HALOALKANES & HALOARENES

Preparation of Aryl halides (Ar – X)

Haloarenes cannot be prepared from phenols in a similar way as R–X are prepared from R–OH.

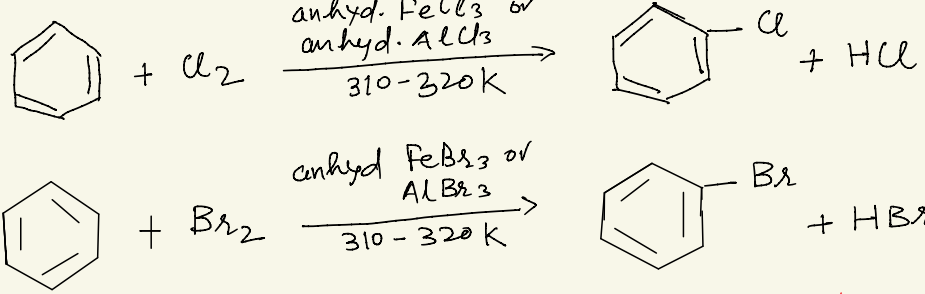
C–O bond has partial double bond character due to resonance hence difficult to break.

Phenol

1. From aromatic hydrocarbons – by direct halogenation (Electrophilic Substitution of Cl and Br)

Conditions — low temperature (310–320 K) in the absence of light

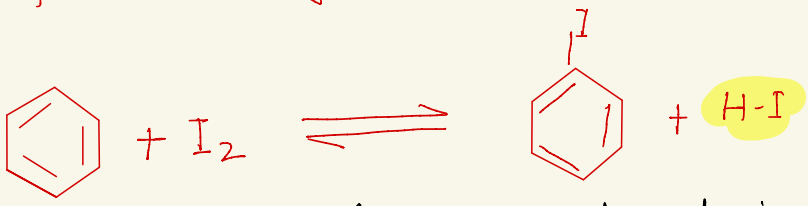
In the presence of halogen carriers such as anhydrous FeX_3 or AlX_3 (X = Cl, Br) or Fe



FeX_3 or AlX_3 — Lewis acids (being electron deficient)

If toluene is used, ortho and para isomers are obtained which can be easily separated due to large difference in their melting points.

Iodination of aromatic hydrocarbon is reversible in nature



H-I formed during the reaction is a good reducing agent, it reduces the Iodobenzene back to benzene and I_2. Therfore Iodination is carried out in the presence of acidic oxidising agents such as HNO_3, HIO_3, HgO etc.

$$5HI + HIO_3 \longrightarrow 3I_2 + 3H_2O$$