

2) Reduction by e^- transfer reagents

Australian
Chemist
Arcture Birch

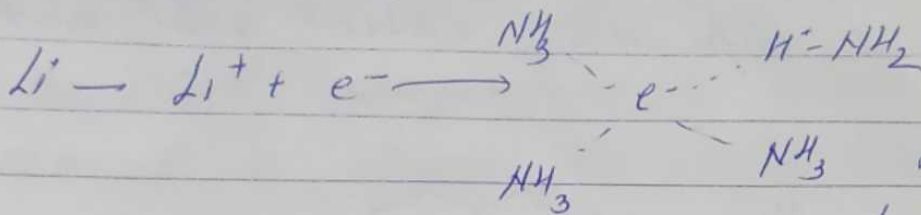
Birch reduction - Regio selective rxn

Freshly prepared solnⁿ of

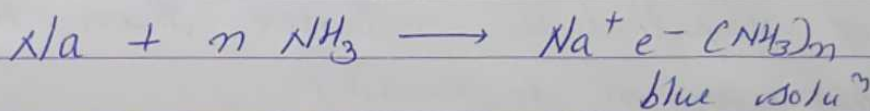
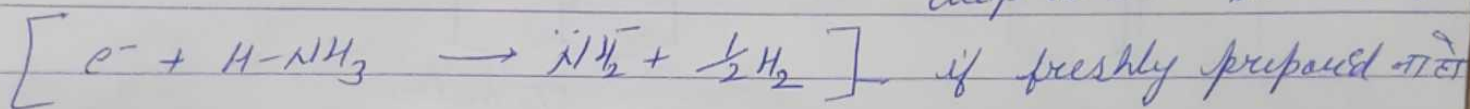
Na/Li/K in liq NH_3
and

EtOH / $t\text{-Bu-OH}$

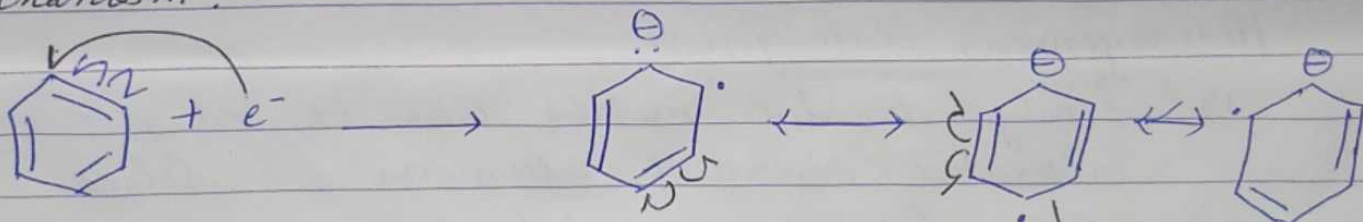
Working temperature = -33°C



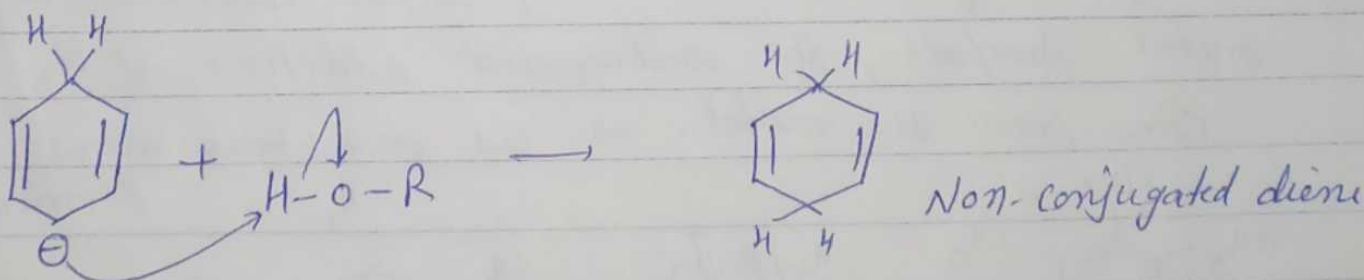
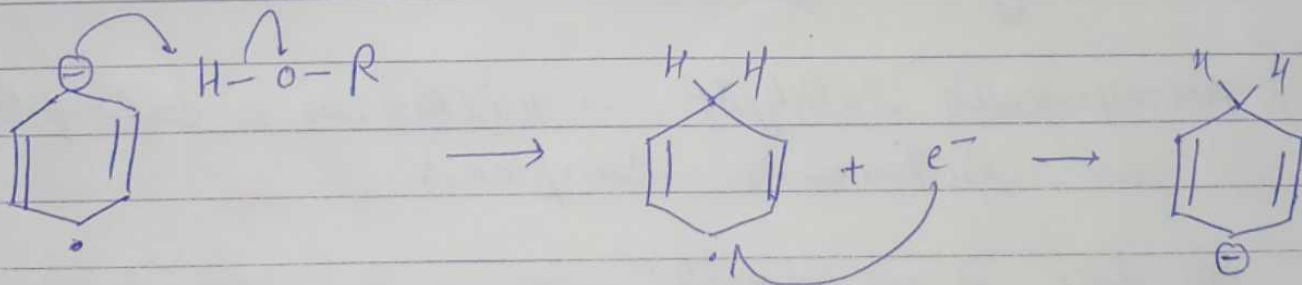
Solvated e^-
deep dark blue soln.

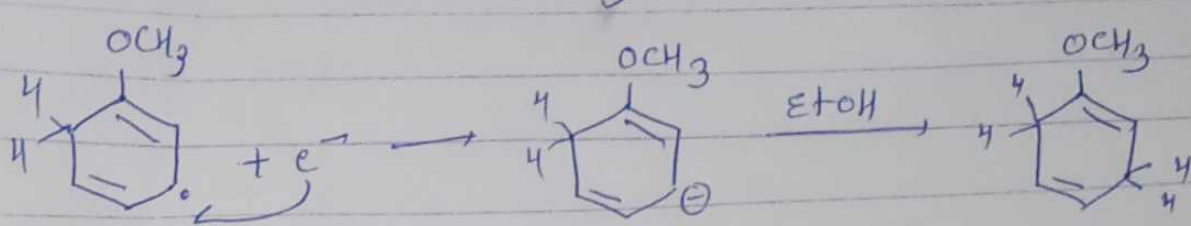
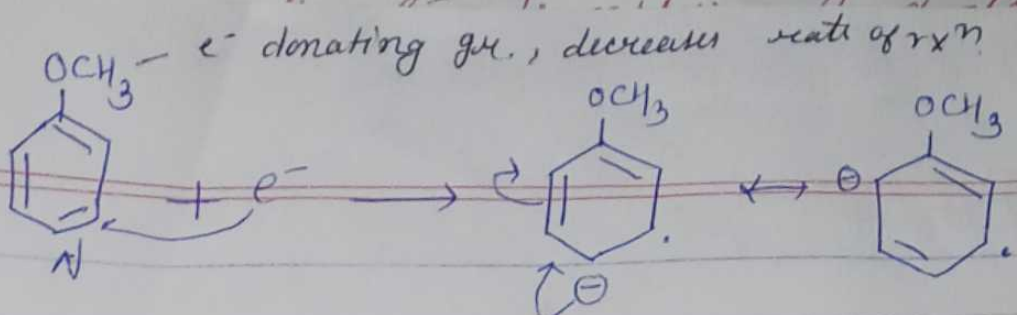


Mechanism :-

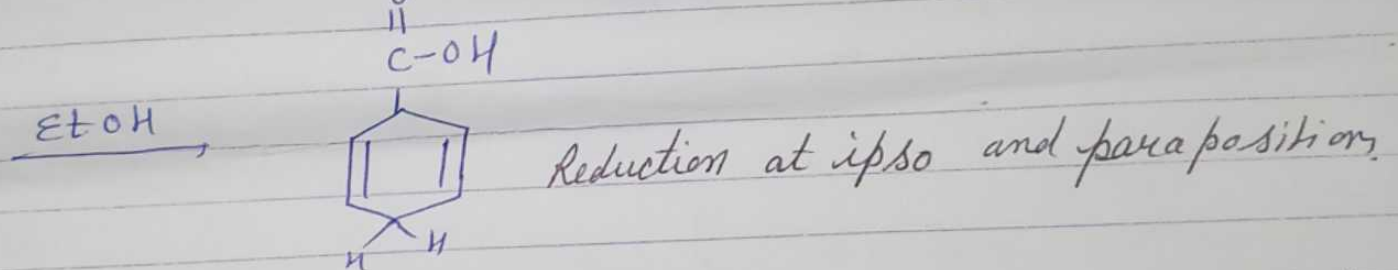
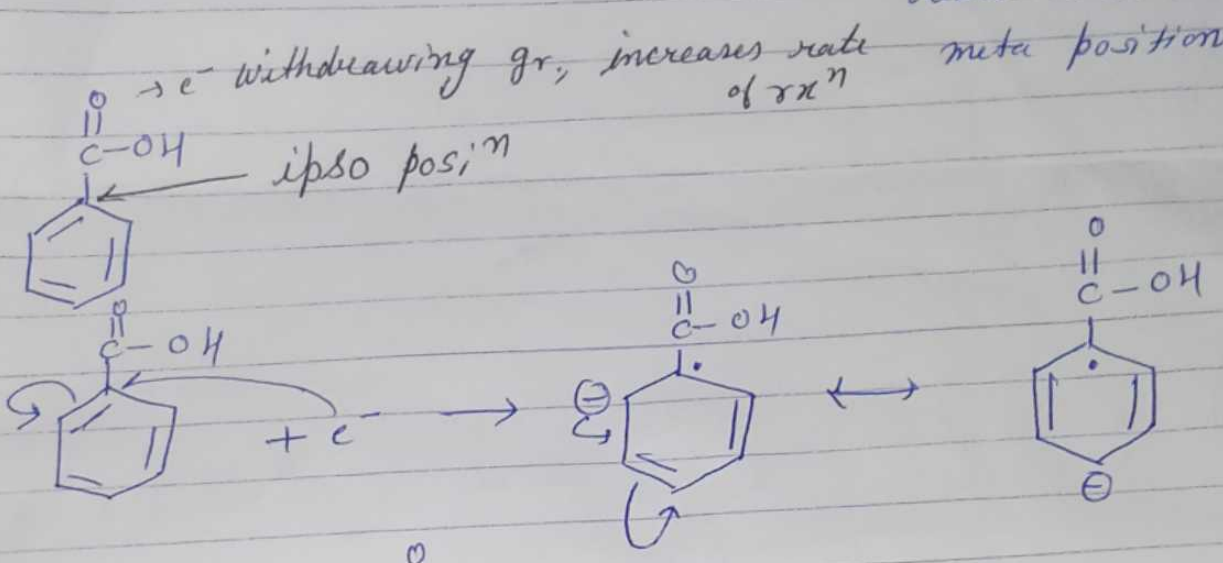


Radical anion most stable

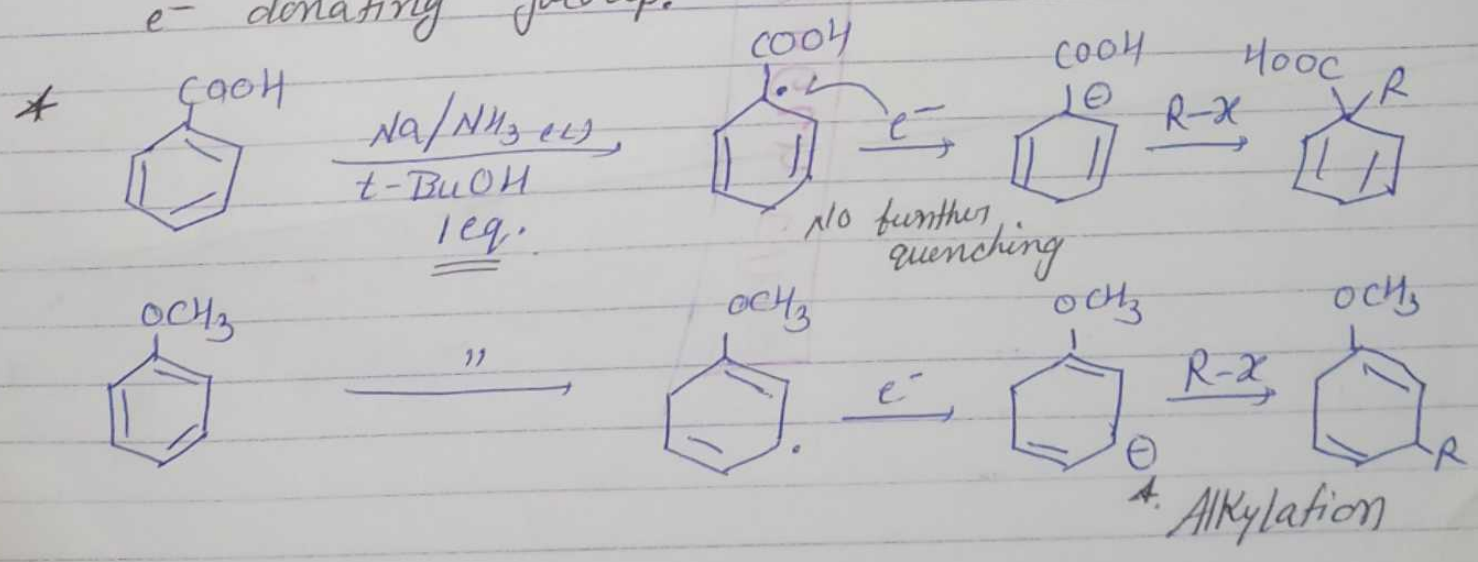


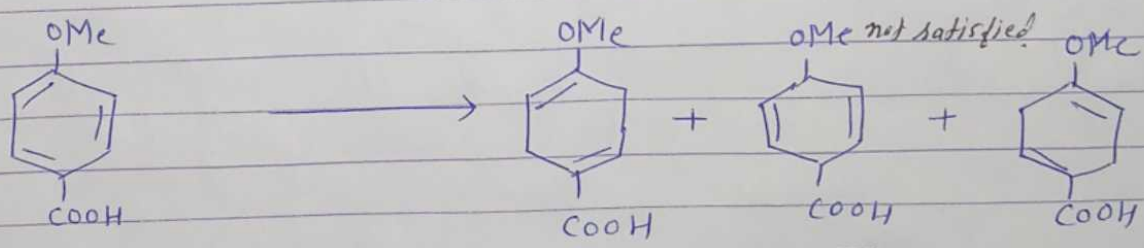
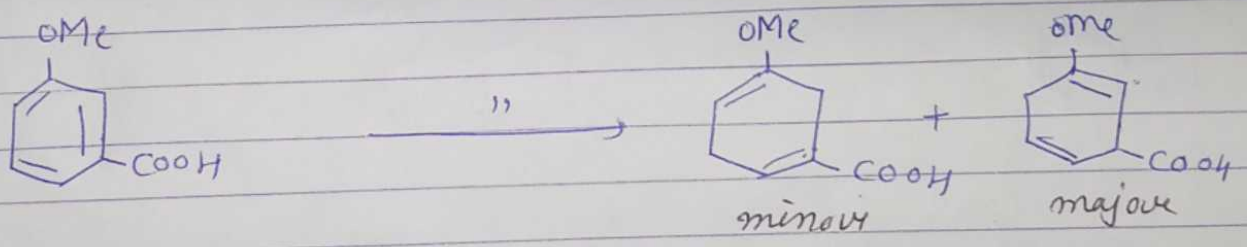
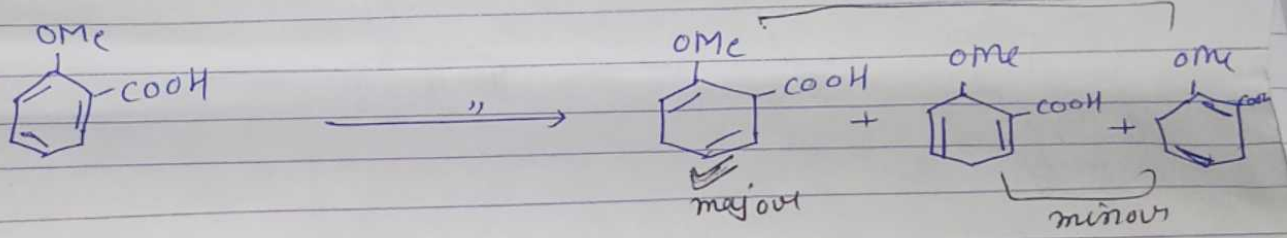
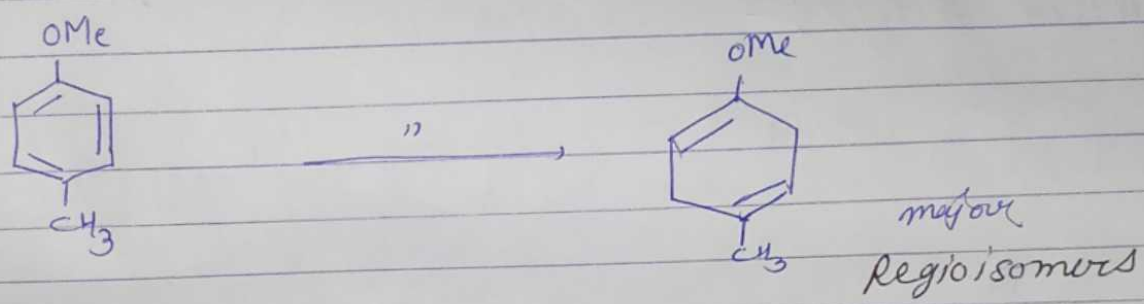
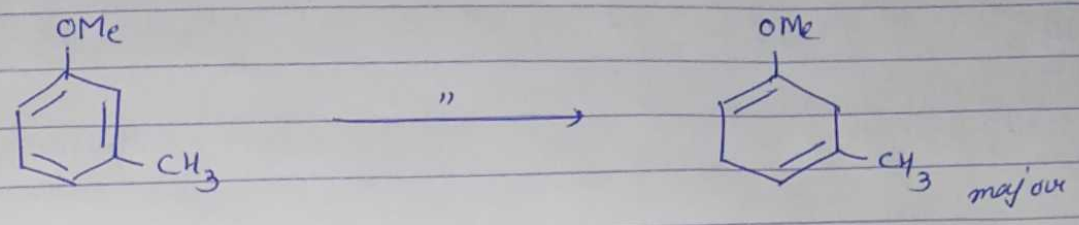
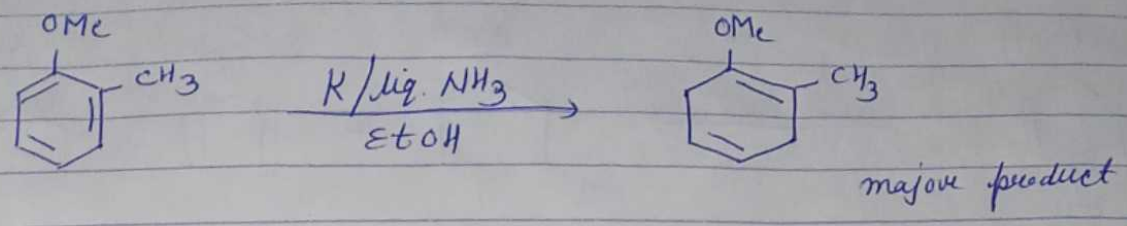
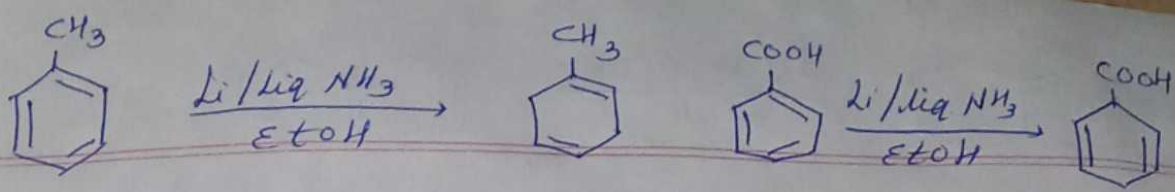


reduction at ortho and meta positions.

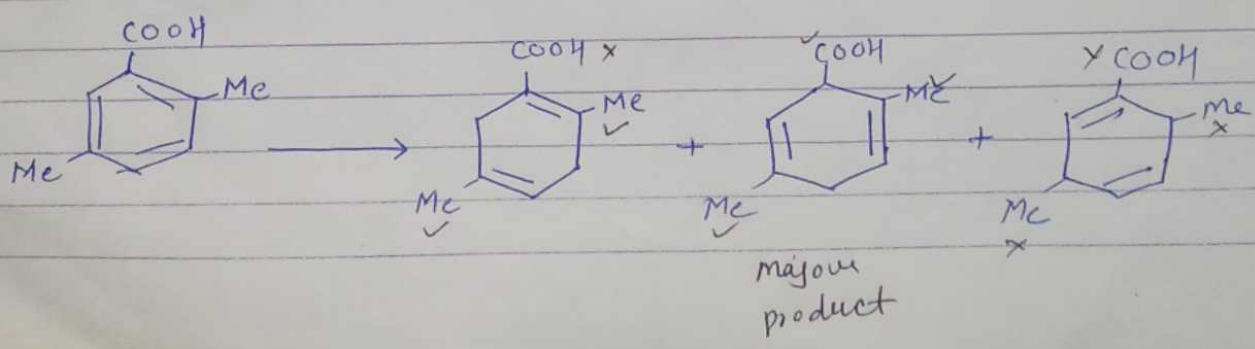


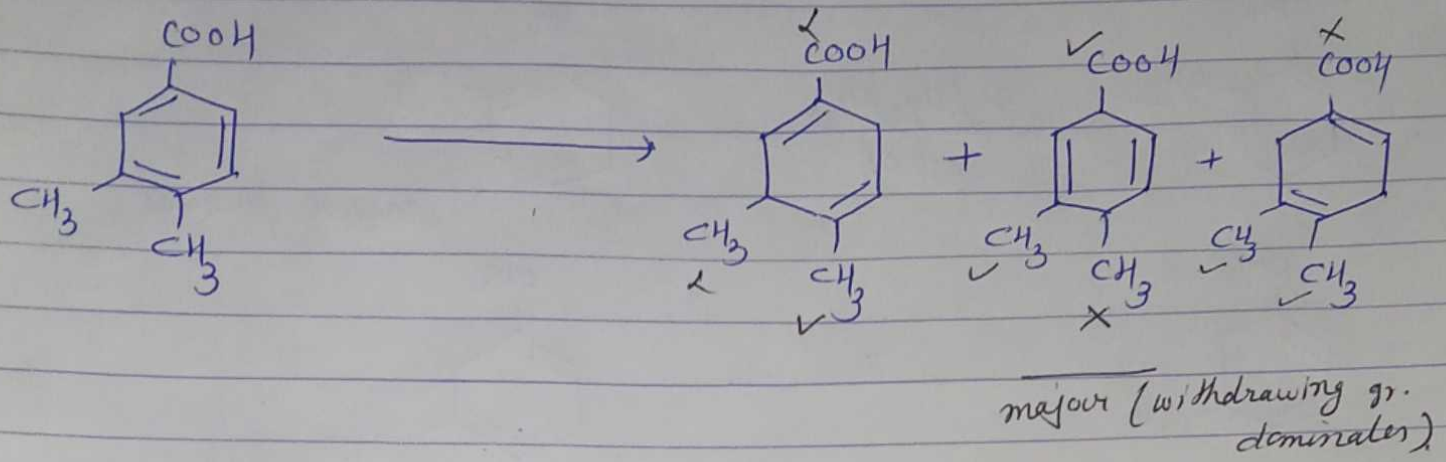
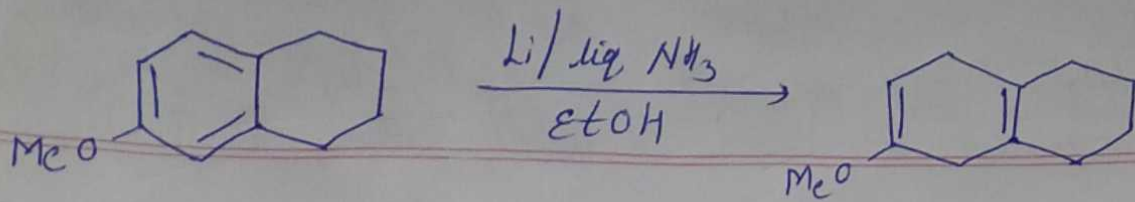
* $-\text{CHO}$, $-\text{COOEt}$ are e^- withdrawing group but Birch reagent converts them $-\text{CH}_2\text{O}^-$ so act as e^- donating group.



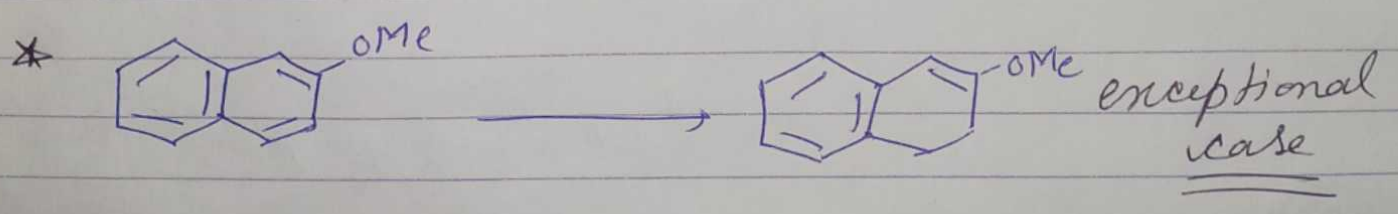
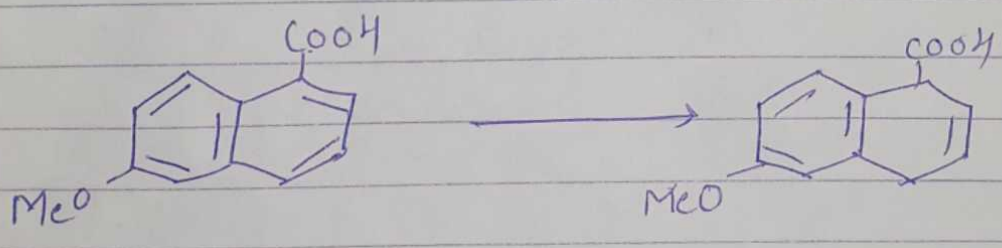
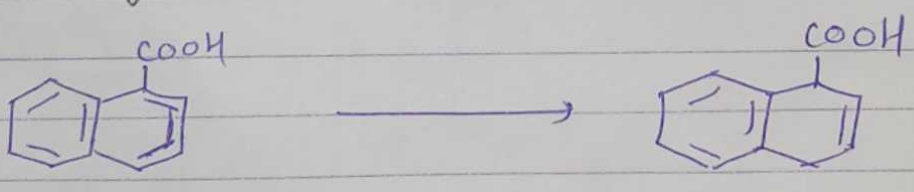
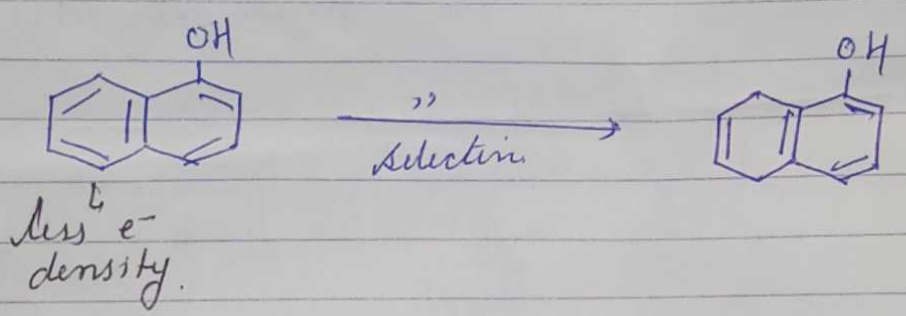
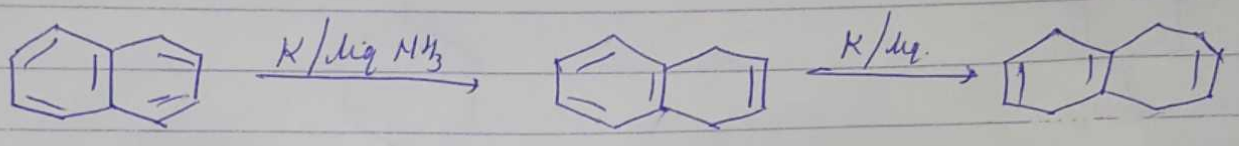


* major
* withdrawing group dominates

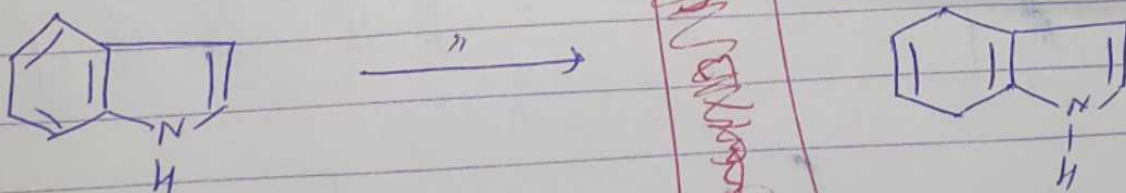
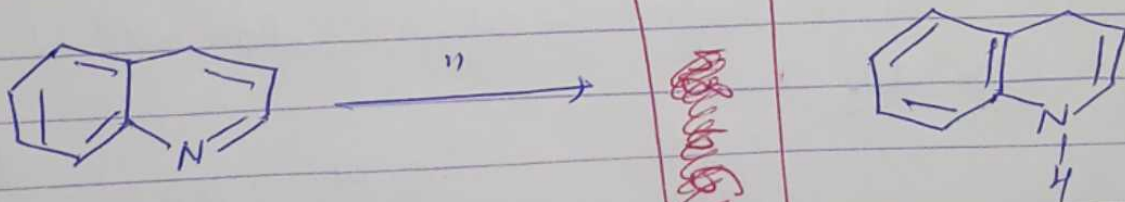
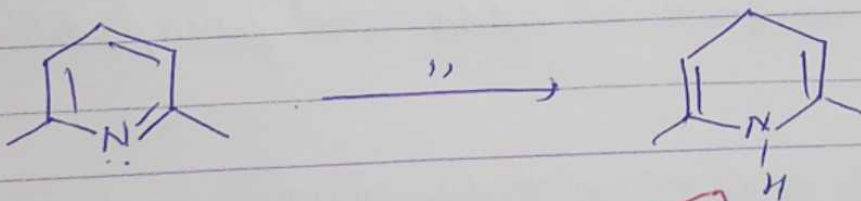
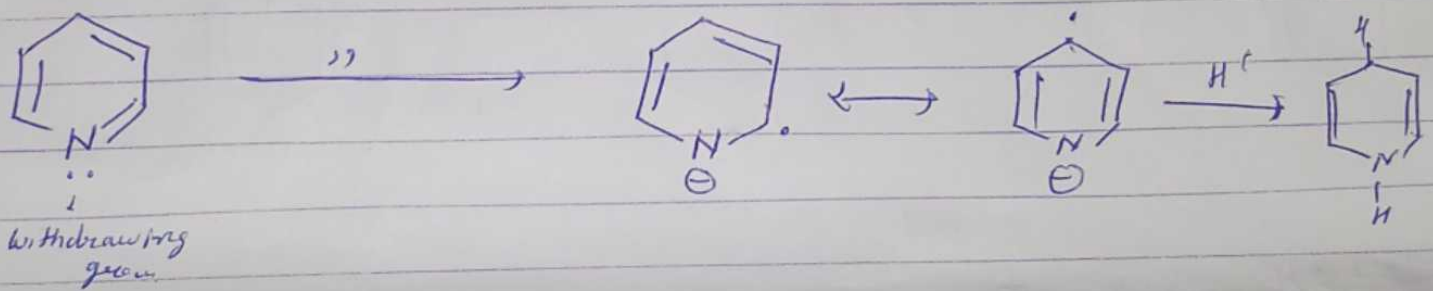
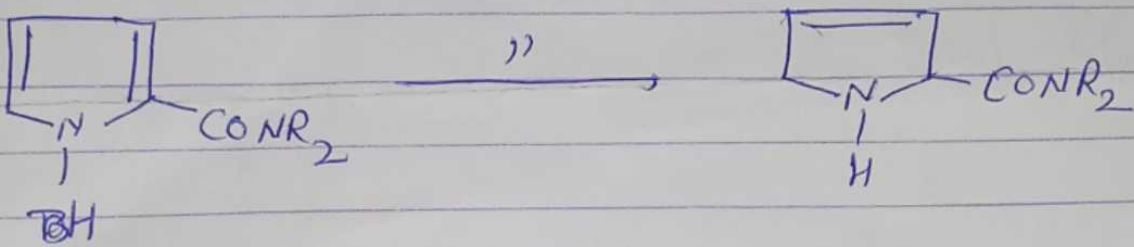
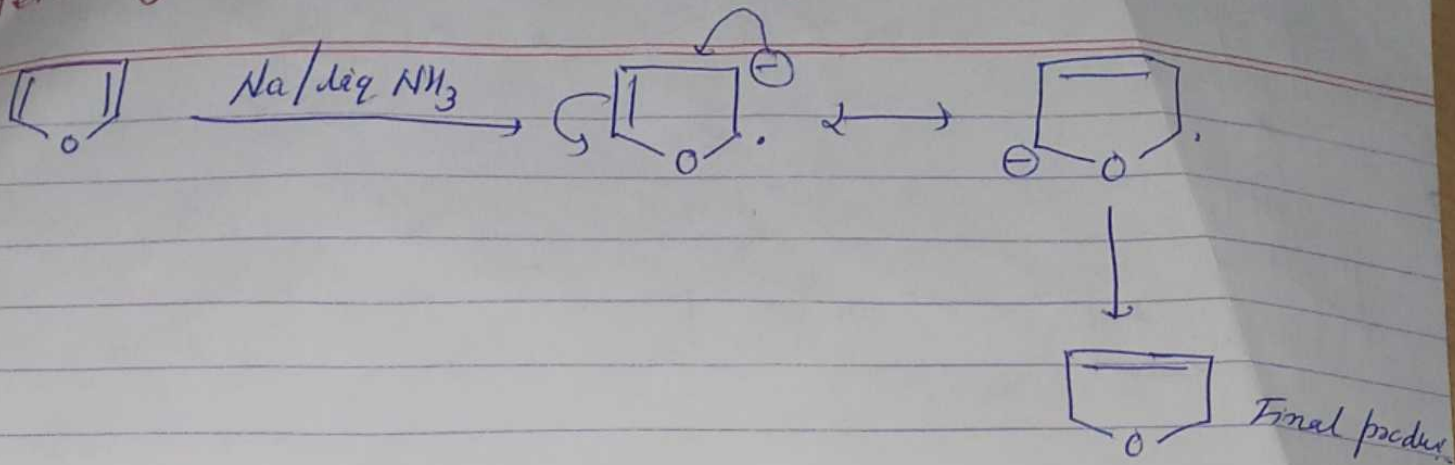




Fused Rings: -



Heterocyclic Aromatic rings:-



Resonance structures of pyrrole