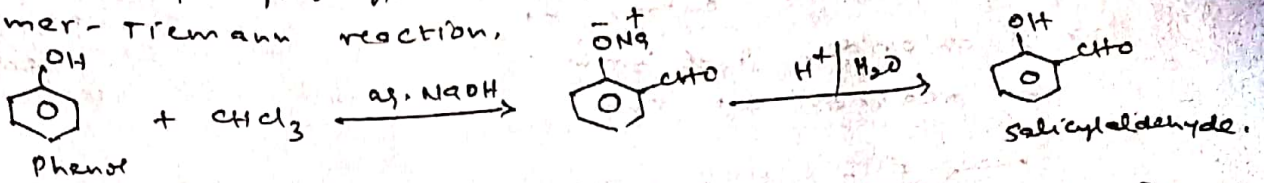


③ Reimer-Tiemann Reaction

Treatment of phenol with chloroform in aqueous NaOH followed by acid hydrolysis gives salicylaldehyde. This reaction is called Reimer-Tiemann reaction.

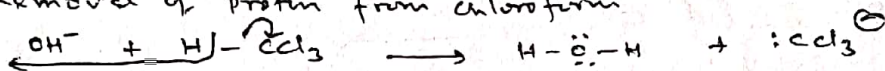


If CCl_4 is used instead of CHCl_3 , salicylic acid is formed.

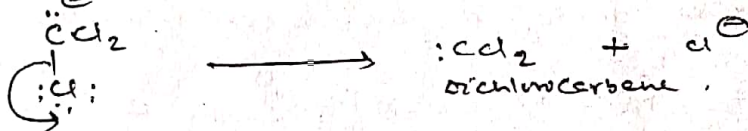
$$\text{Phenol} + \text{CCl}_4 + \text{NaOH} \longrightarrow \text{Salicylic acid} + 4\text{KCl} + 2\text{H}_2\text{O}$$

Mechanism:

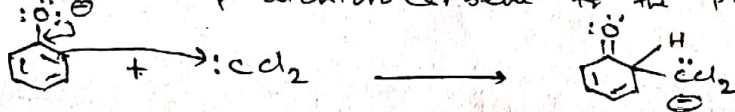
i) Removal of proton from chloroform



ii) Dissociation of trichloromethyl anion



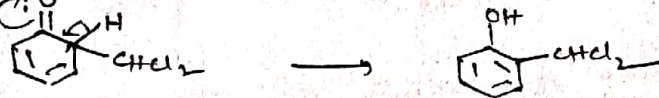
iii) Addition of dichlorocarbene to the phenoxide ion.



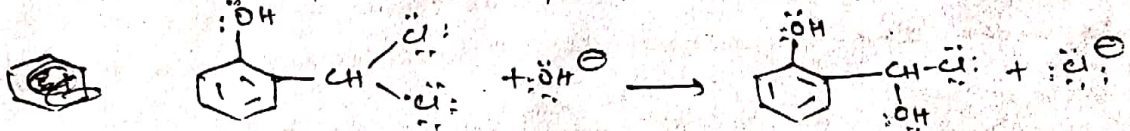
iv) Abstraction of a proton from water



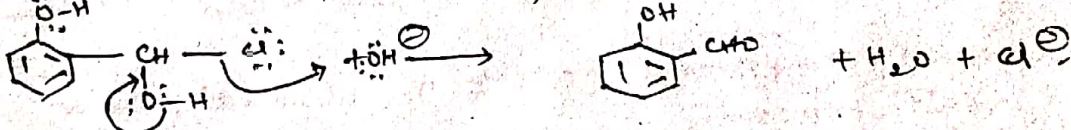
v) Tautomerisation to form substituted phenol



vi) Displacement of halide by hydroxide ion.



vii) Elimination of HCl to form aldehyde product



Extensional of Reimer-Tiemann reaction.

This reaction can be applied on some heterocyclic compounds such as thiophene, pyrrole, pyrimidines & indoles etc.

