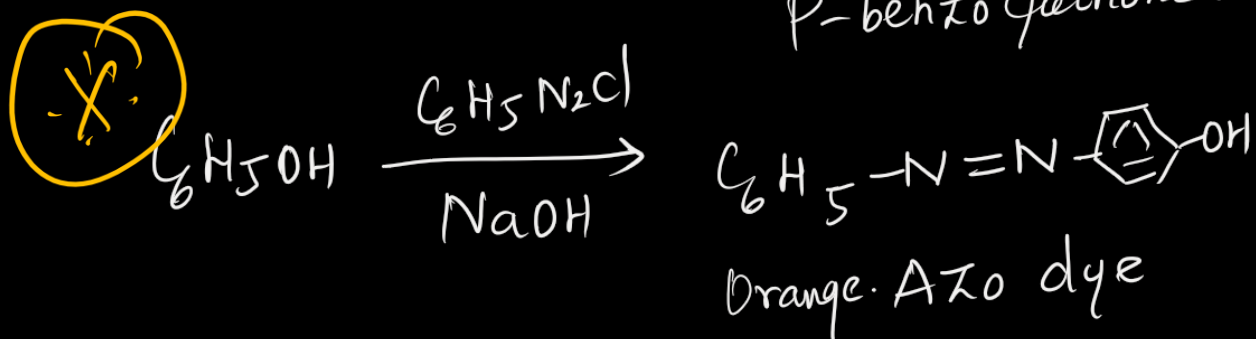
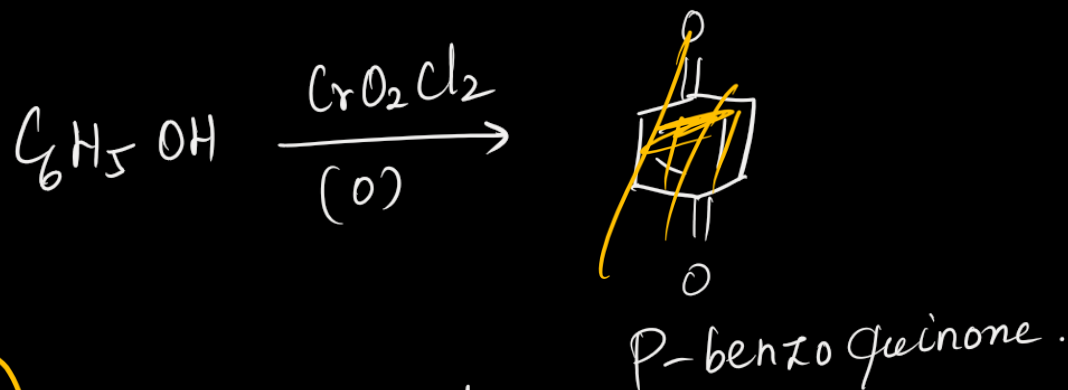
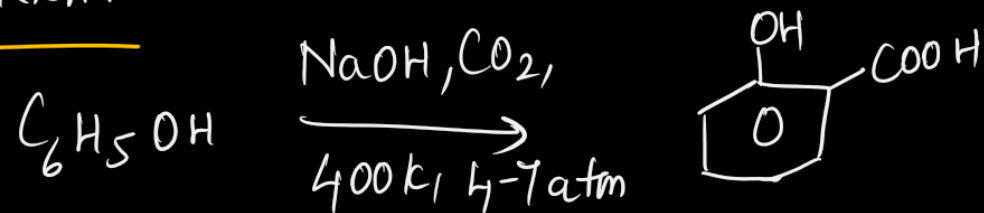


Step 2: Attack of Carbene:

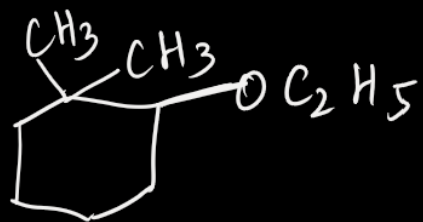




Kolbe's Rxn:

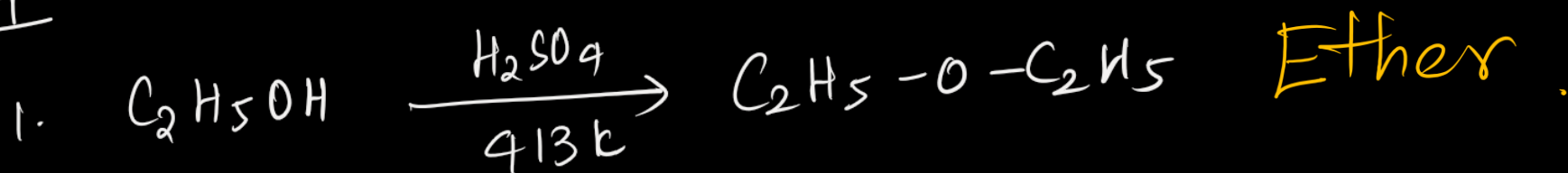


Ethers: $R-O-R$.



2-Ethoxy-1,1-dimethylcyclohexane.

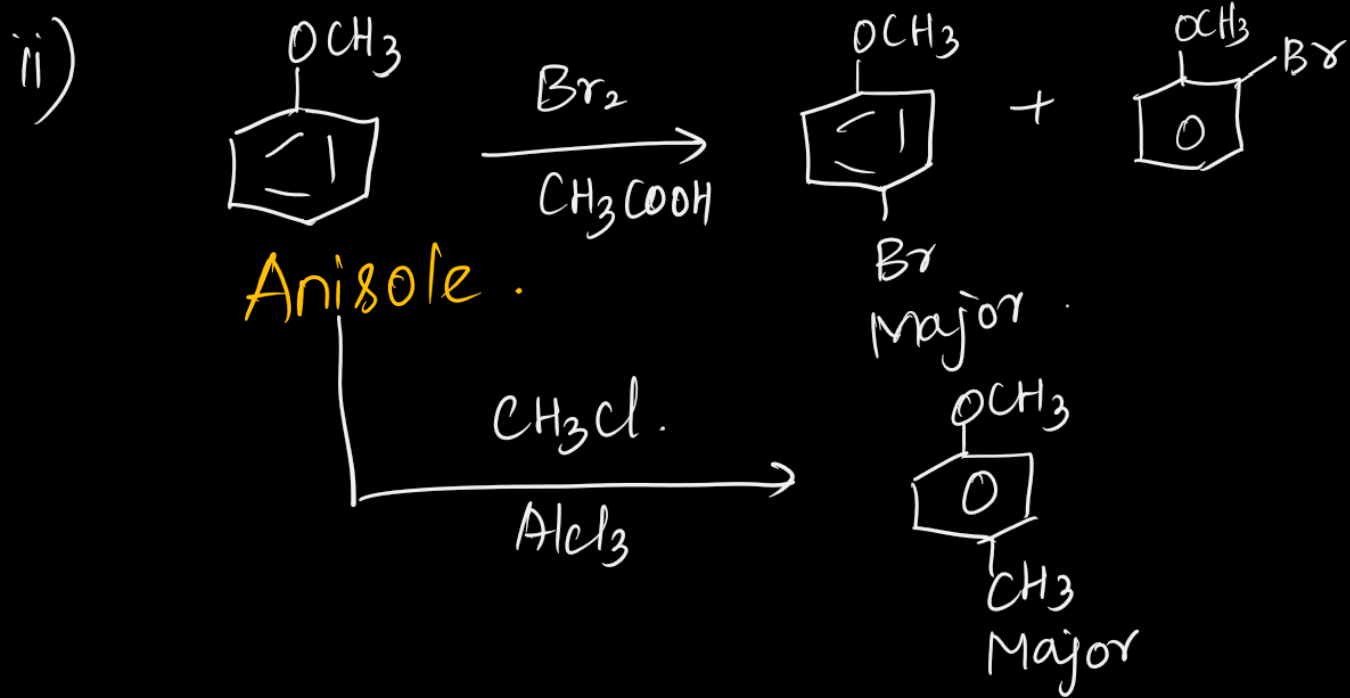
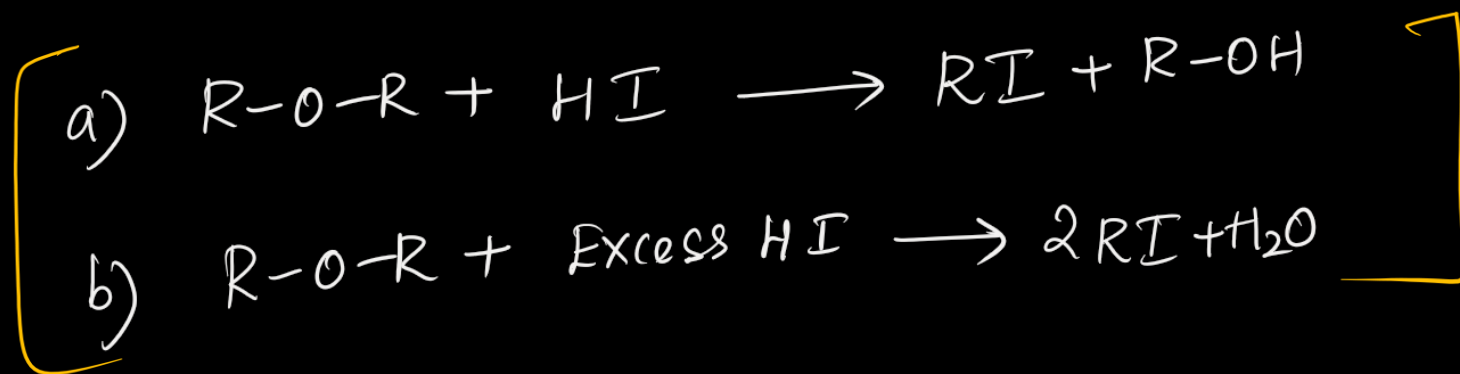
Prep.



Williamson Synthesis.

S_N2

Prop: $\text{HI} > \text{HBr} > \text{HCl}$.



Carbonyl Compounds:

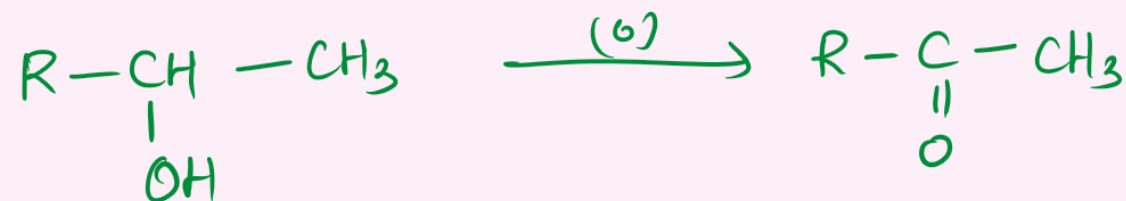
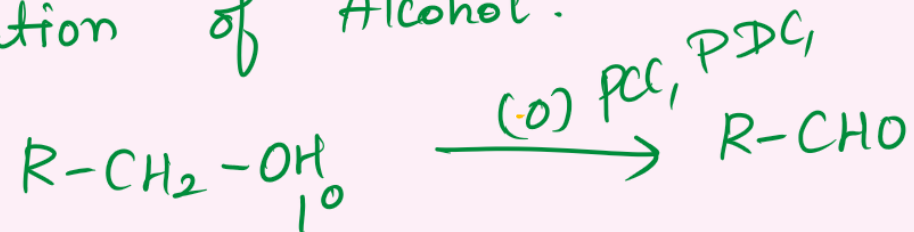


Metamerism.

Nomenclature.

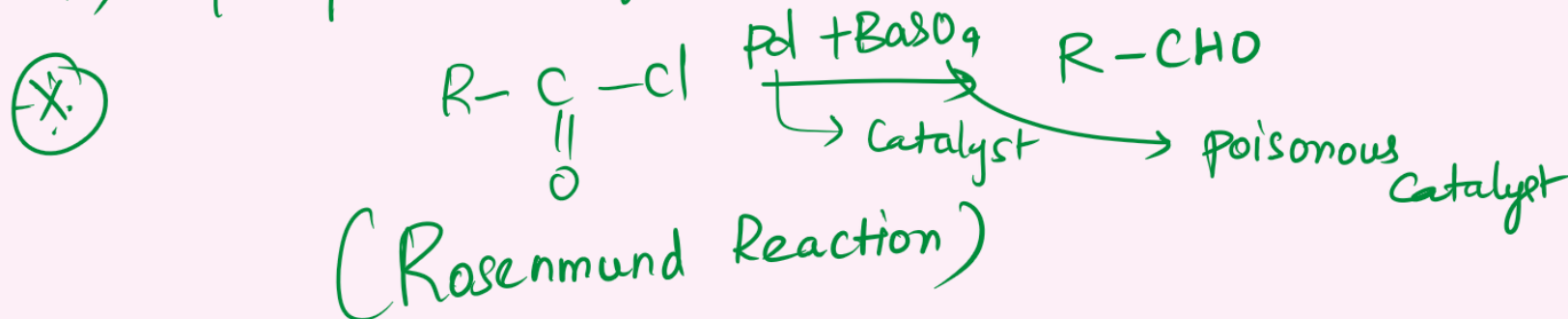
Preparation:

i) Oxidation of Alcohol:

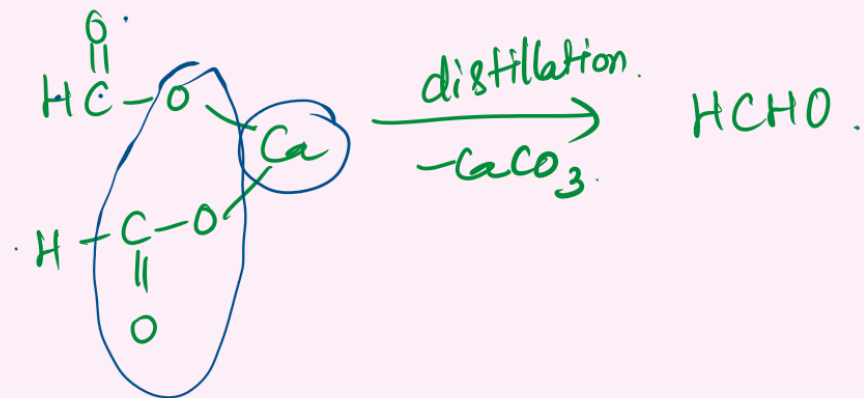
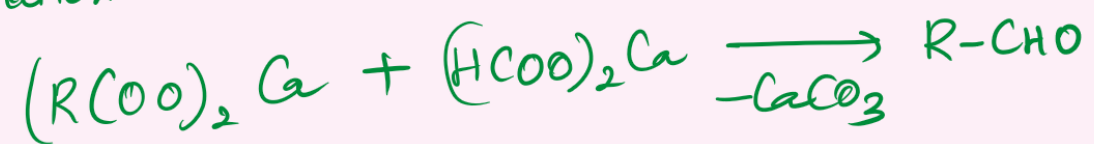


~~(X)~~ CrO_3 - Jones Reagent $\Rightarrow$ 2° Alcohol only.

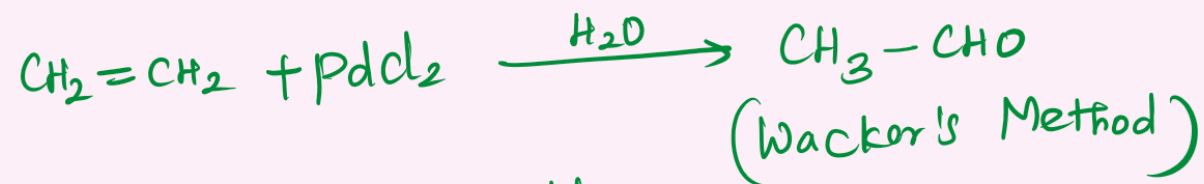
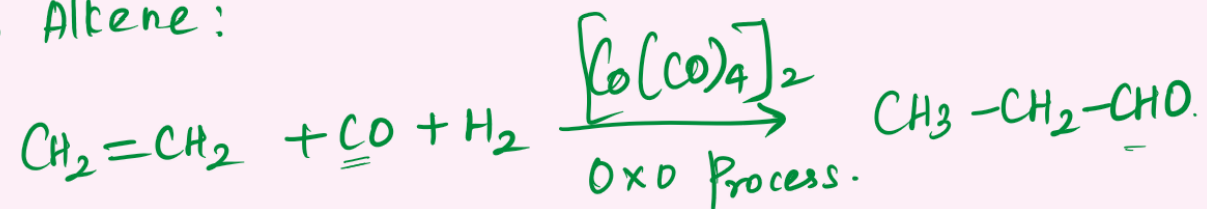
ii) Hydrogenation of Acid chloride.



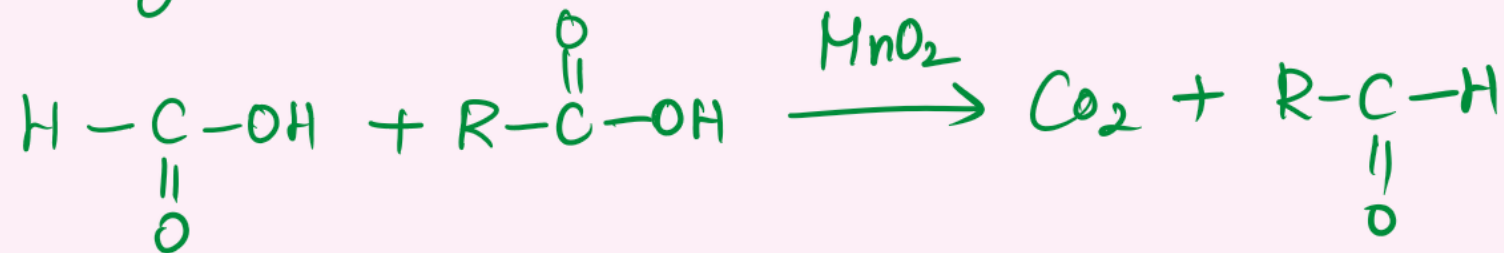
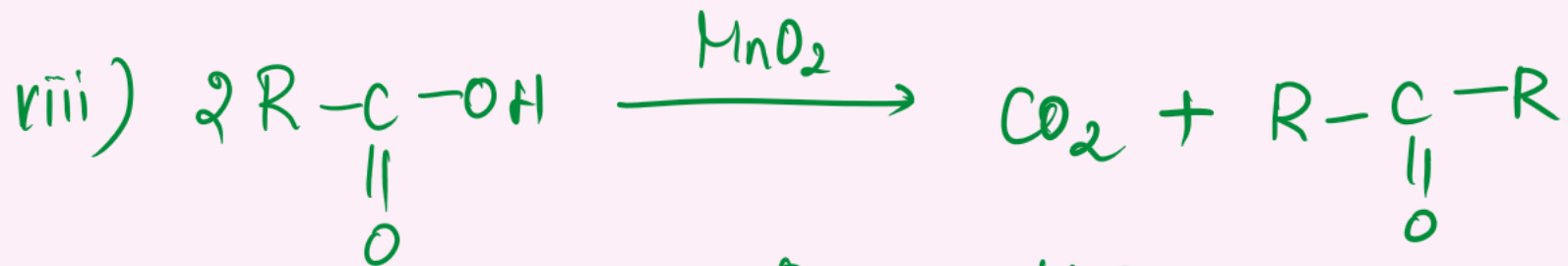
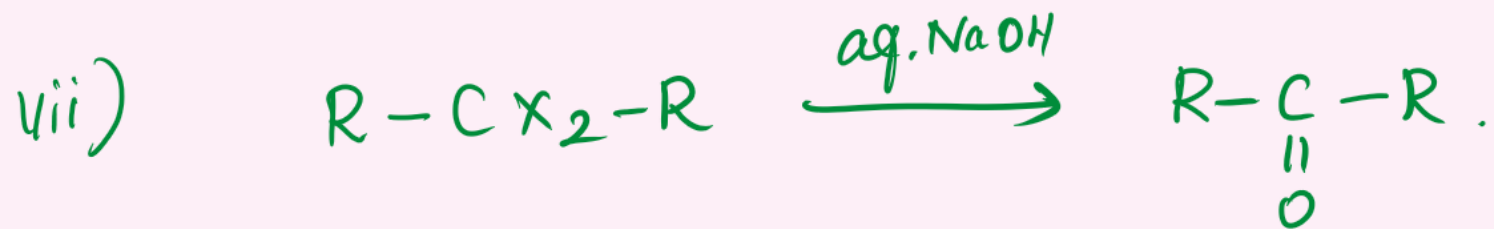
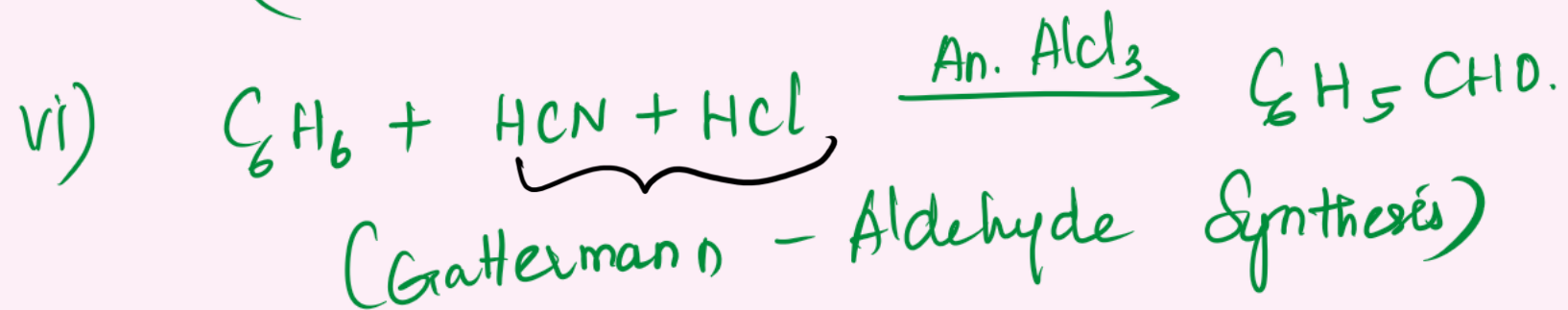
iii) Distillation:

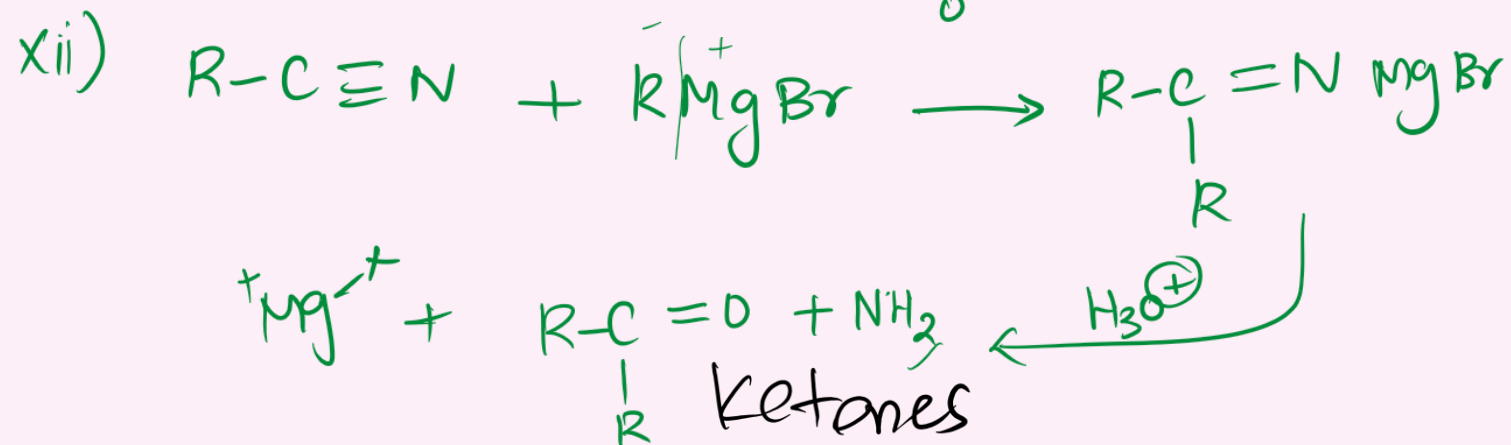
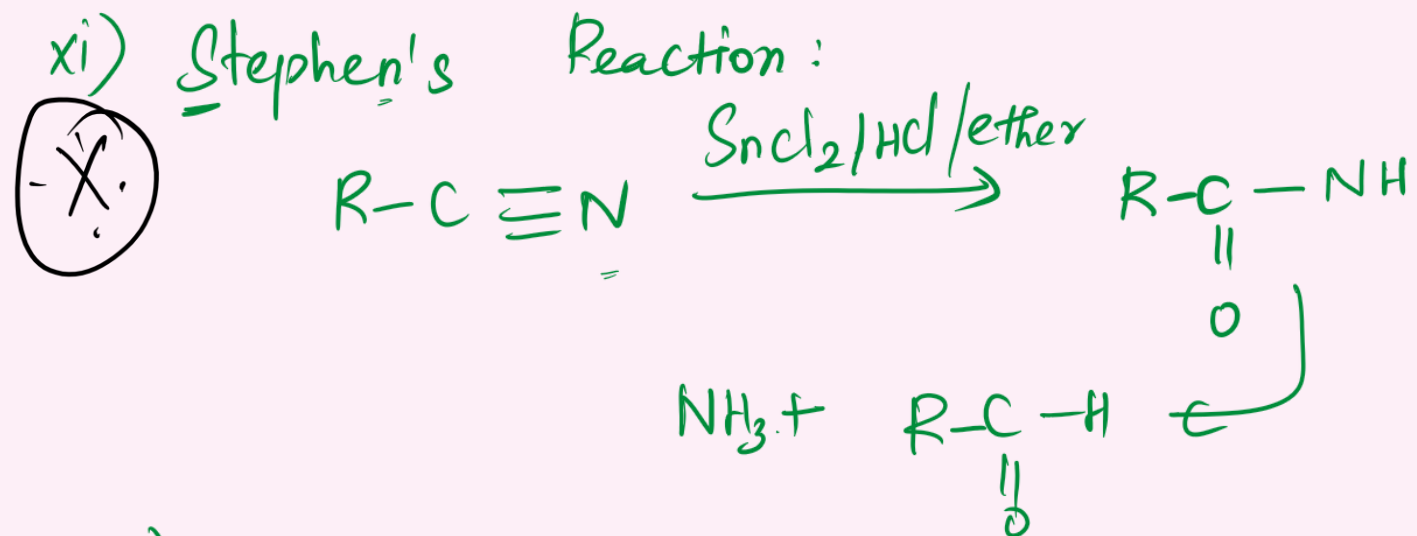
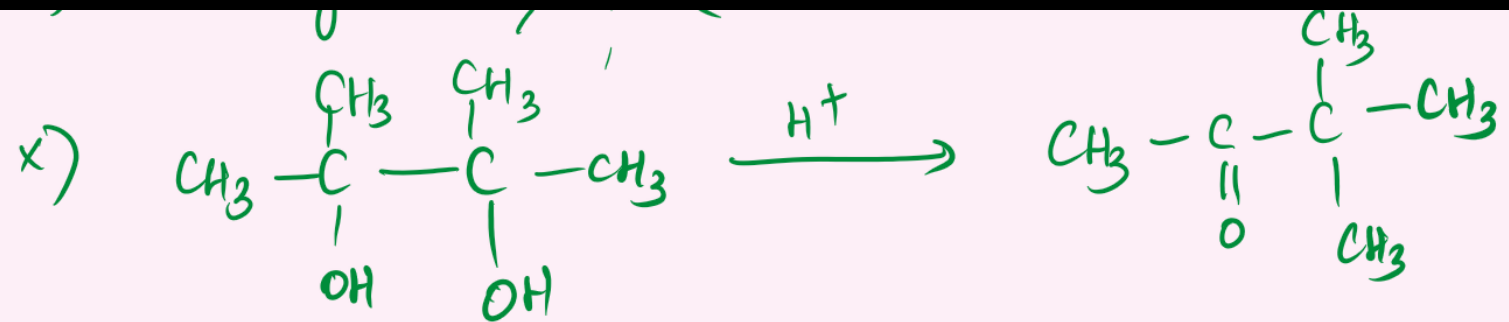


iv) From Alkene:

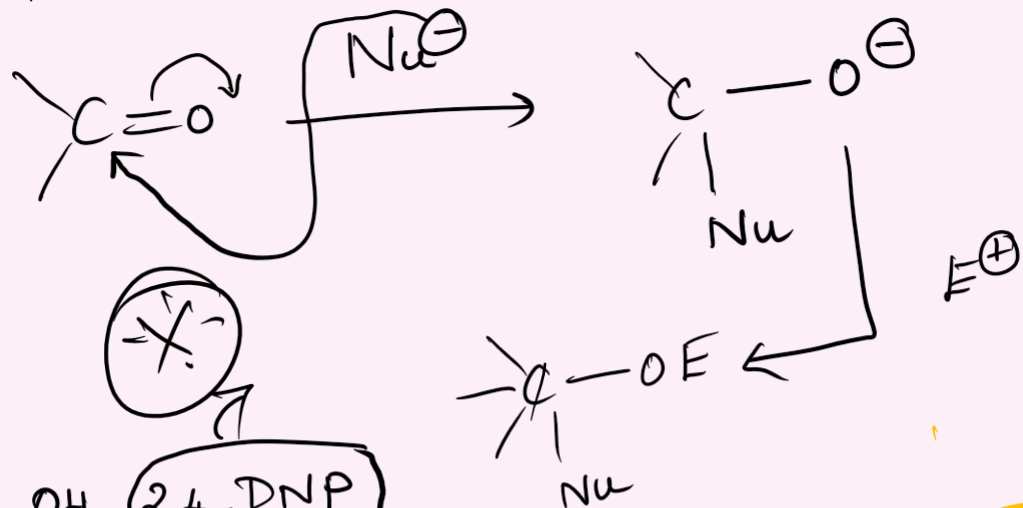


(Gattermann-Koch Synthesis)



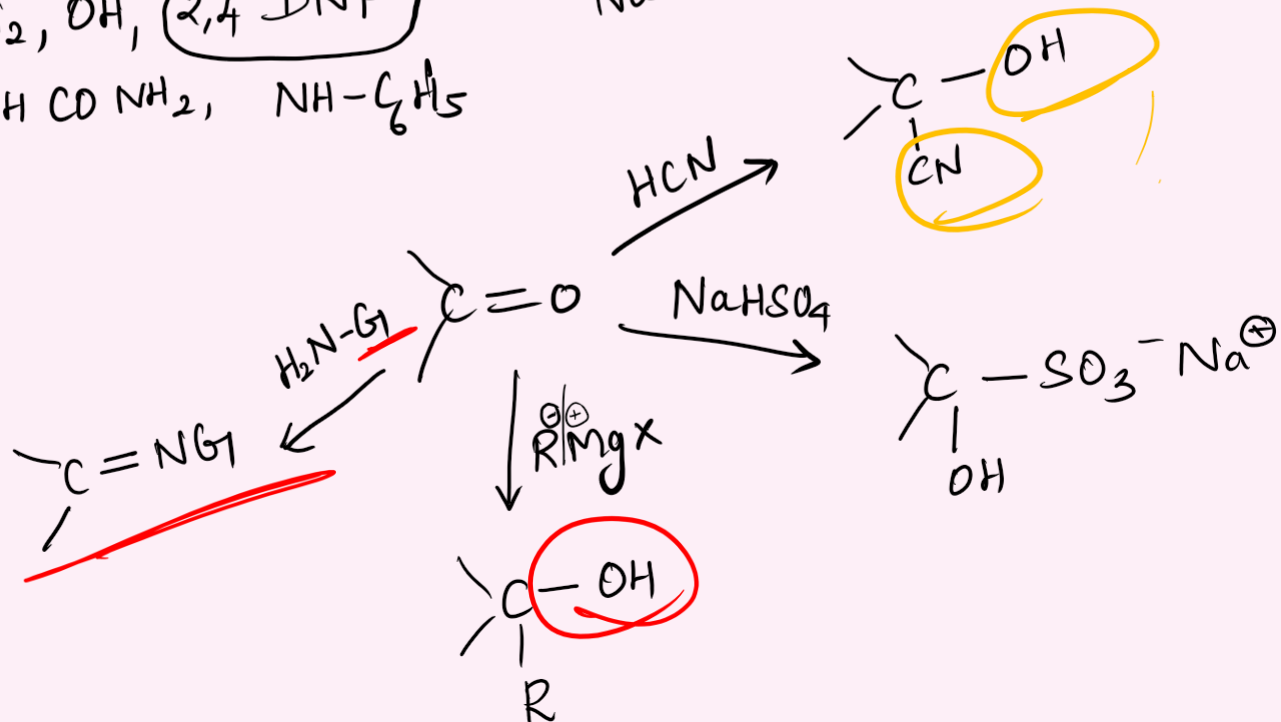


Nucleophilic Addn:

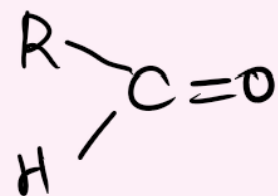


$\text{G} - \text{NH}_2, \text{OH}, \text{2,4 DNP}$
 $\text{NH CO NH}_2, \text{NH}-\text{C}_6\text{H}_5$

$\text{p}^{\text{H}} 3.5$



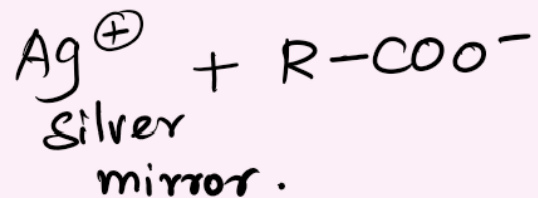
Oxidation:



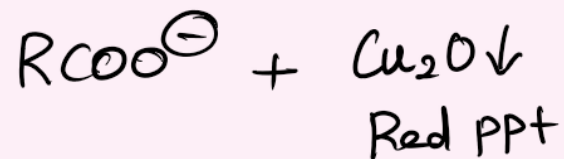
Tollens Reagent

(o)

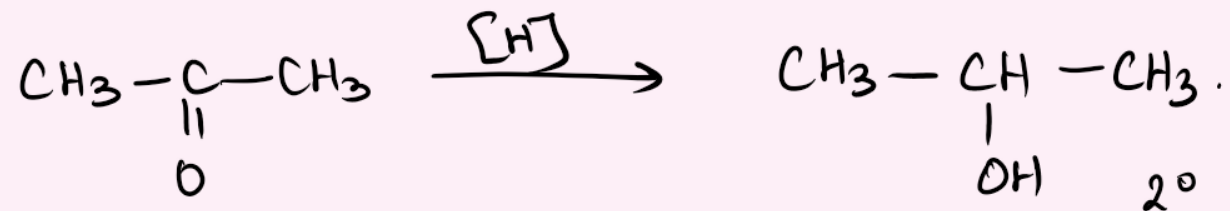
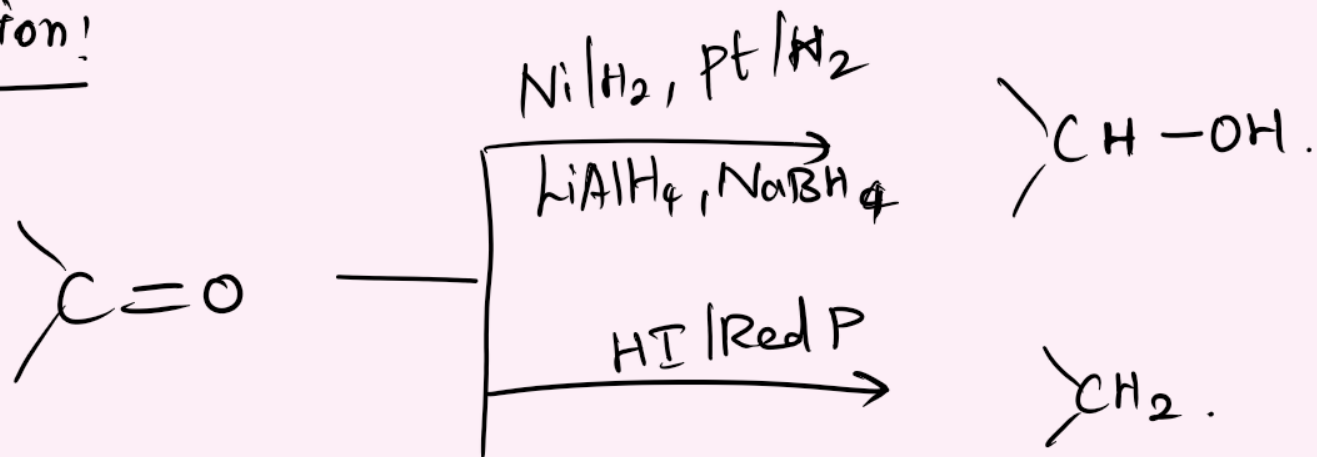
$\swarrow$ AgNO_3



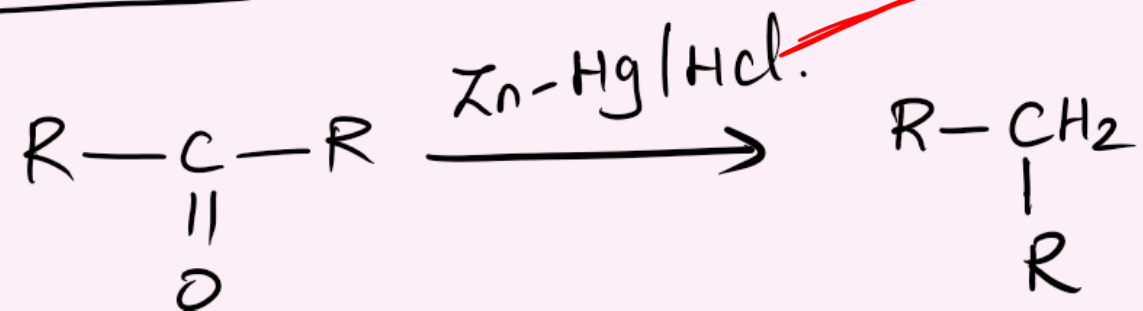
Fehling Solution.



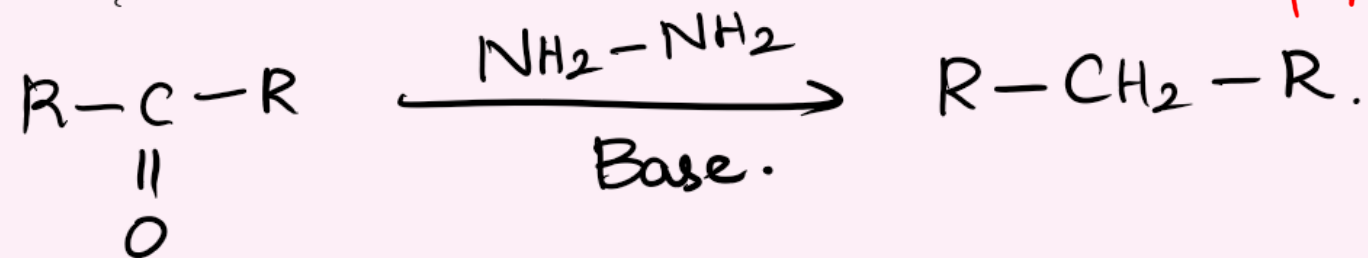
Reduction:



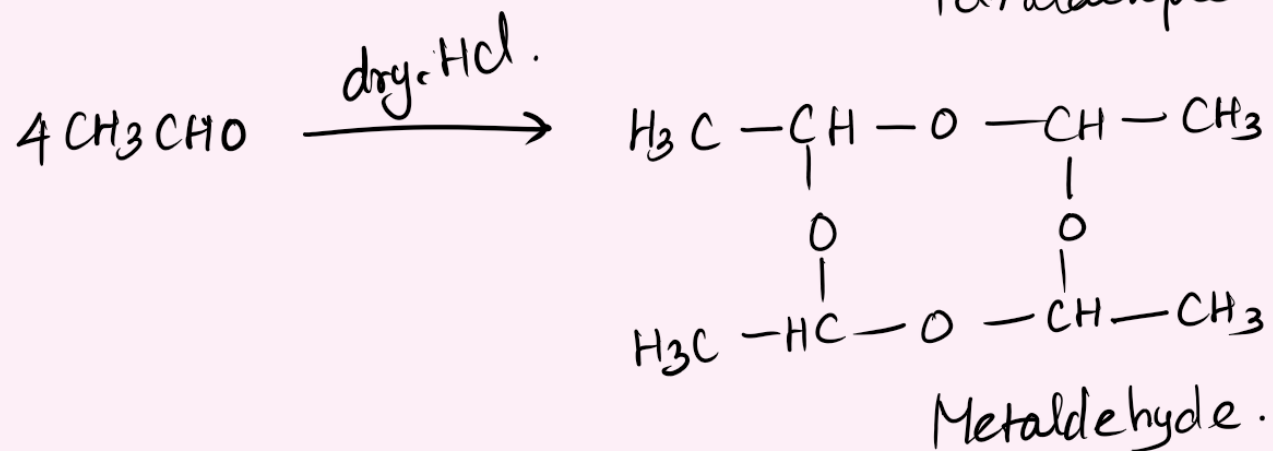
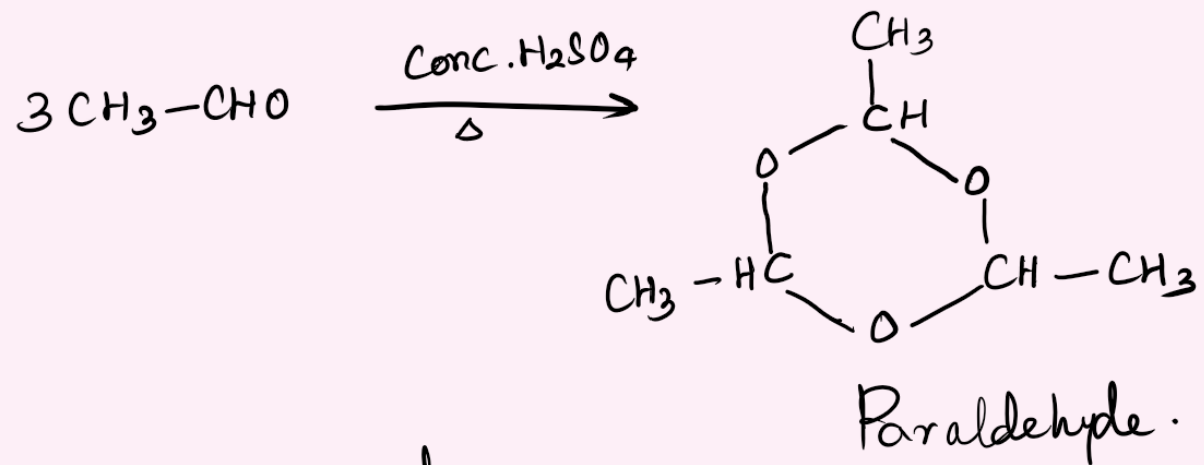
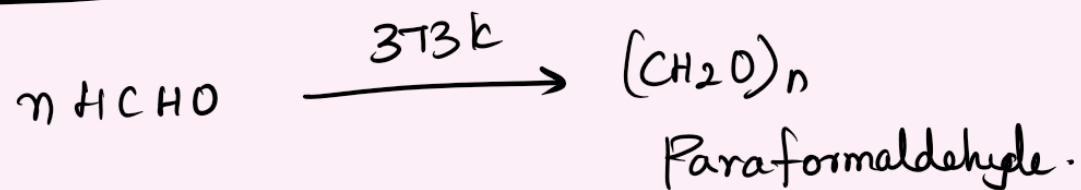
i) Clemmensen Reduction:



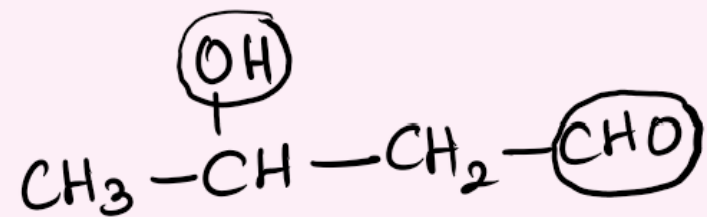
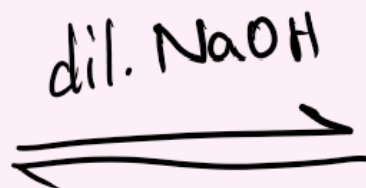
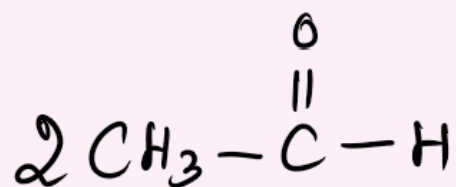
ii) Wolff Kishner Reduction: (Acid sensitive groups)



Polymerisation:

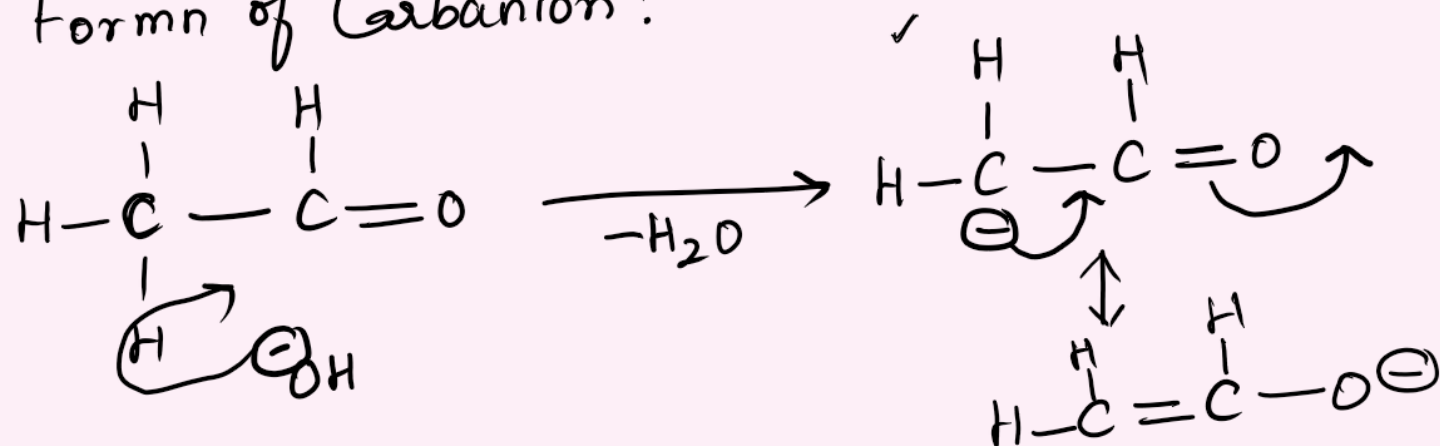


Aldol Condensation: "α-Hydrogen"

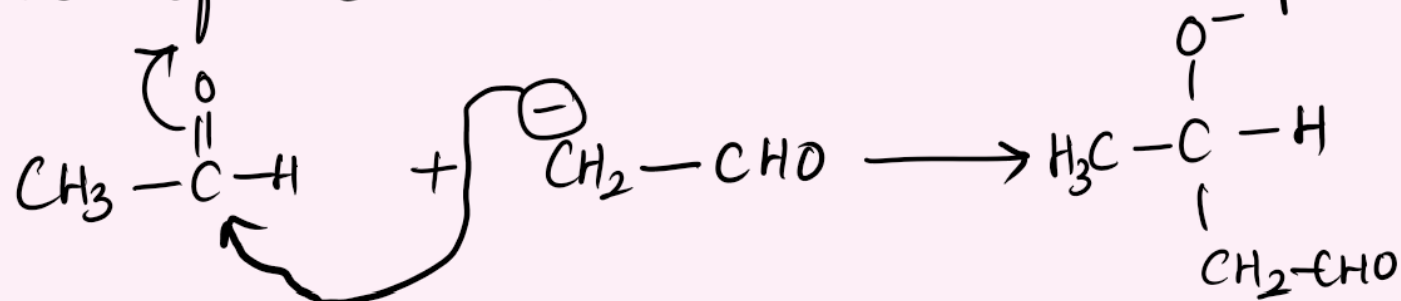


β-hydroxy butyraldehyde.

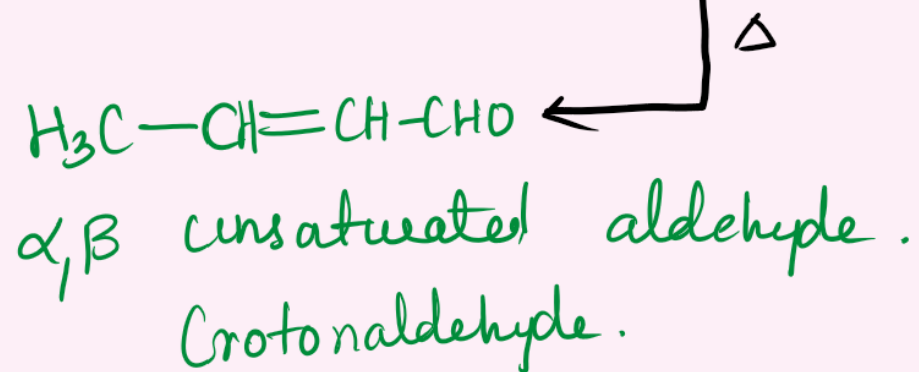
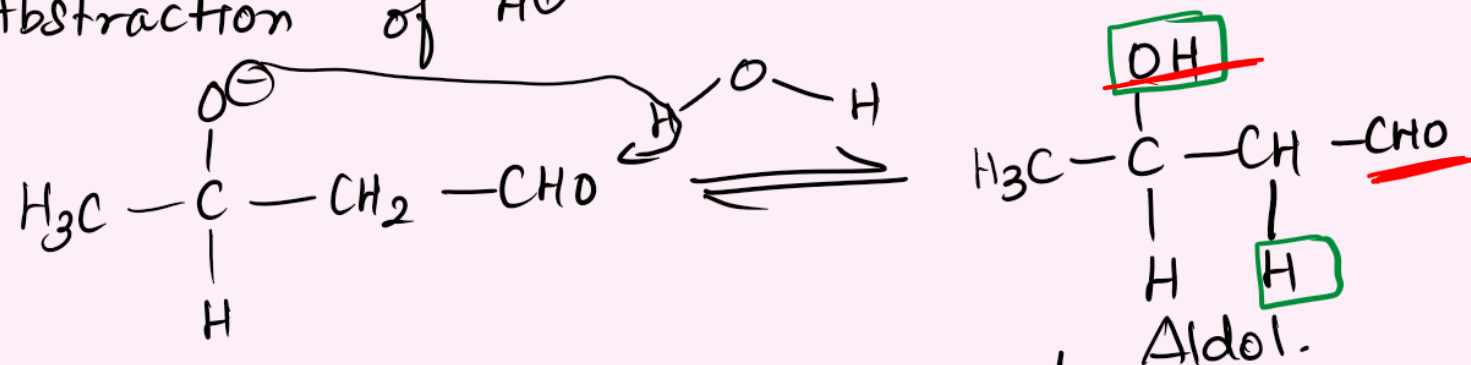
Step 1: Formn of Carbanion:



Step: 2 Attack of Carbanion on. another aldehyde.

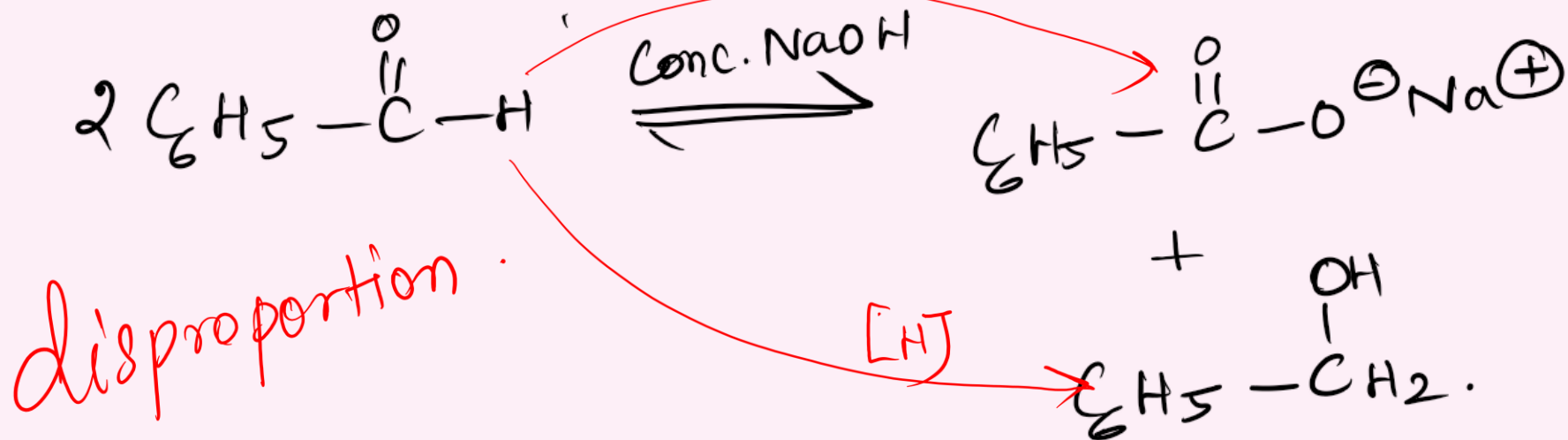


Step: 3 Abstraction of H^+

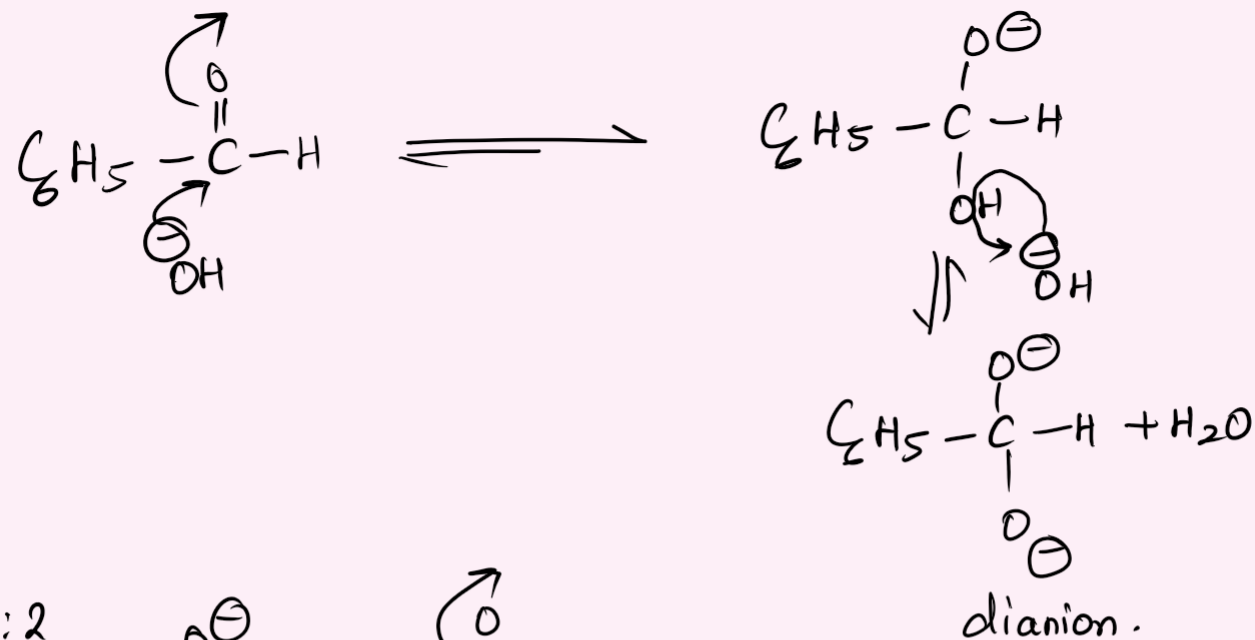


Cannizzaro Reaction!

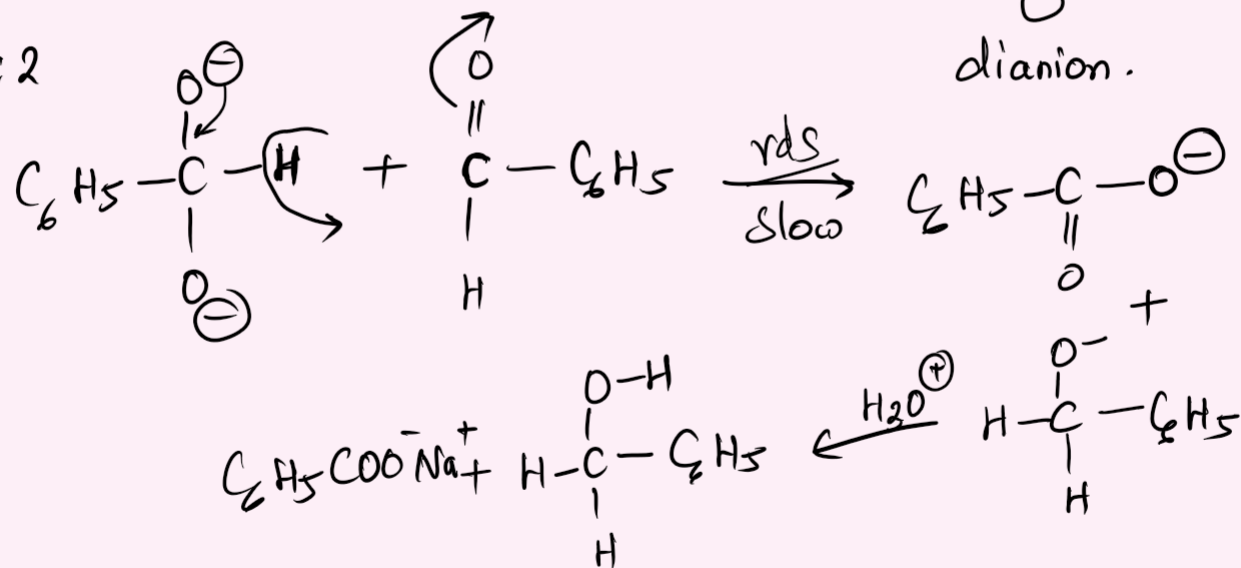
(o) "No α -hydrogen."



Mech:



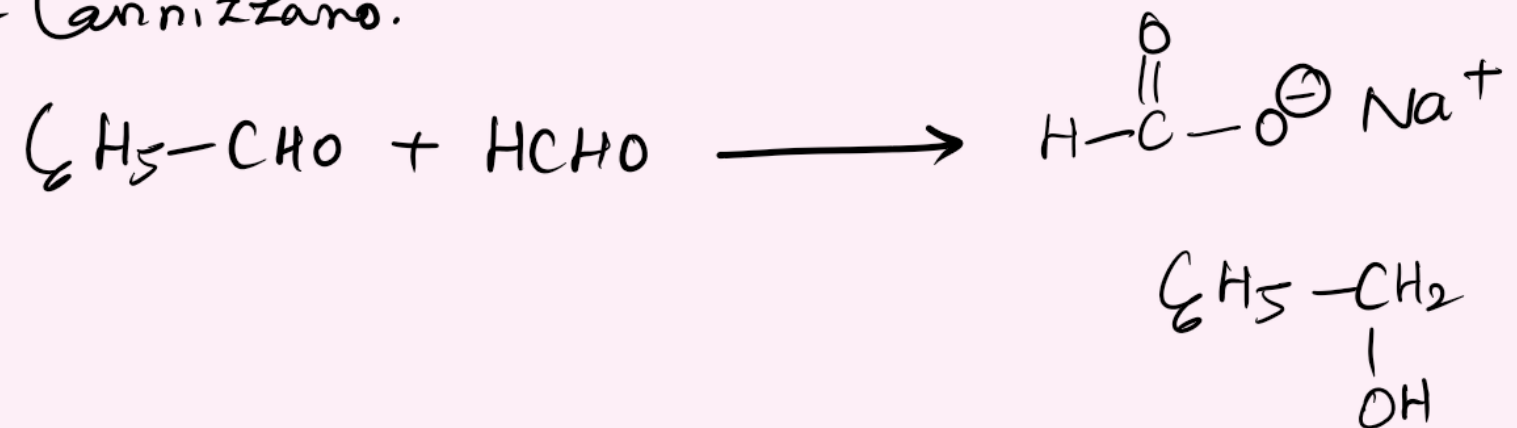
Step: 2



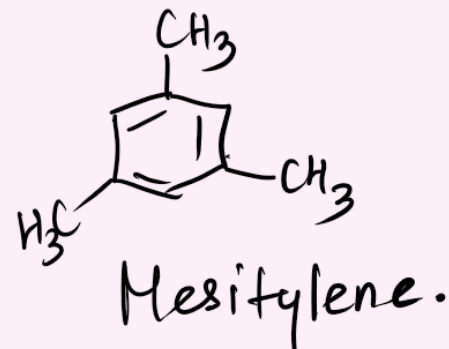
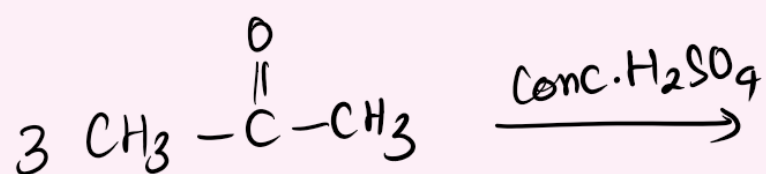
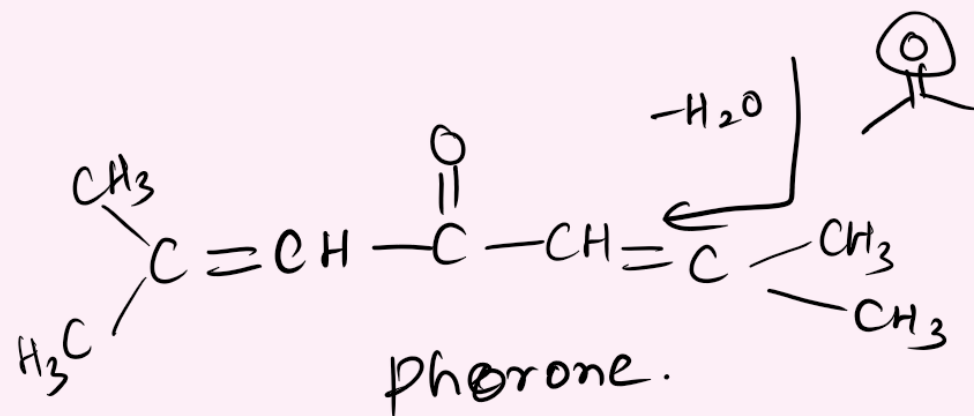
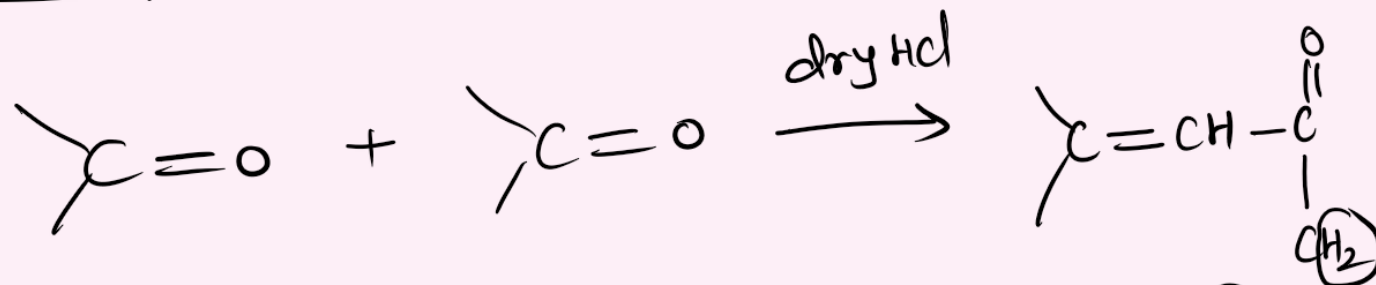
$$\text{Rate} \propto [\text{C}_6\text{H}_5\text{CHO}]^2 [\text{OH}^-]^2$$

$$\text{Order} = 4$$

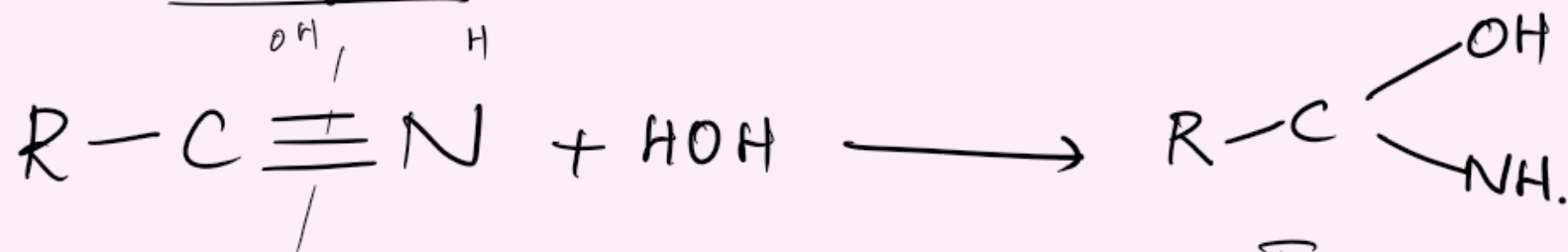
Crossed - Cannizzano.



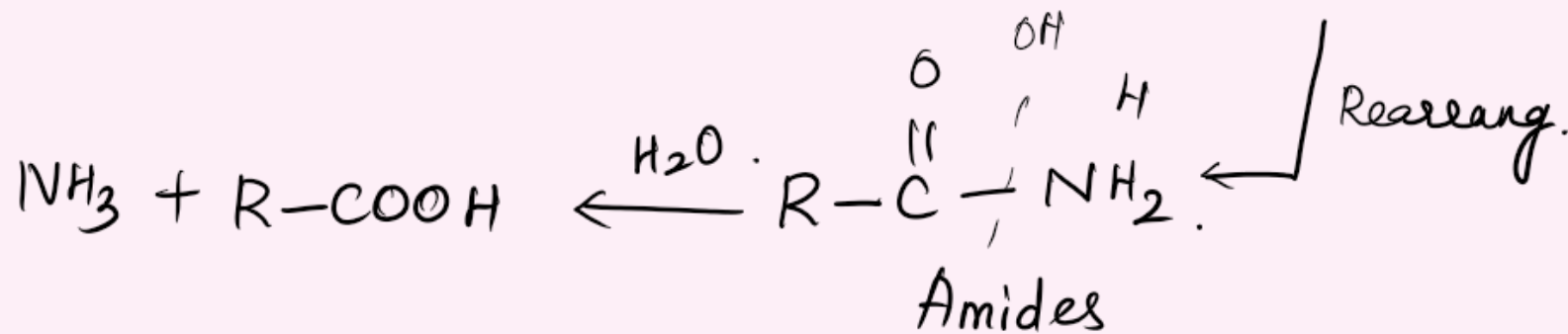
Condensation of Acetone:



Hydrolysis of alkyl Cyanides:



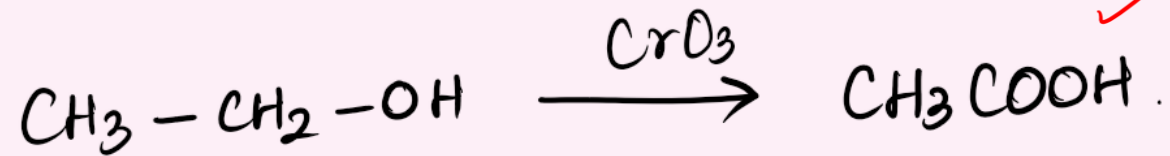
Imidol.



Amides

Preparation:

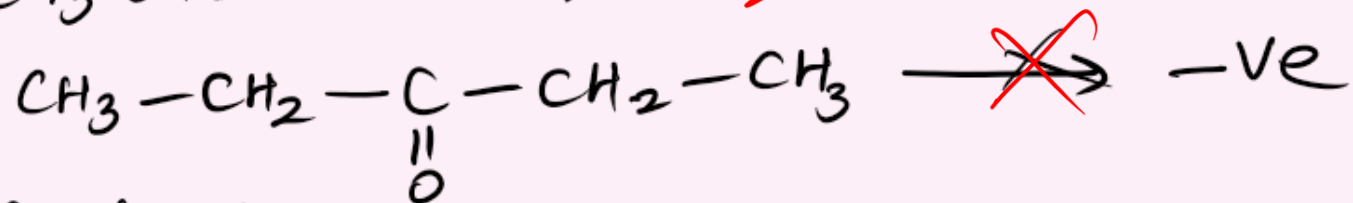
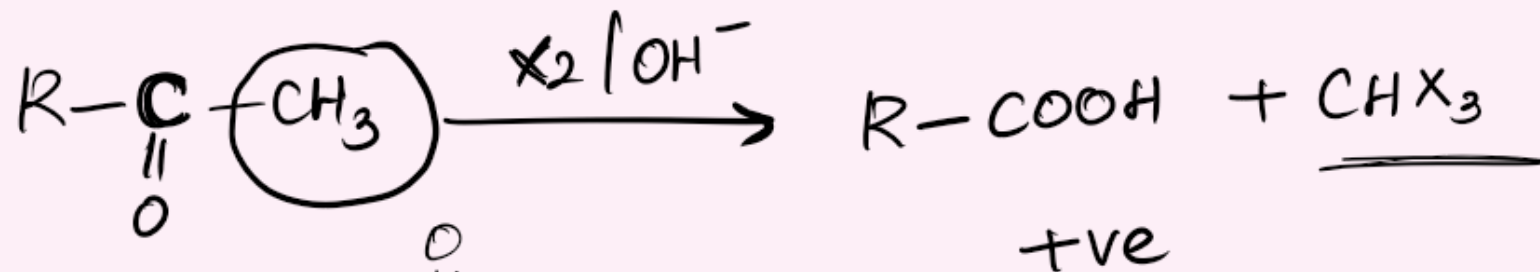
oxidation of 1° Alcohol.



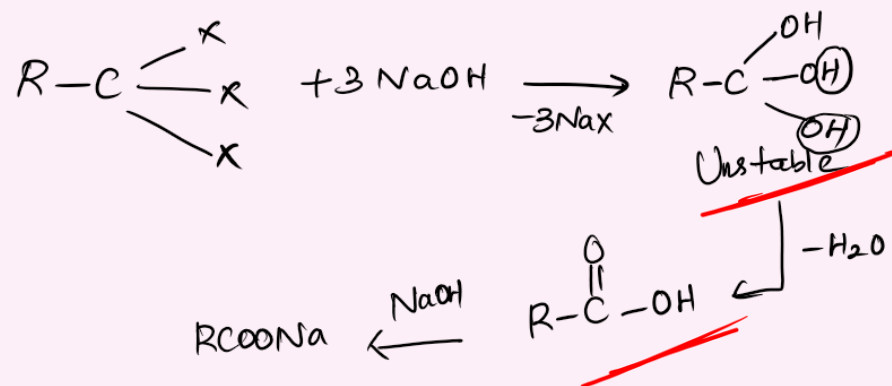
2° alcohol.



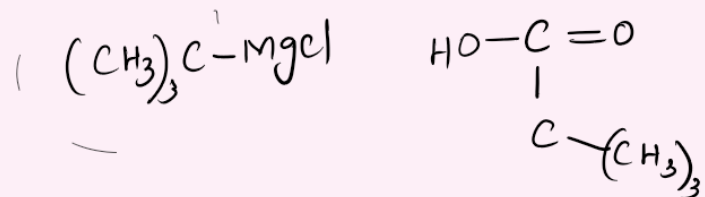
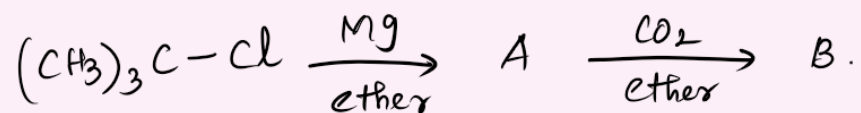
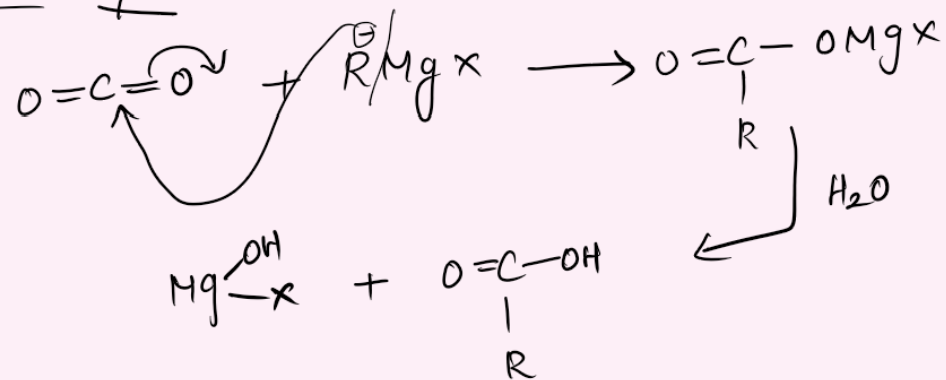
Haloform Reaction: $\text{CHX}_3 \Rightarrow \text{CHCl}_3, \text{CHI}_3$



3. Terminal trihalogen



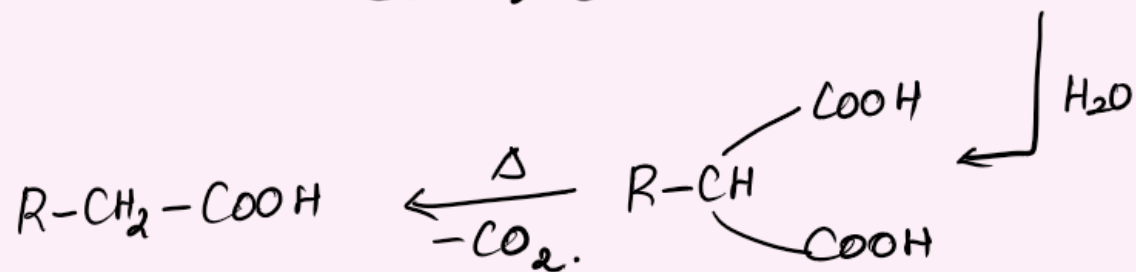
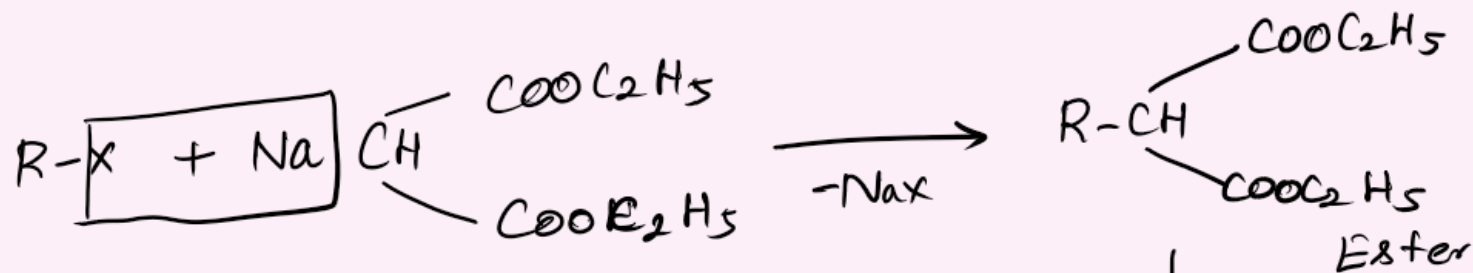
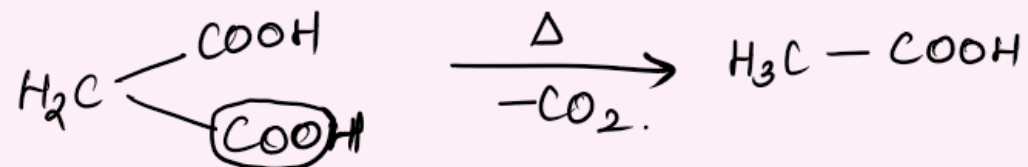
Grignard Reagent:



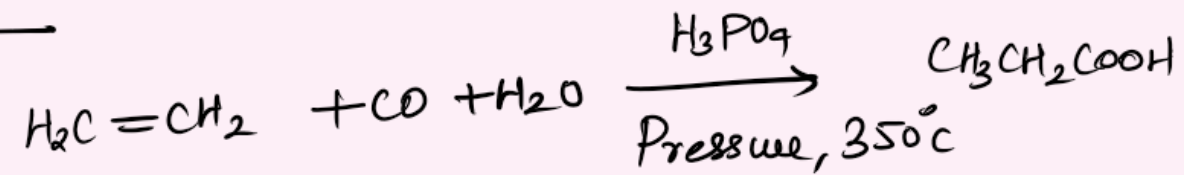
Hydrolysis of Ester:



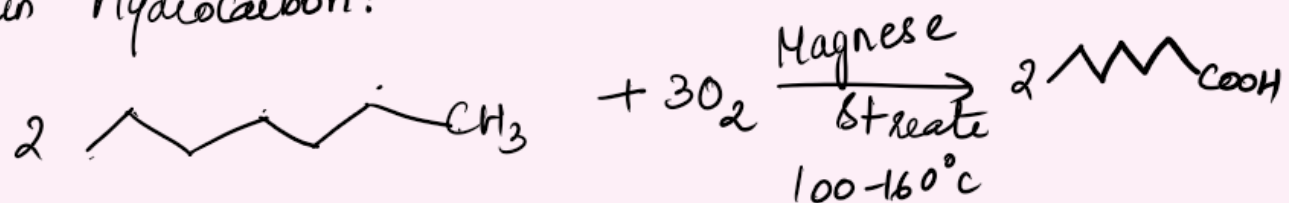
Action of heat



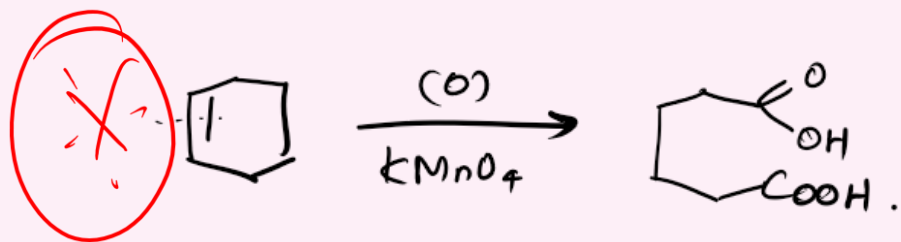
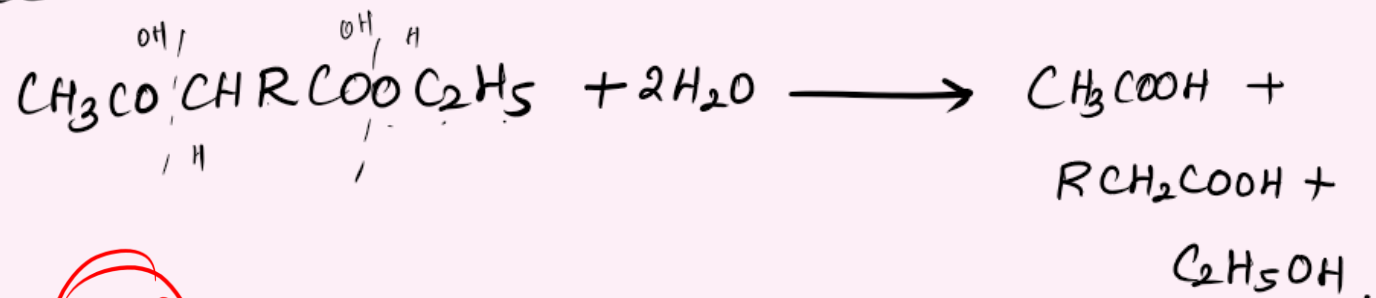
Koch reaction:



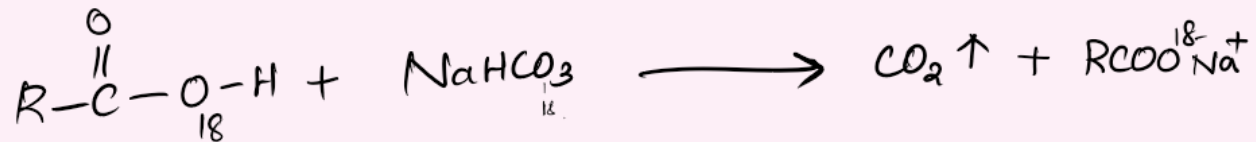
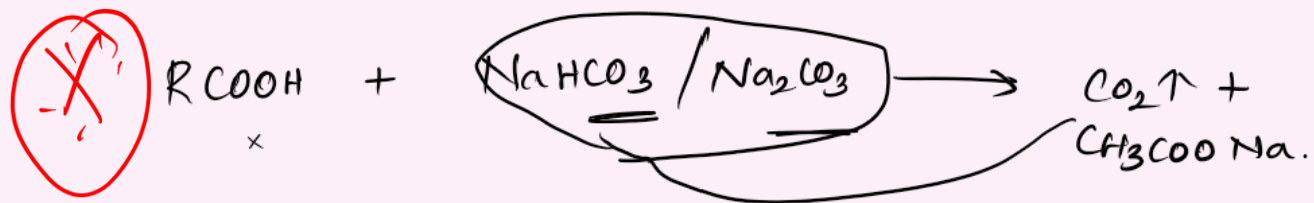
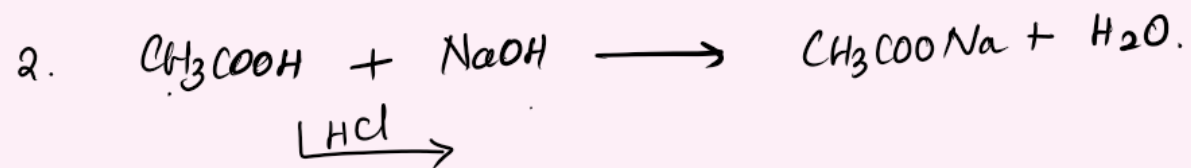
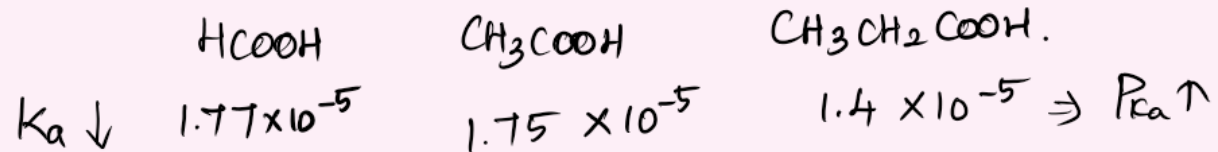
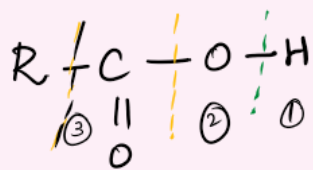
long chain Hydrocarbon:



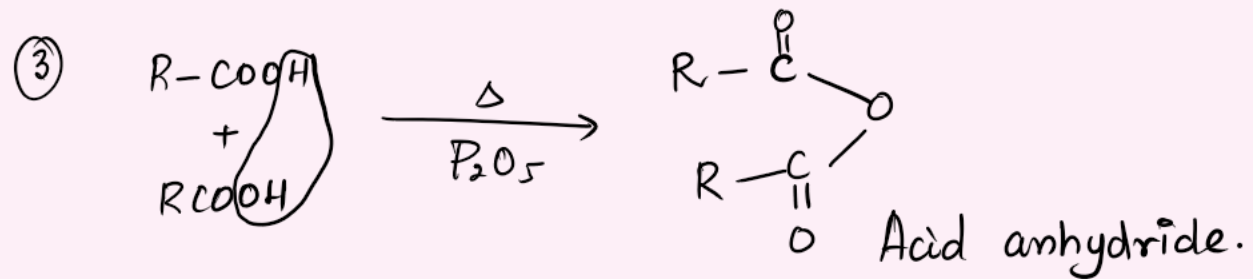
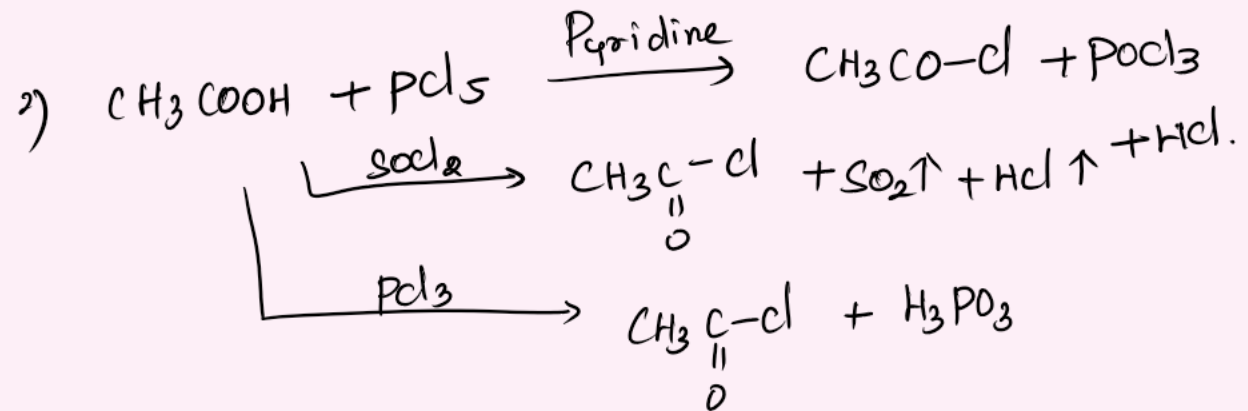
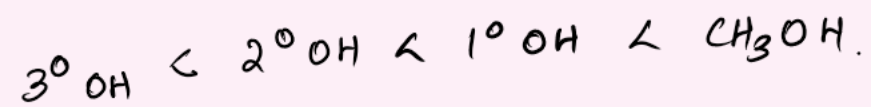
Acetoacetic Ester:



Chemical Prop:

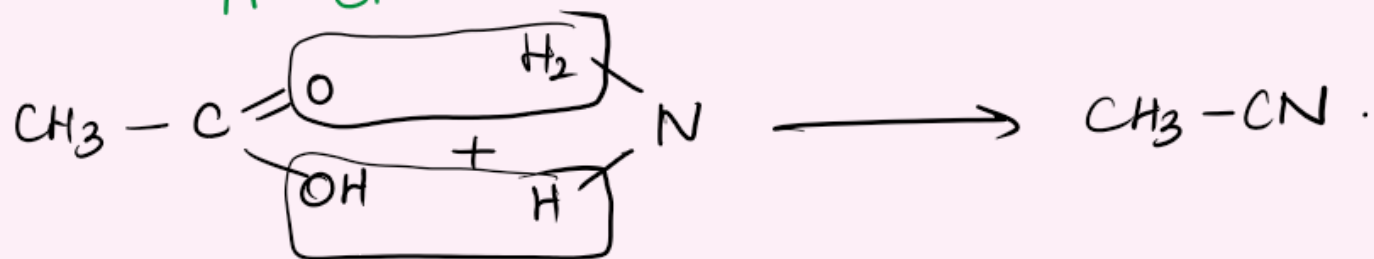
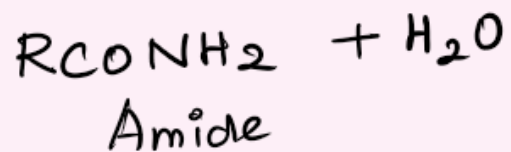
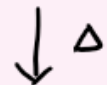
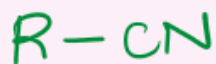
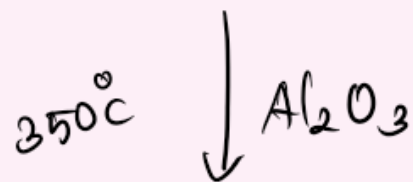
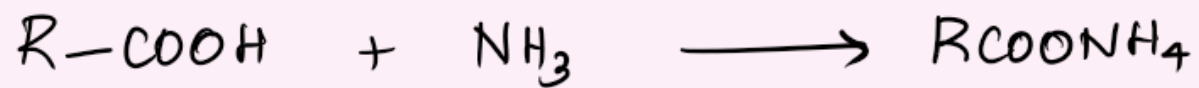


② Esterification:

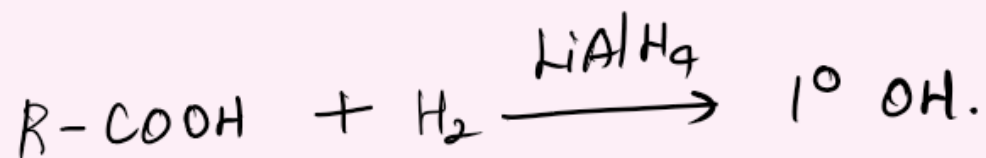


Formic Acid will undergo the process / or not ?

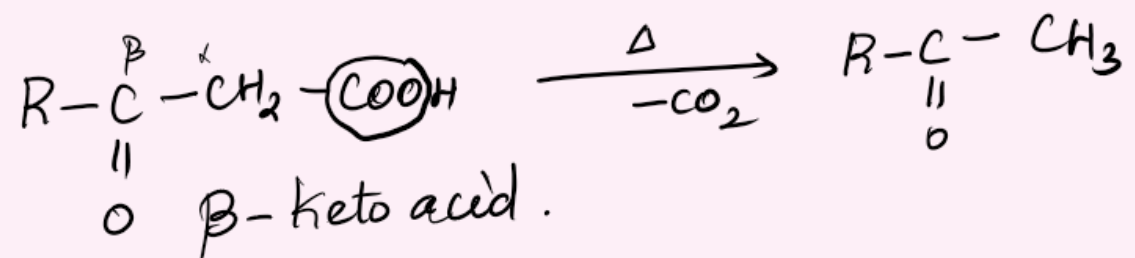
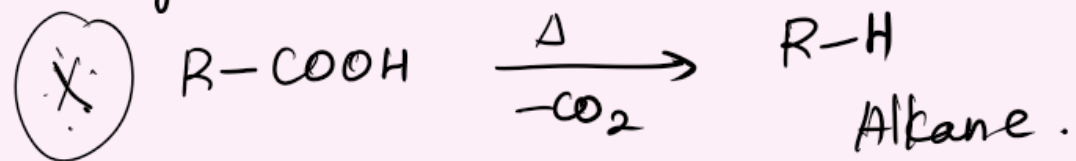
→ No



a) Redn: $LiAlH_4$, BH_3/THF , Ru/H_2 , $CuCr_2O_4/H_2$.



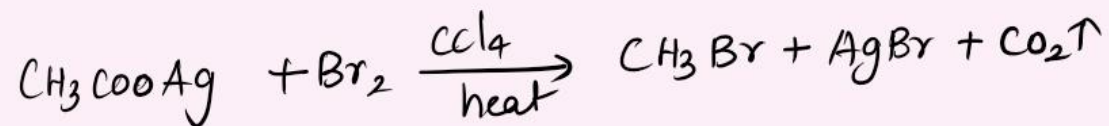
decarboxylation:



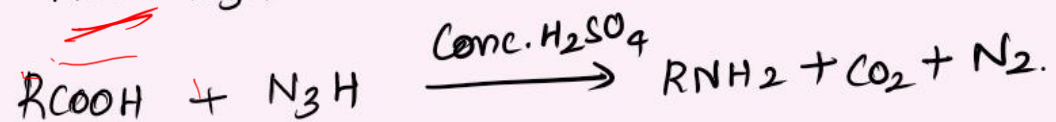
Dry distillation:



Hunsdiecker's Reaction.



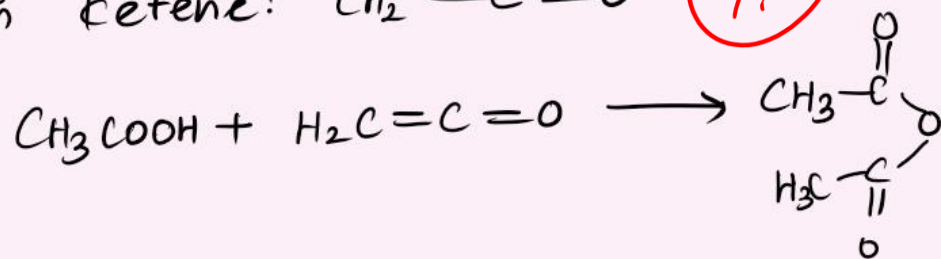
Schmidt rxn: N₃H:



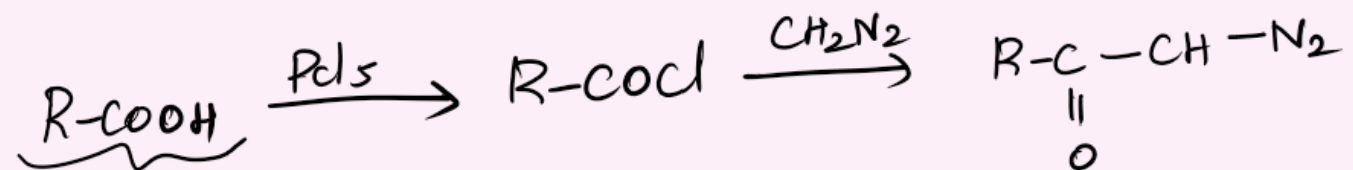
Rxn with CH₂N₂: $\longrightarrow$ Diazomethane



Rxn with ketene: CH₂=C=O



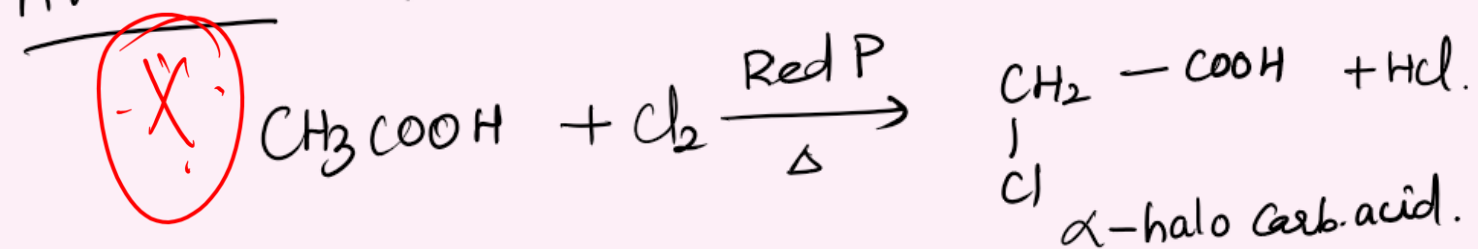
Arndt-Eistert Rxn:



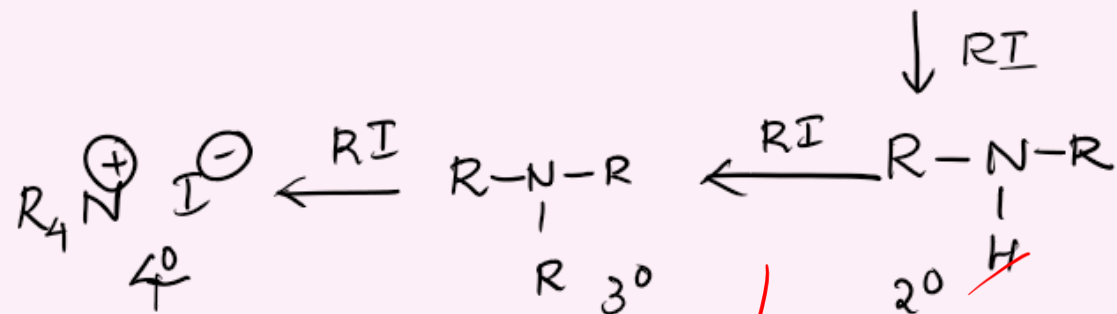
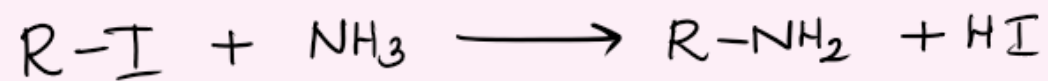
Homologation.



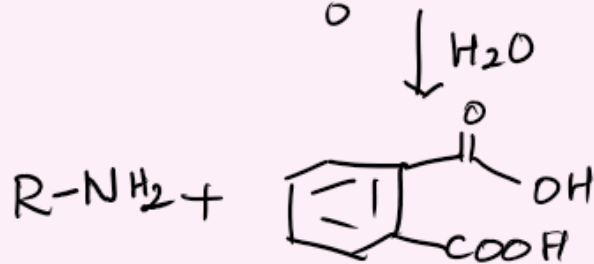
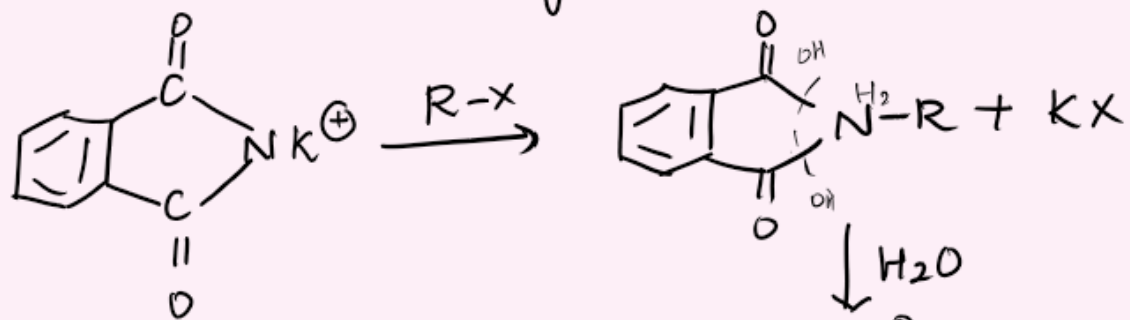
HVZ rxn: " α -H"



Preparation: Hoffmann Alkylation:



2. Gabriel phthalimide Syn:

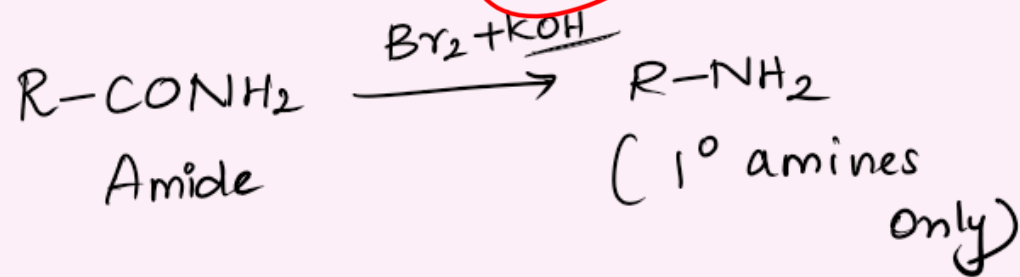


Aromatic Amine x

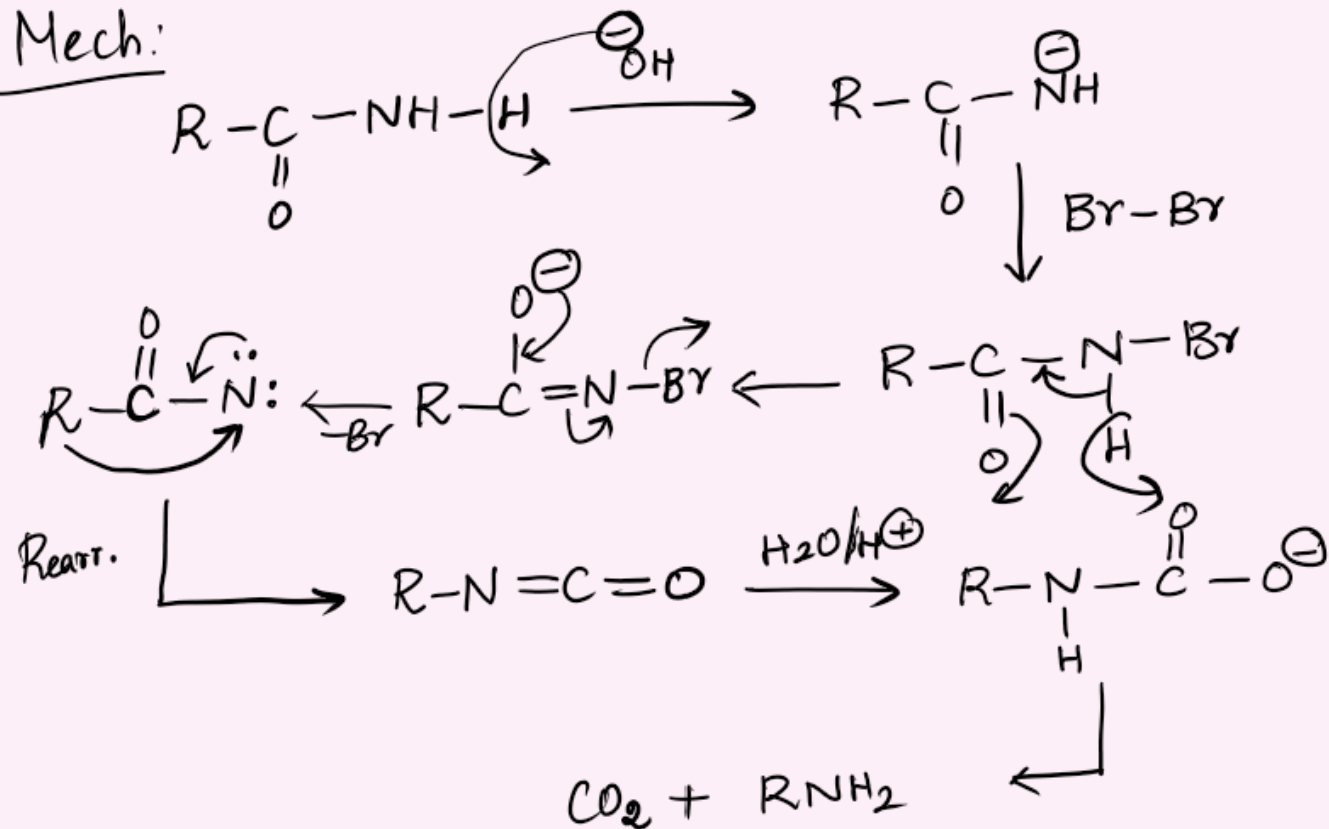
Amines

NH₂

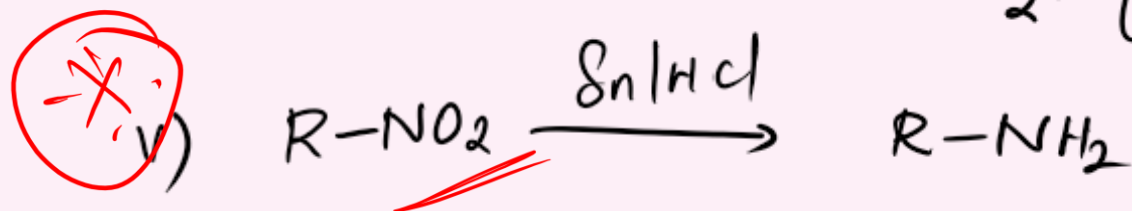
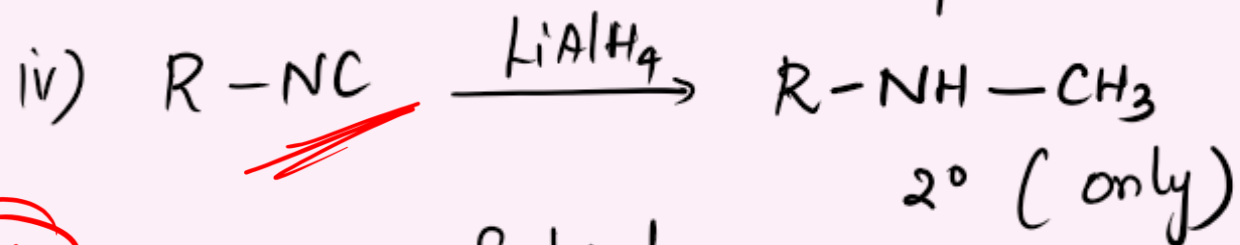
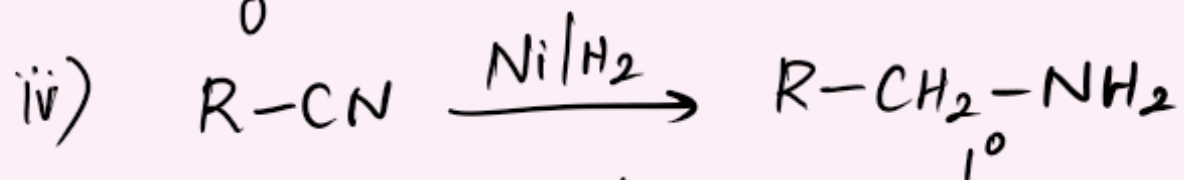
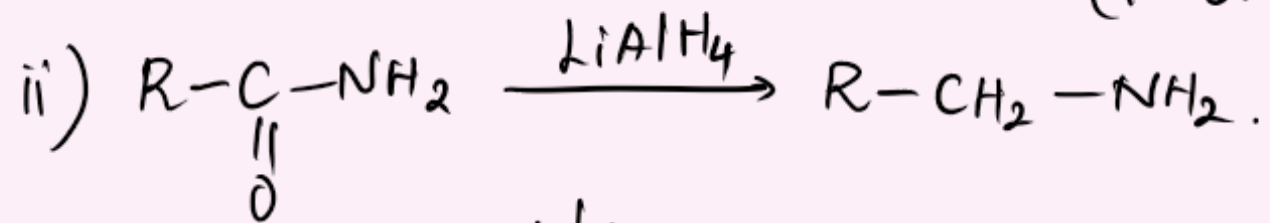
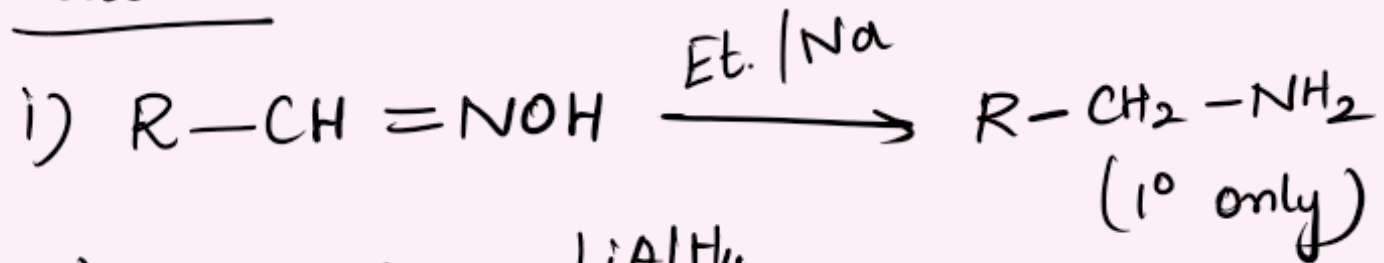
3. Hoffmann Bromamide



Mech:



Reduction:

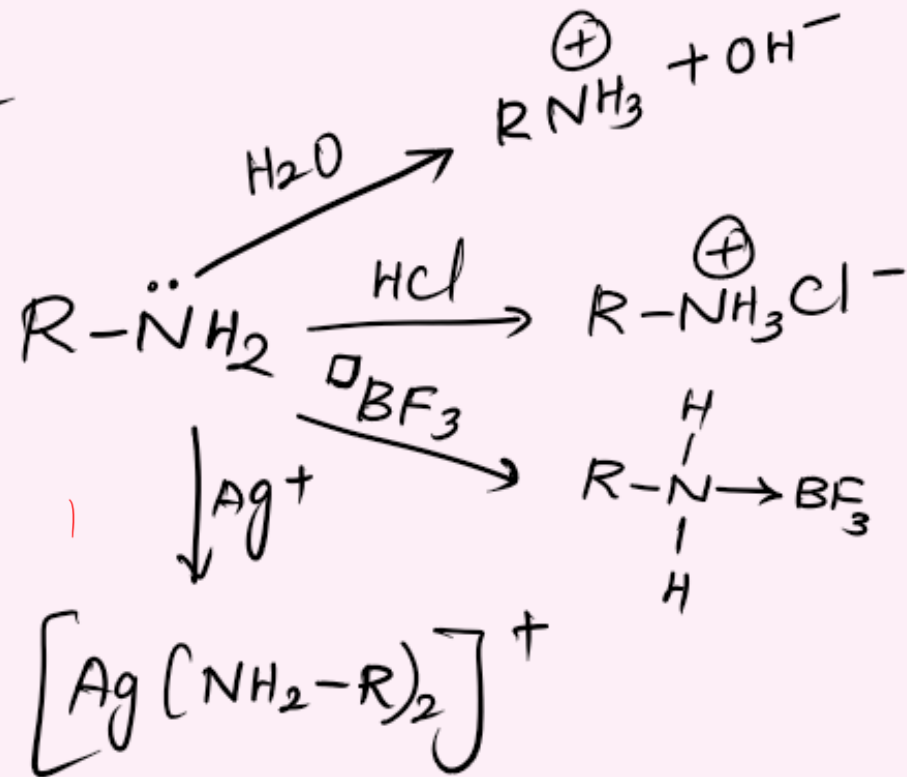


Properties:

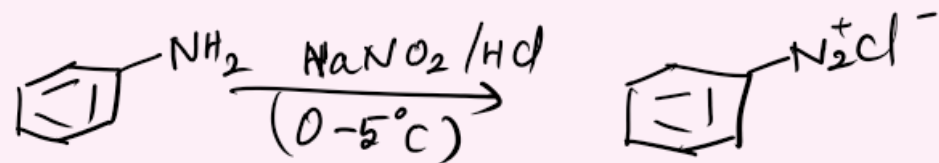
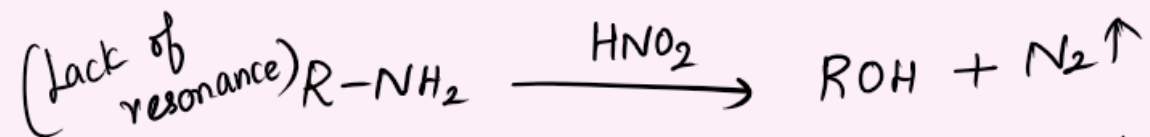
i) Basic Nature

aq. 2° ✓

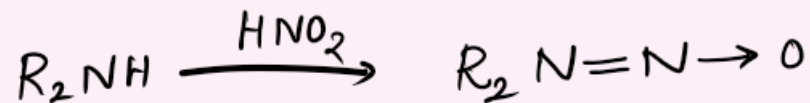
Solid 2° ✓



Rxn with HNO_2 : (Nitrous Acid)

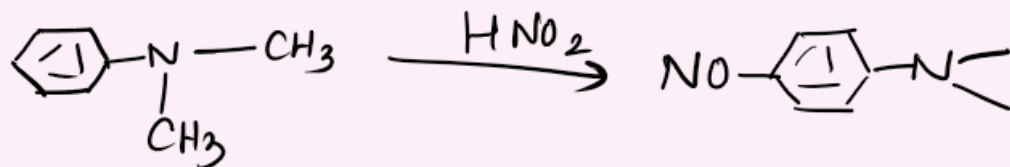


2° Amine.



N-nitrosoamine
(yellow oily liq)

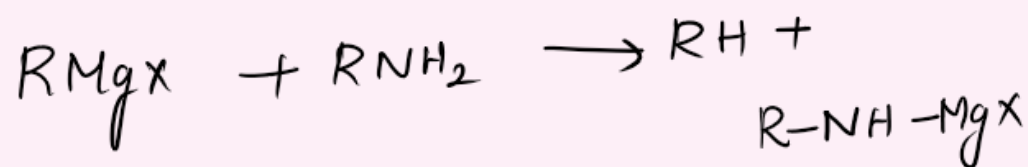
3° Amine:



③ Acylation:

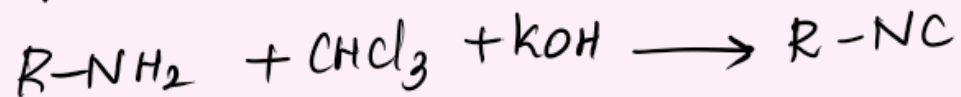


④ Grignard Reagent:



$\rightarrow$ Alkanes.

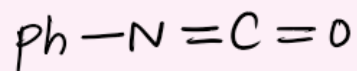
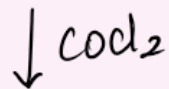
⑤ ~~Carbylamine~~ Carbylamine Rxn. (1°) (Ali & Aro)



10

Isoocyanide

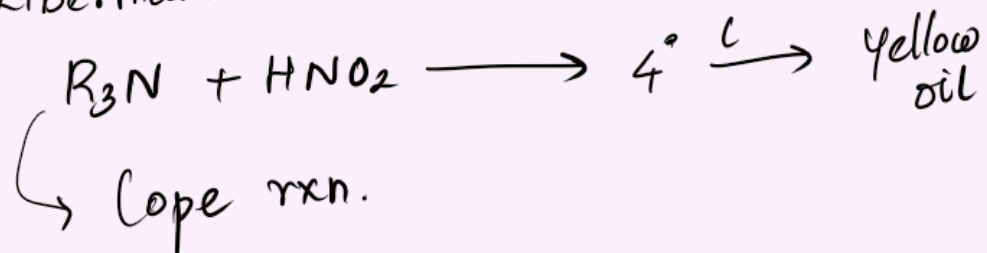
Mustard Oil rxn: 1°



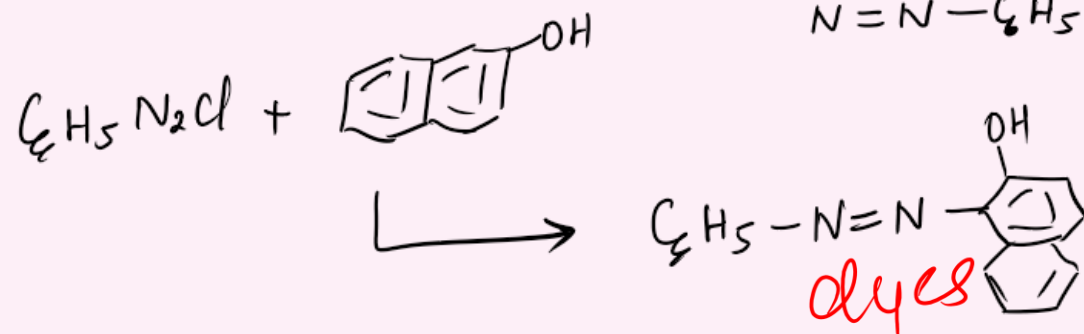
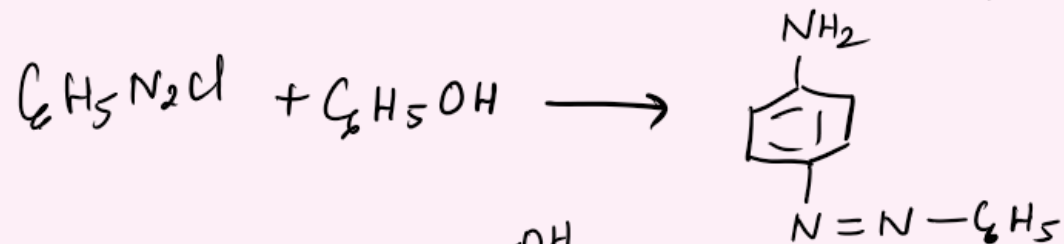
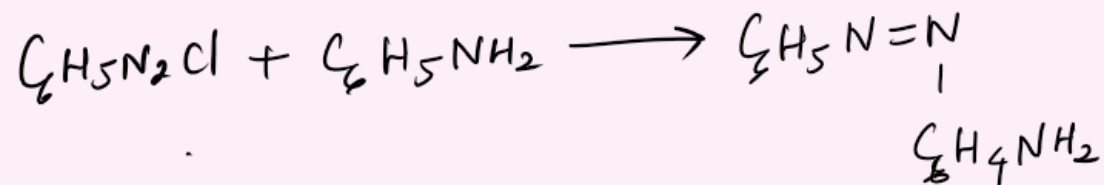
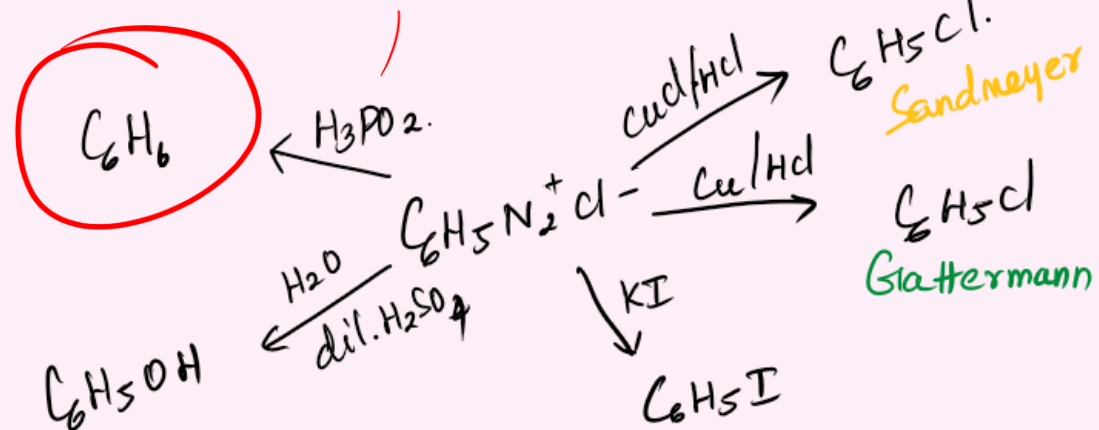
Distinguish Aro. $1^\circ, 2^\circ, 3^\circ$



Libermann's nitroso rxn.



Benzene diazonium chloride:



Mock test - 30 +

5 - full test

Practice.

