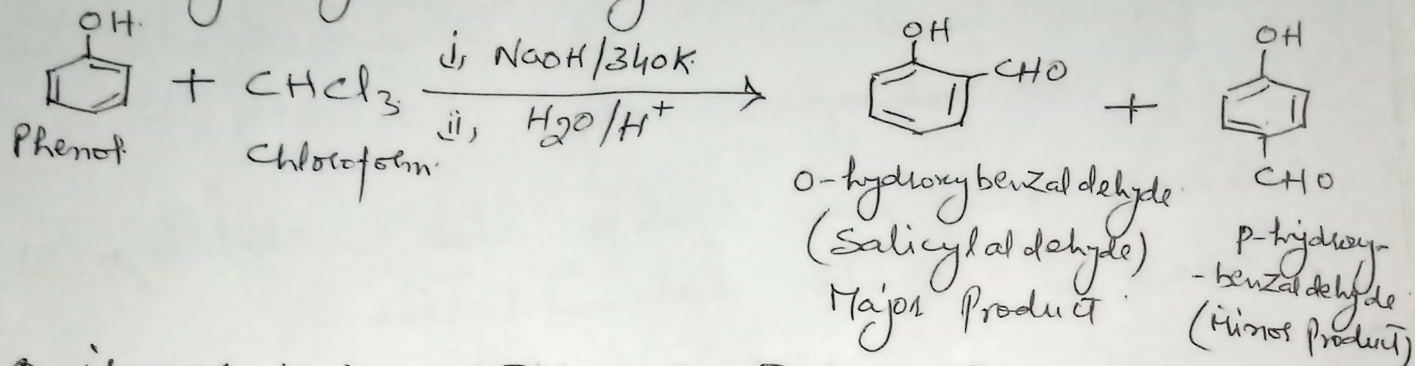


Reimer-Tiemann Reaction:

It is a reaction of Phenol with chloroform in presence of aqueous sodium or potassium hydroxide at 340K followed by hydrolysis to yield ortho and para-hydroxybenzaldehyde.

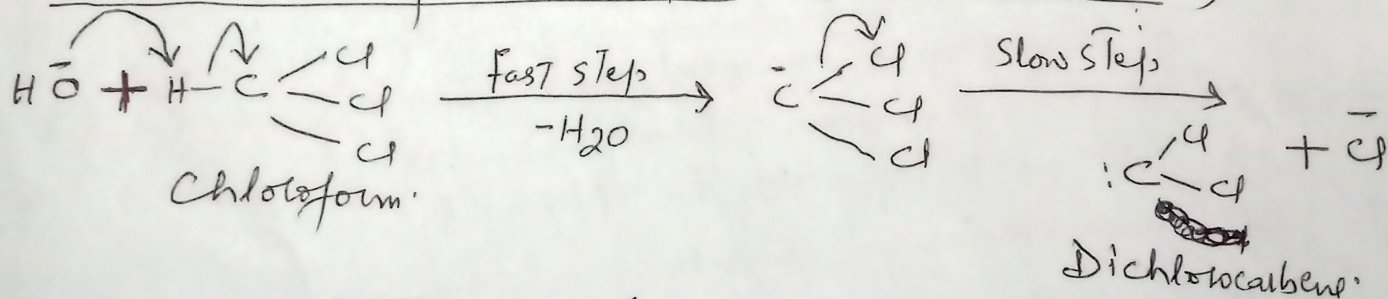


O-isomer being volatile due to chelation is separated by steam distillation.

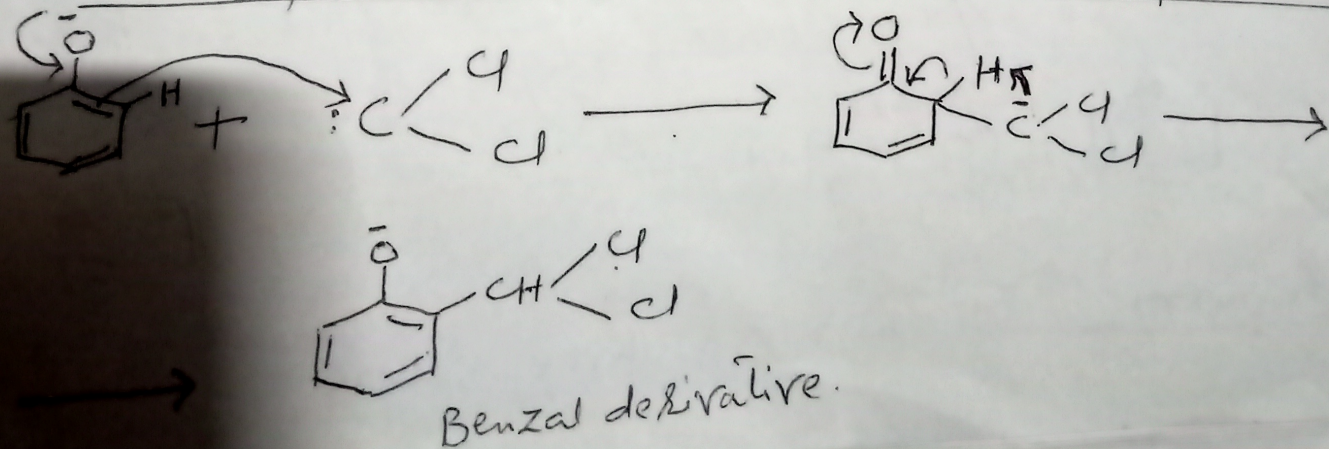
Mechanism: →

The reaction takes place in the following three steps:

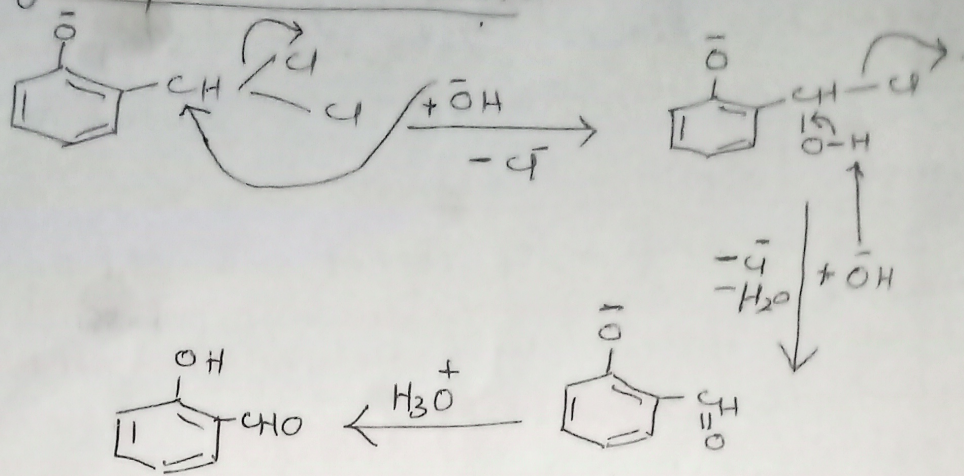
① Generation of electrophile (dichlorocarbene)



② Attack of electrophile (Dichlorocarbene) on phenoxide ion.

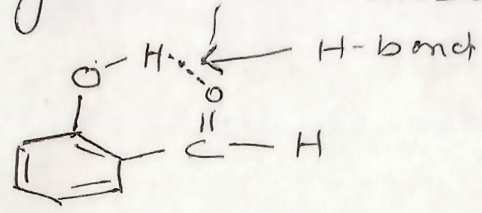


⑤ Hydrolysis of benzal derivative.



o-hydroxybenzaldehyde.

o-isomers being more stable due to chelation is formed in greater concentration.

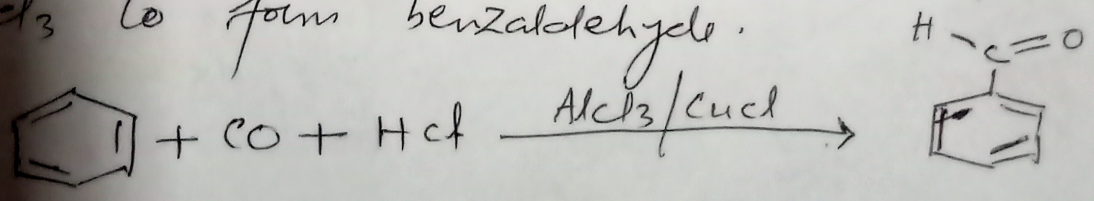


Chelation of o-isomers.

Reimer-Tiemann - Koch Reaction:

The reaction is named after German chemists and unlike Gattermann formylation reaction, this reaction is not applicable to phenols.

This reaction involves formylation of benzene with carbon monoxide (CO) and HCl in presence of AlCl₃ to form benzaldehyde.

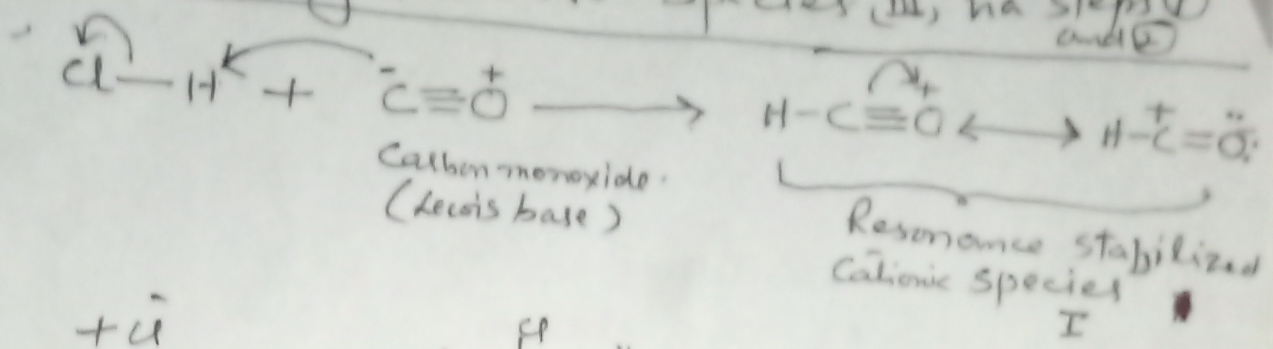


Mechanism: It involves three steps:

Step 1

3

Generation of reactive species III, via steps 1 and 2

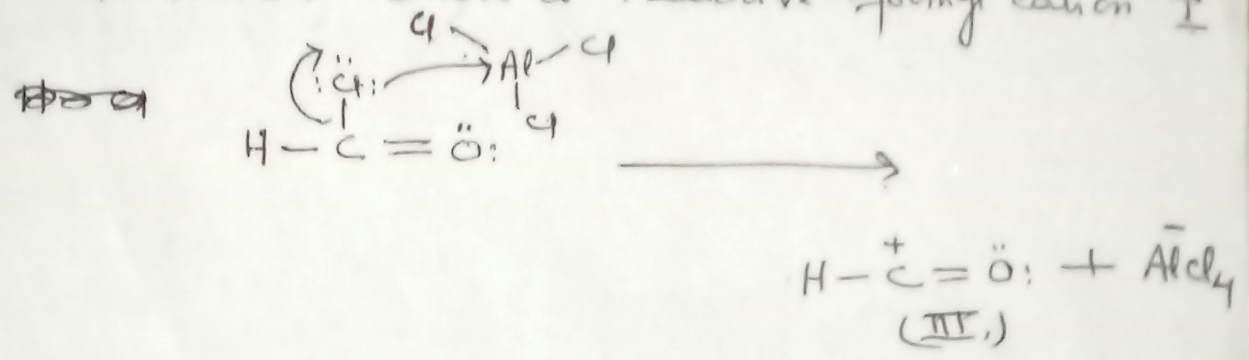


2



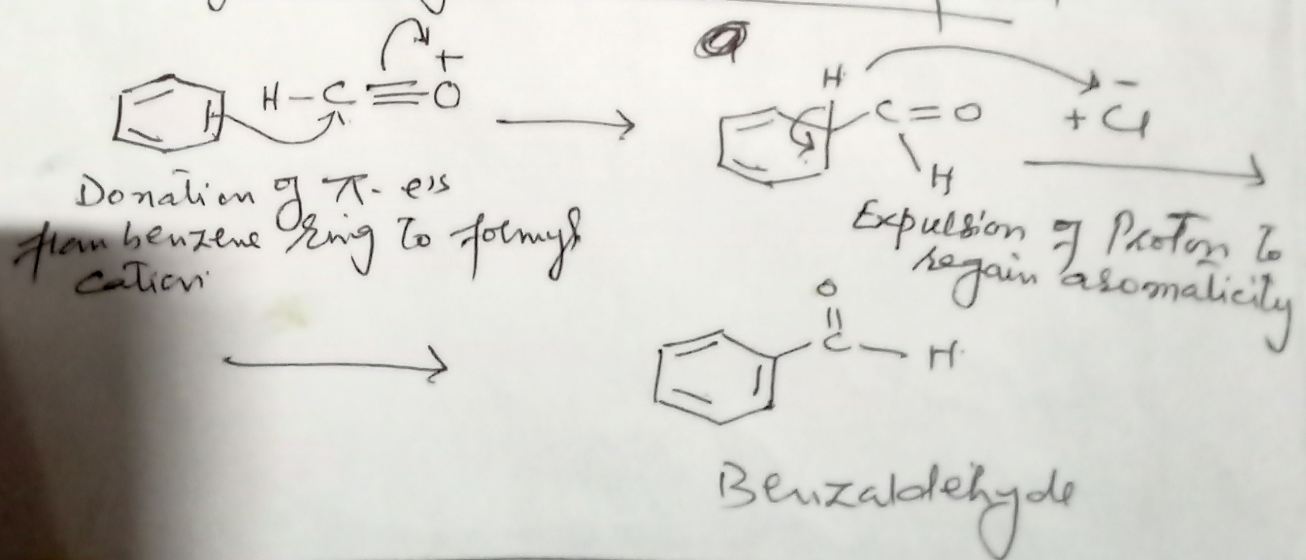
Step 2

In presence of AlCl_3 (Lewis acid), species I is reverted back to reactive formyl cation I



Step 3

Formylation of aromatic compound



Any student having any question regarding today's topic may please contact me.

Thank you.