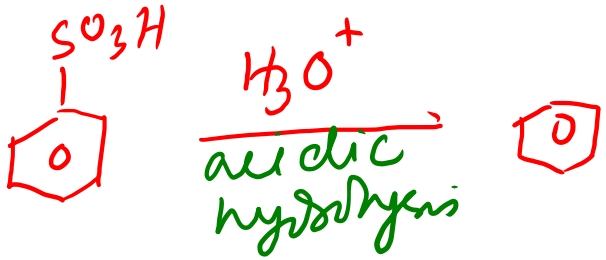
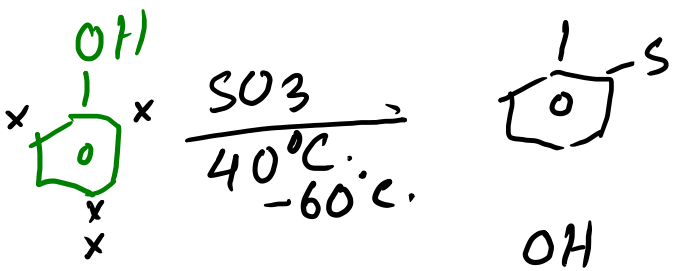


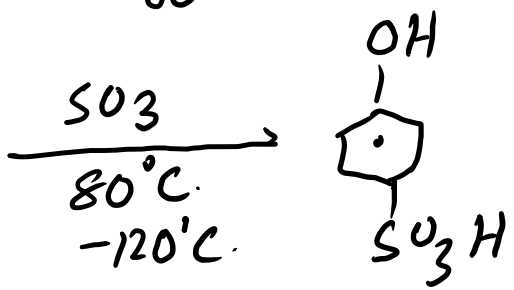
(desulphonation)

In sulphonation all steps are reversible.

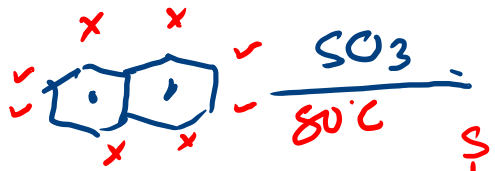
(1).



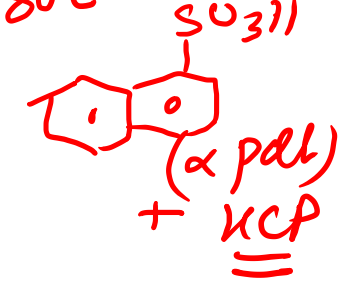
ortho pdt (KCP)



para pdt (TCP)

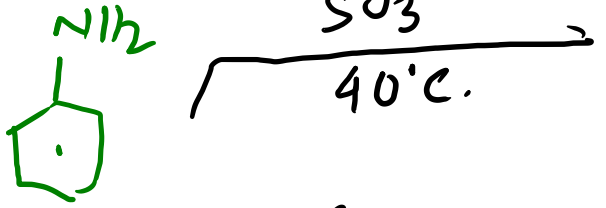


× α position.
✓ β position.

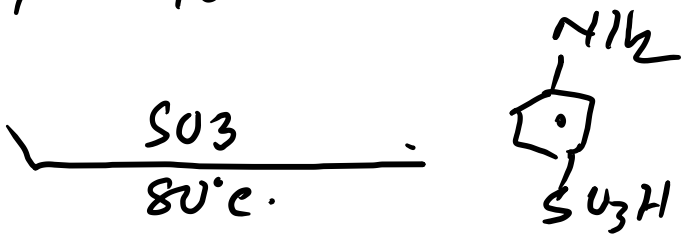


β-pdt (major pdt)

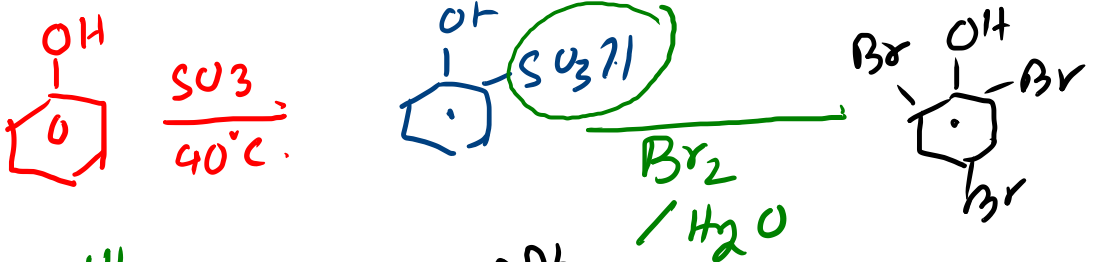
(TCP)

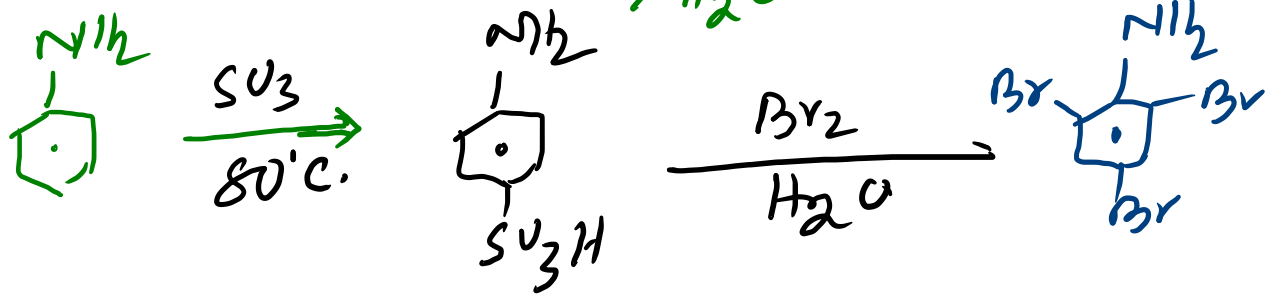


KCP (ortho pdt)

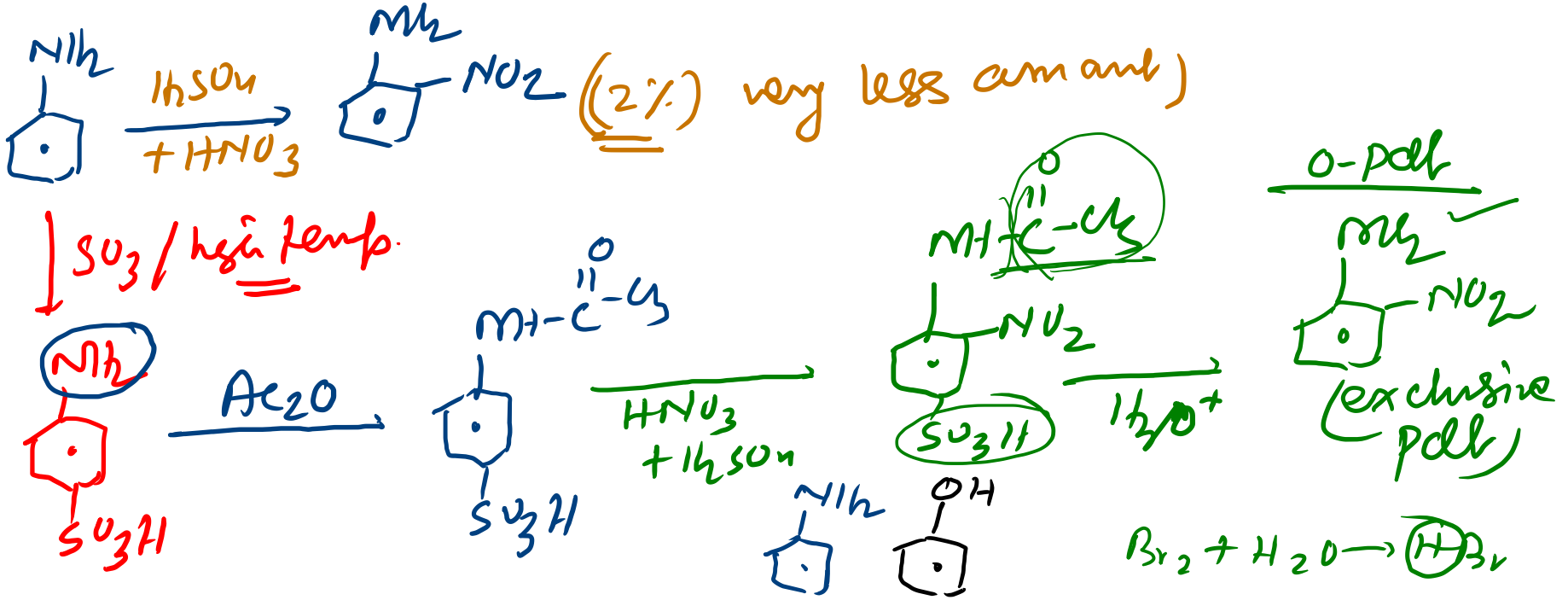


TCP (para pdt)

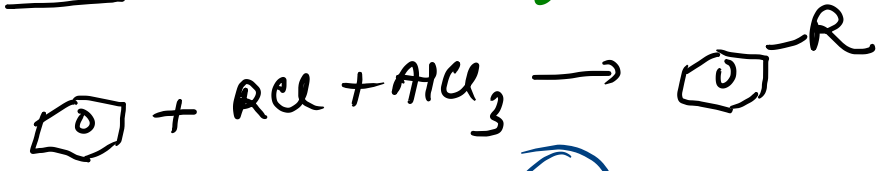
a) 

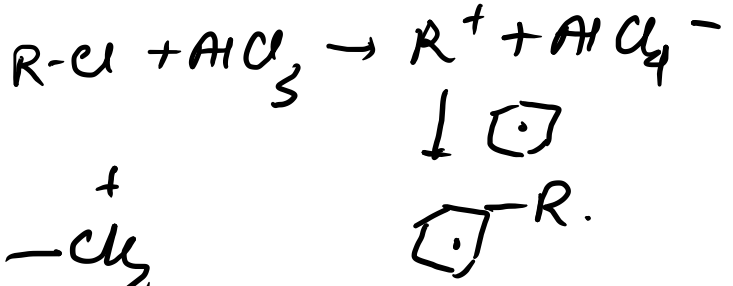
b) 

} desulphonation followed by EAS.

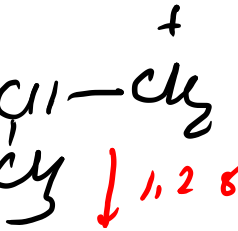
c) 

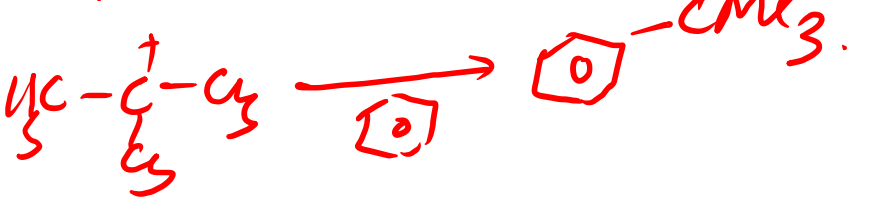
Friedel Crafts Acylation

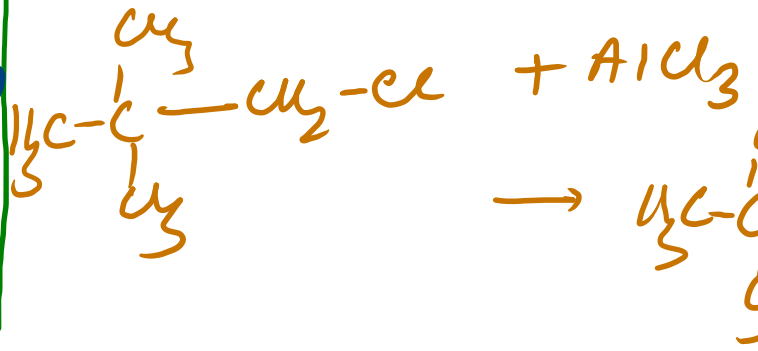


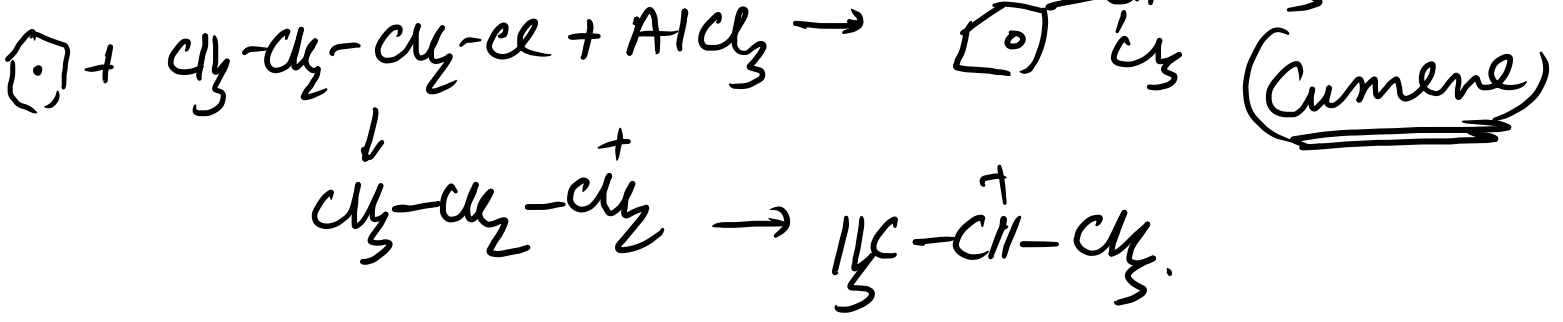


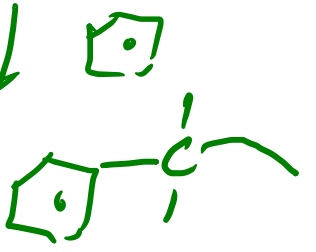
In presence of $BCl_3/AlCl_3$ / $GaCl_3$ 100% reagent pdt if possible

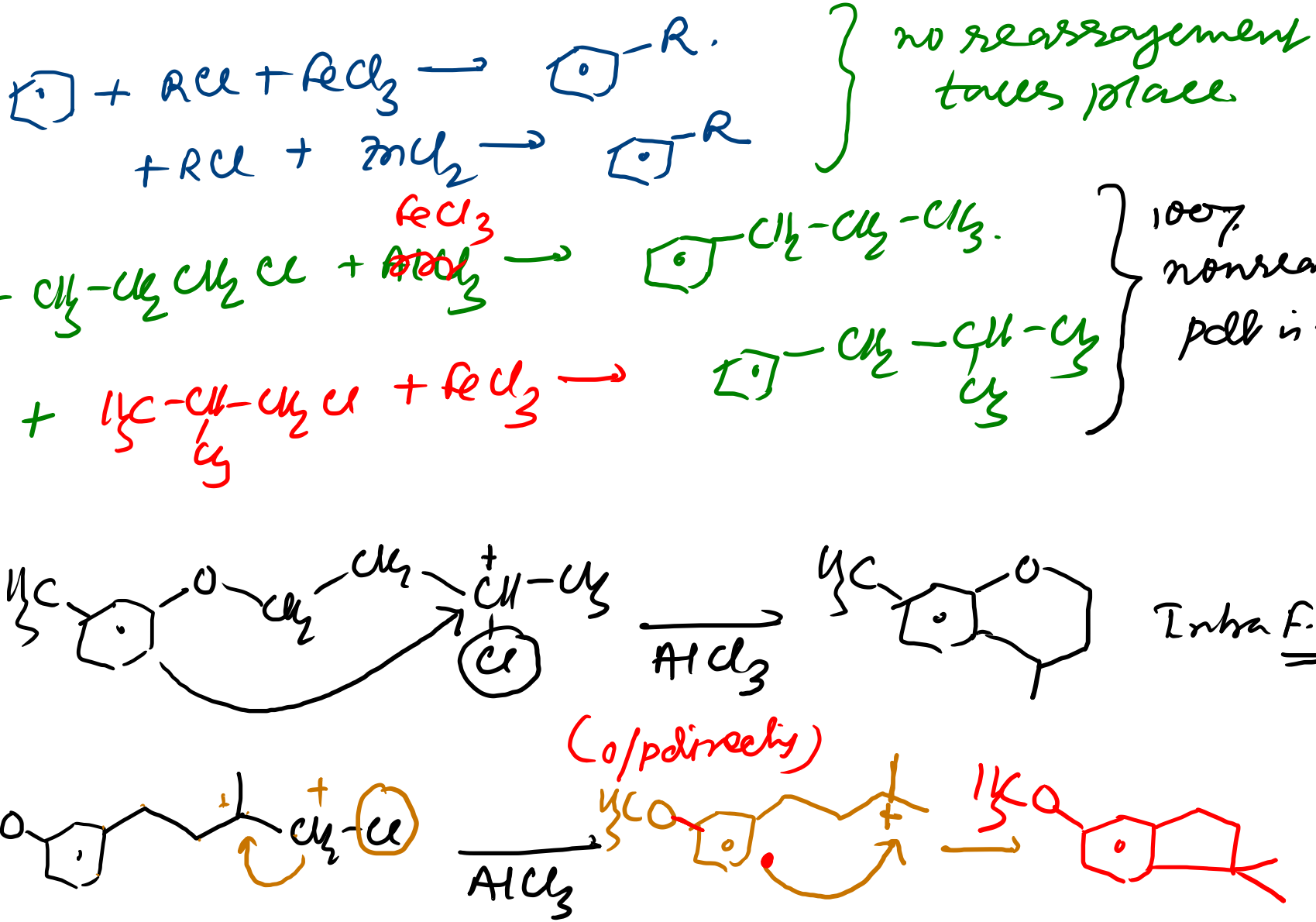


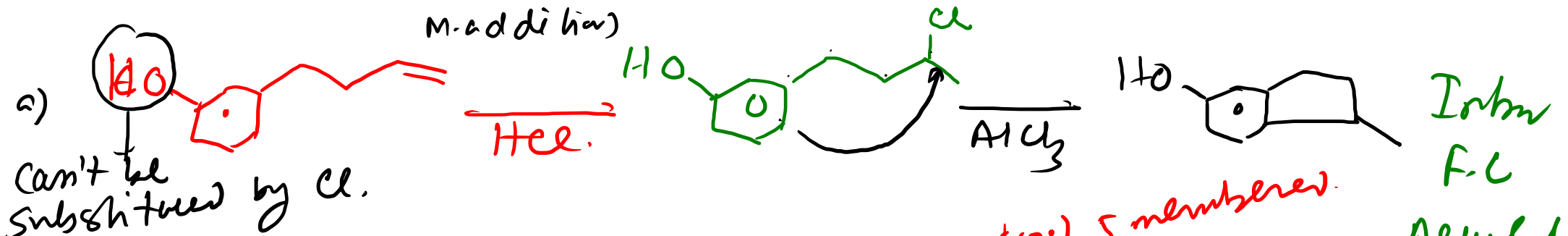


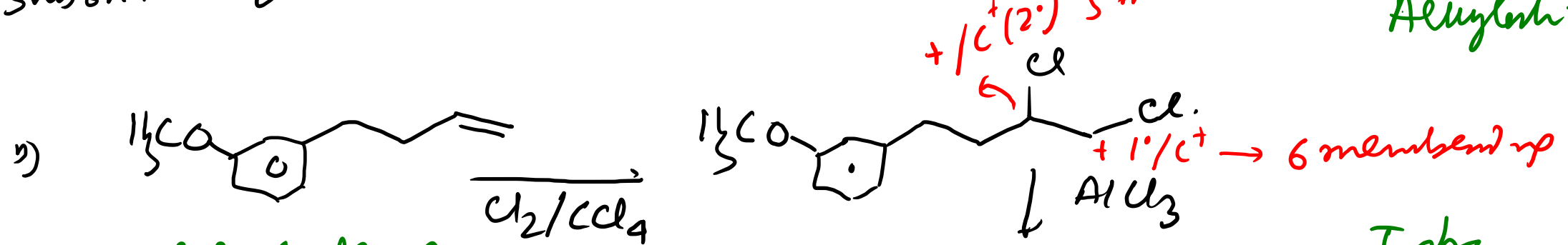




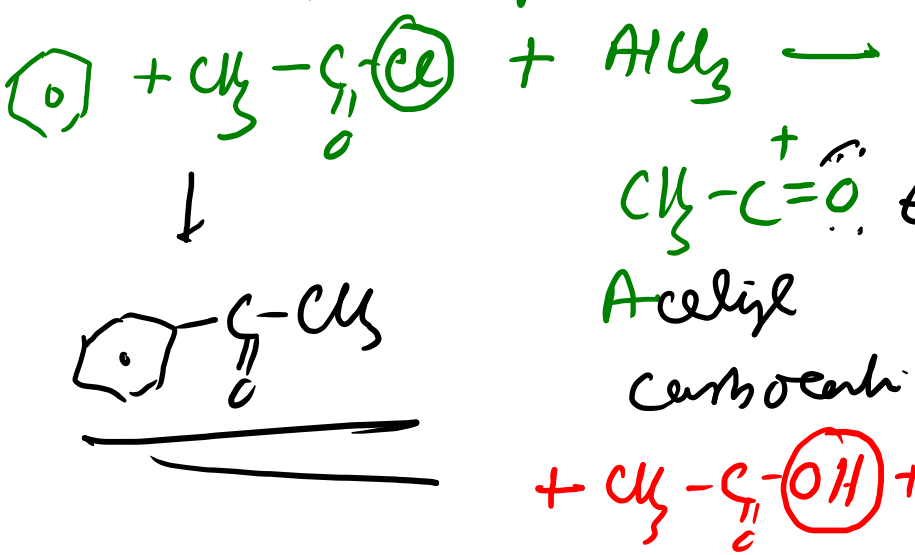


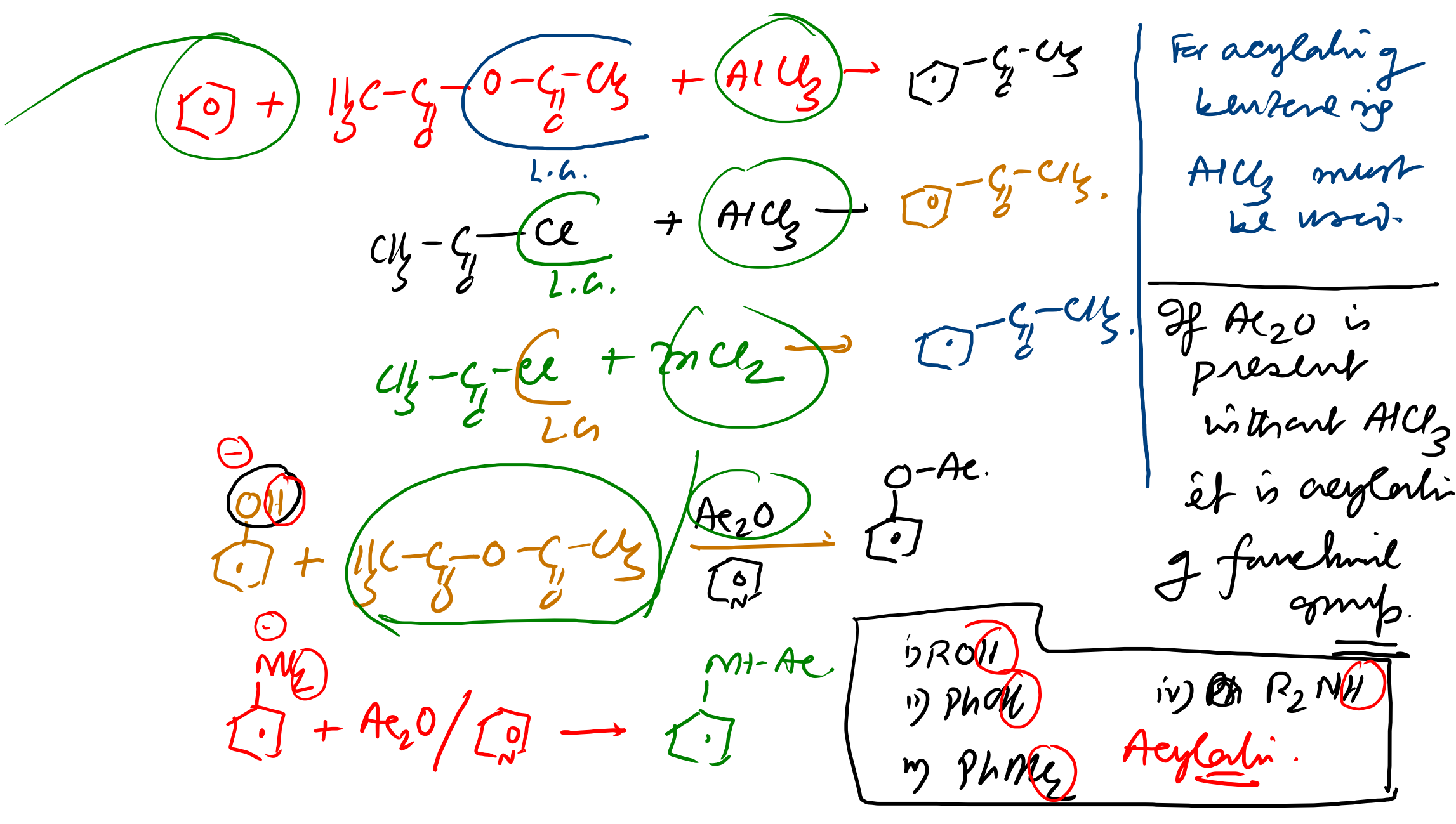

+ RCl + FeCl3 → R.
+ RCl + ZnCl2 → R
no rearrangement takes place
a)
FeCl3
+ CH3-CH2CH2Cl → CH2-CH2-CH3.
b)
+ H3C-CH-CH2Cl + FeCl3 → CH2-CH-CH3
Cl
100% rearranged product is formed
c)
AlCl3
Intra F.C.
d)
(o/p directing)
AlCl3

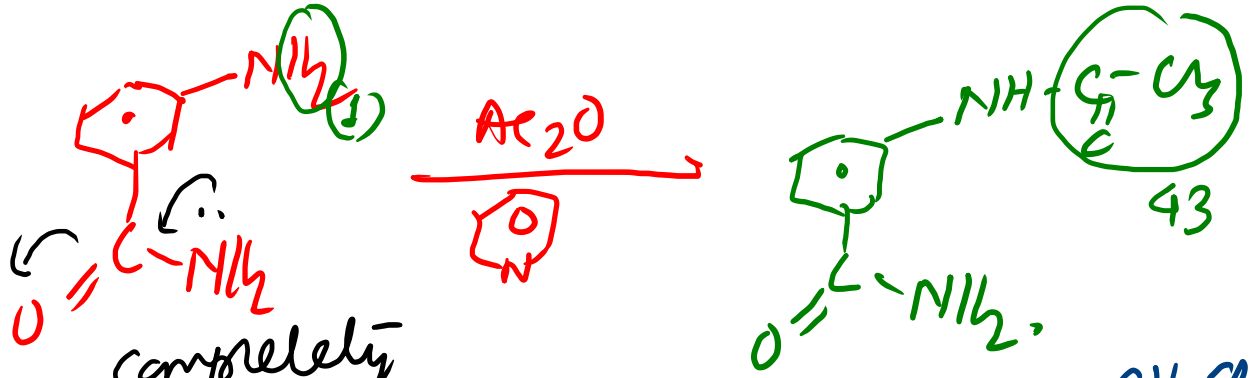
a) 

b) 

Friedel Craft Acylation.

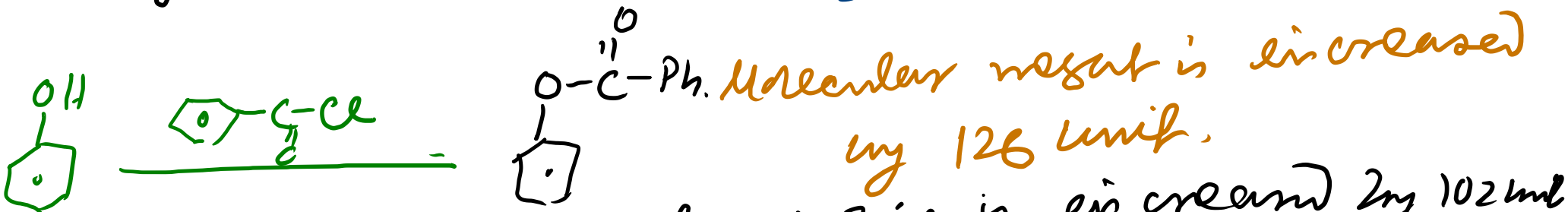



L.A.
L.A.
L.A.
Ac2O
Ac2O/
For acylating benzene ring AlCl3 must be used.
If Ac2O is present without AlCl3 it is acylation of functional group.
i) ROH
ii) PhOH
iii) PhNH2
iv) R2NH
Acylation.



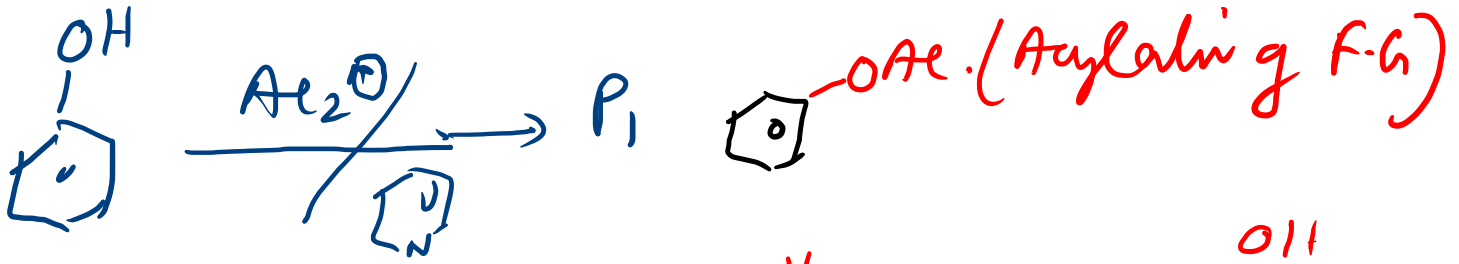
completely delocalised. amide does not undergo acylation.

during acylation, molecular weight is increased by 42 unit.

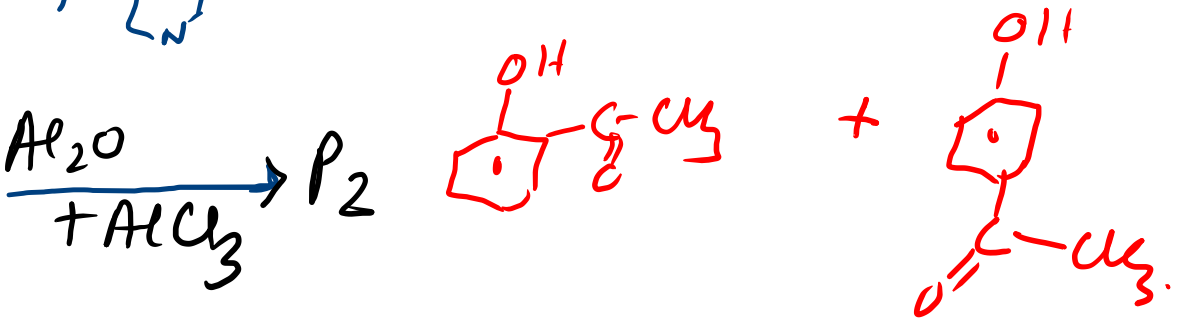


during benzoylation. molecular weight is increased by 102 unit

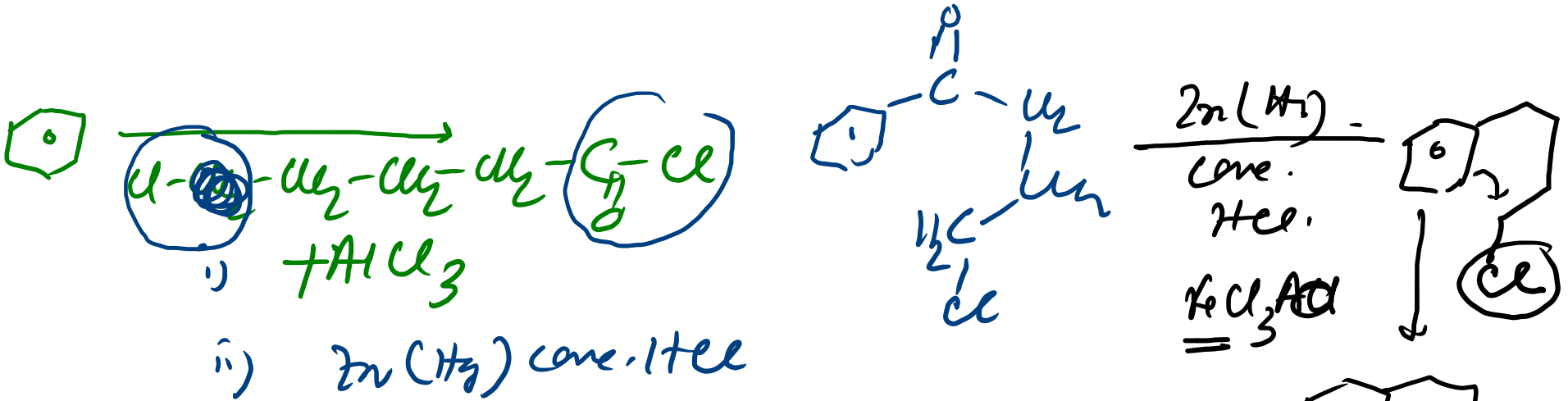
Schotten Baumann Reaction



a)

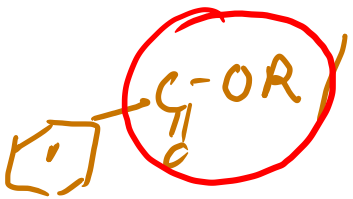


b)



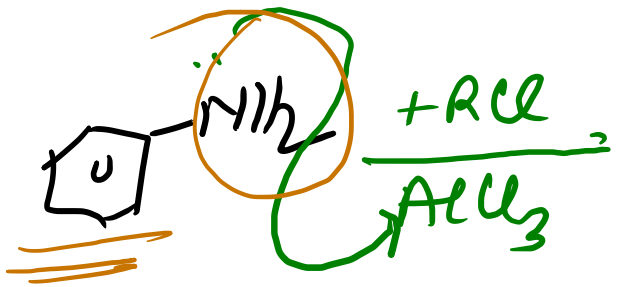
First Acylation & then intramolecular F.C. Acylation.

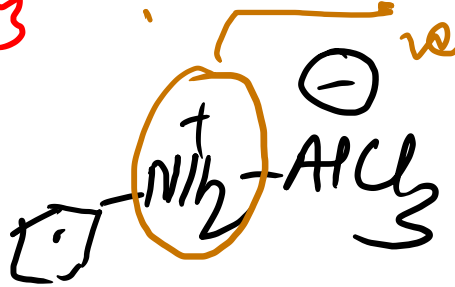
a) 

b) 

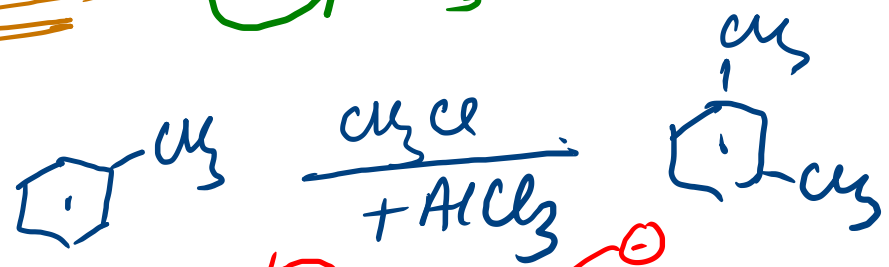
No friedel Craft reaction for highly deactivating group.

Nitrobenzene is used as solvent in Friedel Craft reaction.

c) 



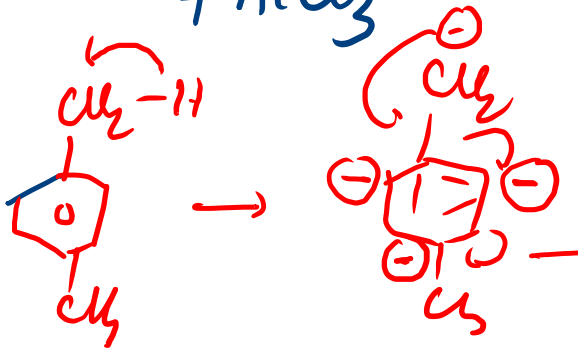
(strong -I effect. (N is highly deactivated) after that no ppt reaction.

d) 

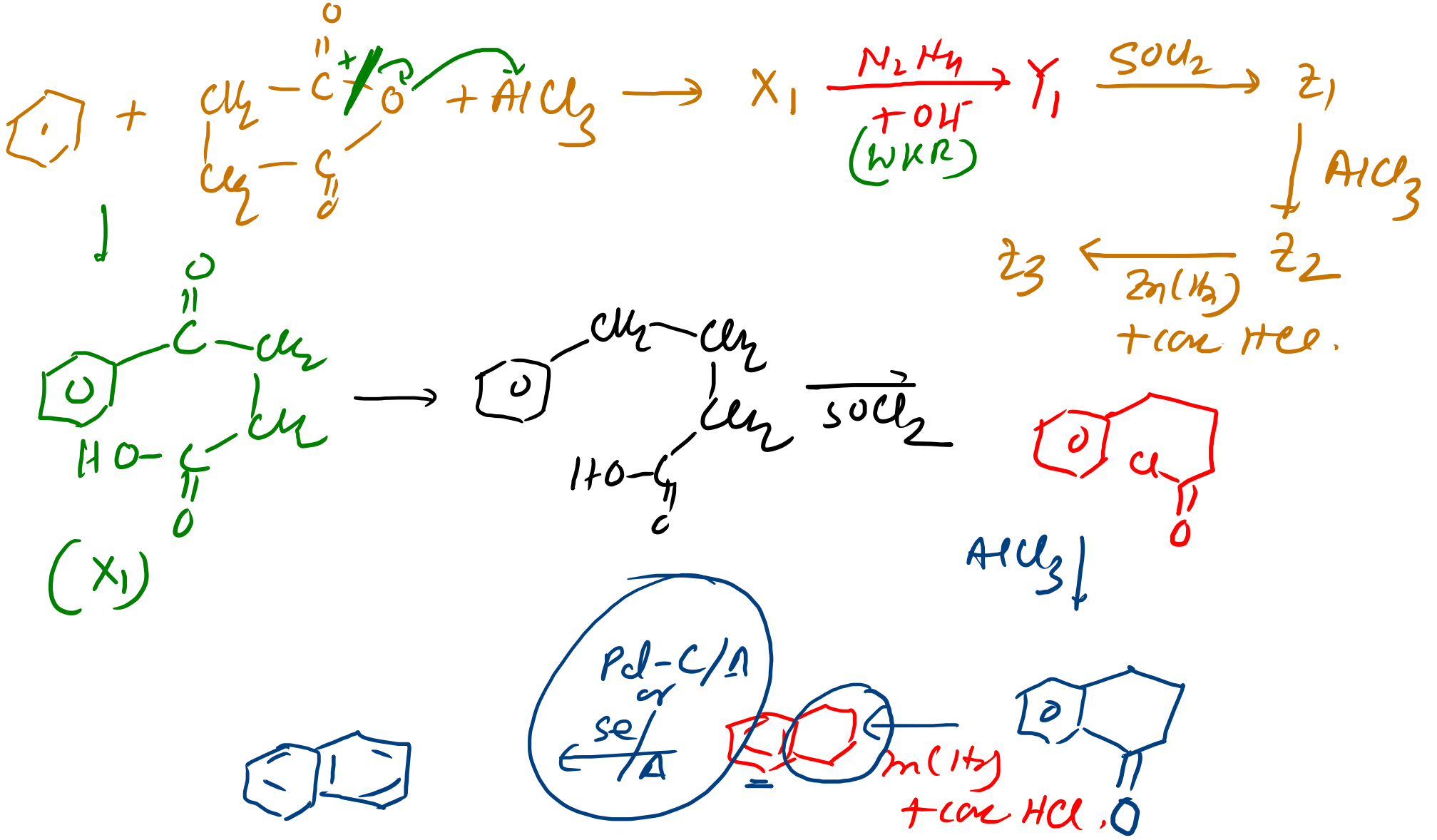
(m-xylene is the major ppt)

there is no -ve charge distribution at m-position.

↳ m-xylene is formed as ppt.

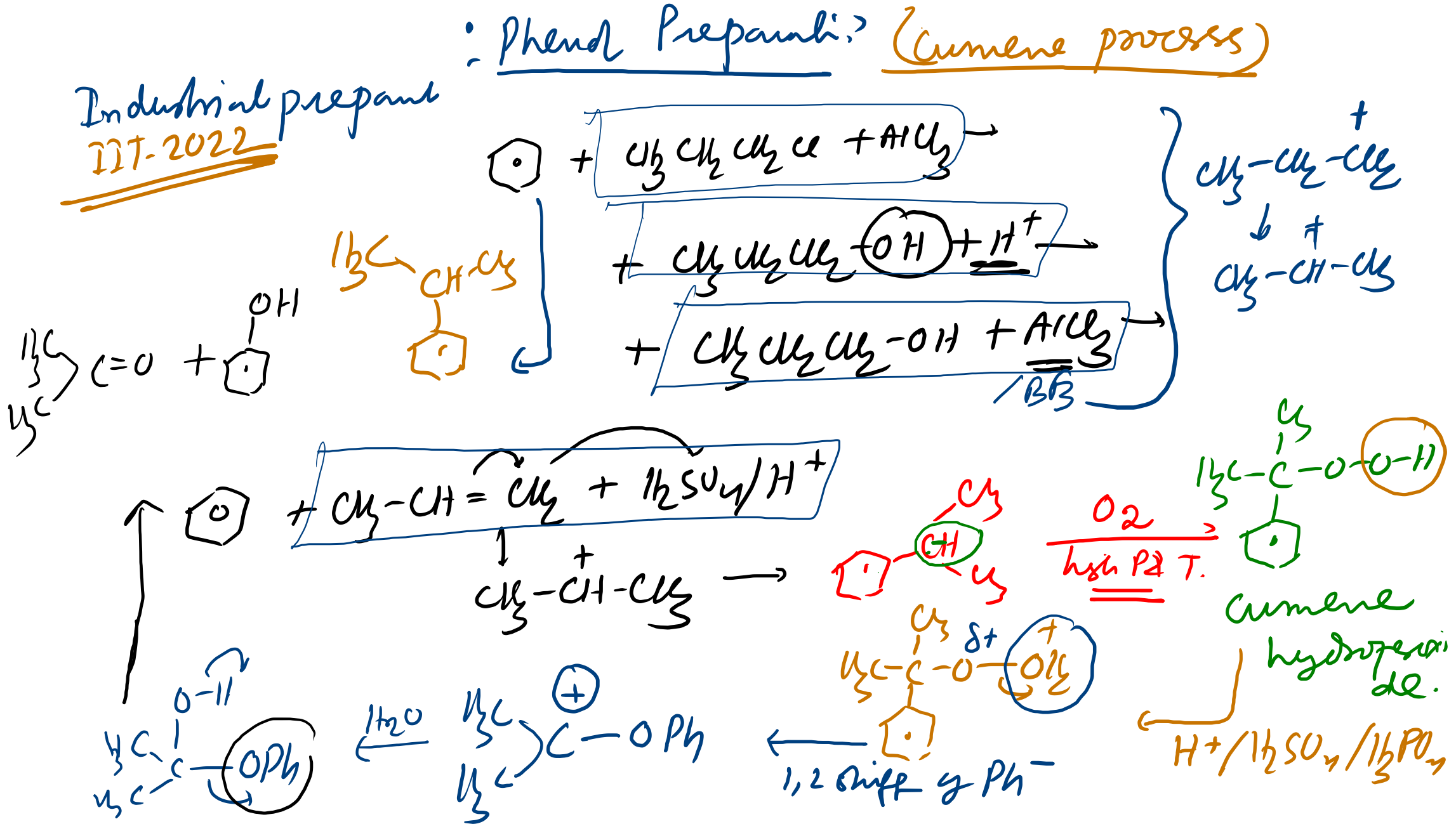


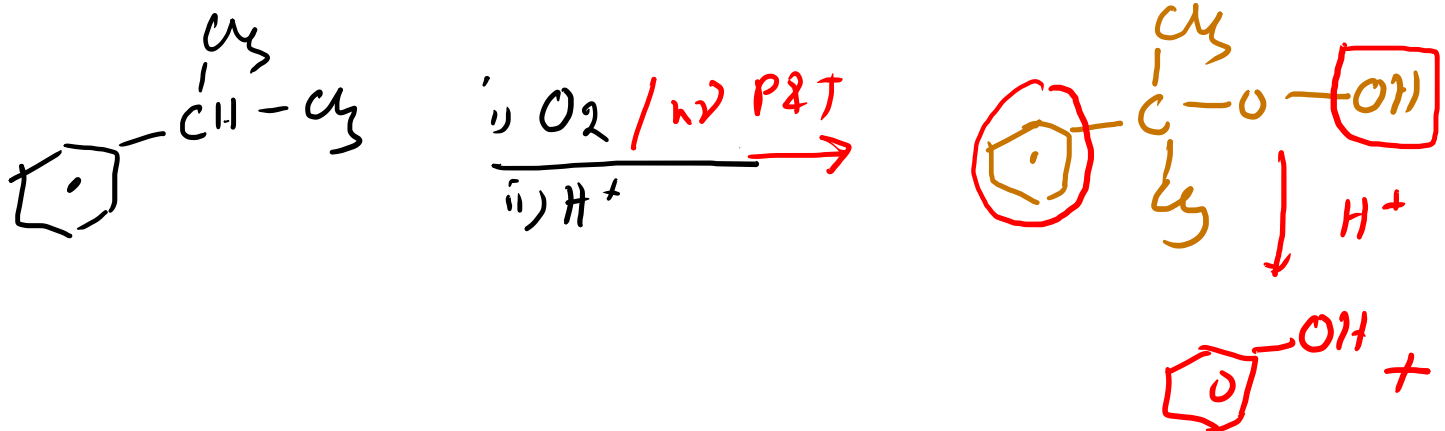
→ -ve charge ($-CH_3$) is distributed.


+ AlCl3
X1
N2H4
+OH-
(WKR)
Y1
SOCl2
Z1
AlCl3
Z2
Zn(Hg)
+conc HCl.
Z3
(X1)
SOCl2
AlCl3
Pd-C/Δ
or
Se/Δ
m(Hg)
+conc HCl.

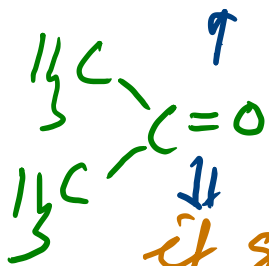
Phenol Preparation (Cumene process)

Industrial prepar
IIT-2022



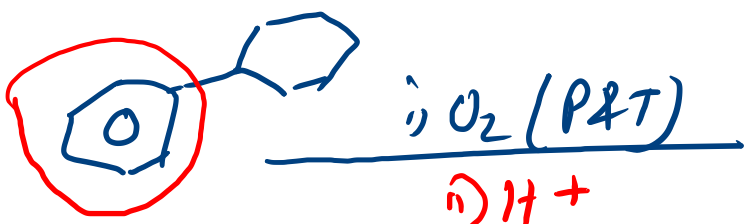


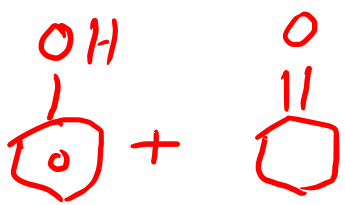
+ve iodoform test.



it gives yellow/orange/red with 2.4.DNP

This reaction is used to identify phenolic OH (violet color with $FeCl_3$)





⇒ +ve 2.4.DNP test.
−ve Tollens/test fehling.

(red/orange color azo dye with PhN_2^+)

Ligand

Zn dust →  + ZnO

→ Williamson Ether synthesis

NaOH / EtI → 

Reacting where –OH group participate

Ac_2O /  → 

$FeCl_3$ → $[(PhO)_6Fe]^{3+}$ (ferric phenate) violet colour

NaOH → PhOH is soluble in NaOH ; PhO^-

$NaHCO_3$ → PhOH is not soluble in $NaHCO_3$

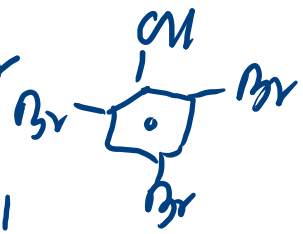
Reaction of benzene ring in phenol ring:

SO_3 40°C.

SO_3 80°C.

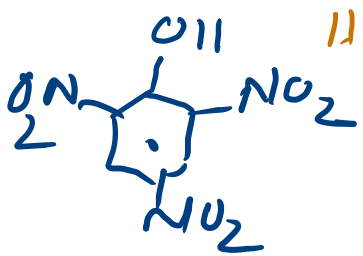
Br_2/CS_2

Br_2/H_2O



dil. HNO_3

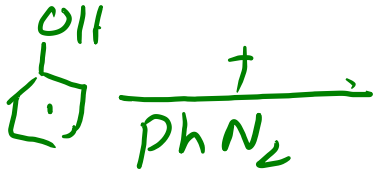
conc. HNO_3



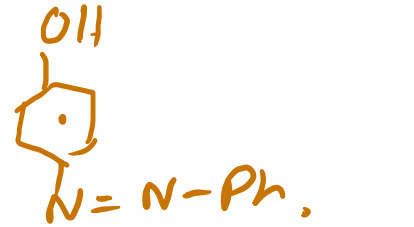
$RCl + AlCl_3$

$R\text{-}COCl + AlCl_3$

a)



MA = 8.5 - 9.5

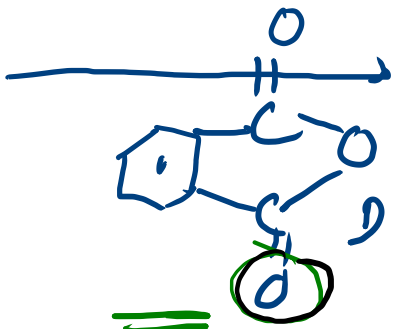


(orange/red ppt).

b)

Phenol

(1:1)

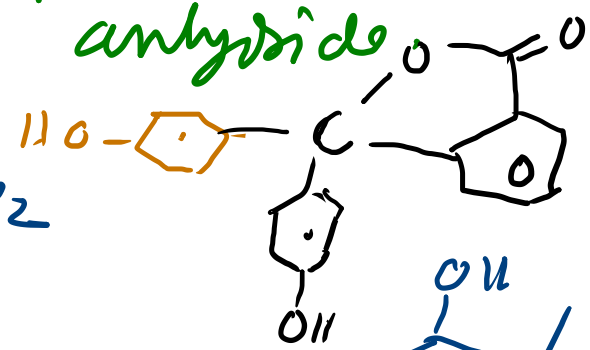


conc H_2SO_4

Phenolphthalein

Indicator

Phthalic anhydride



Phthalein dye.