

CHEMISTRY STUDY MATERIALS FOR CLASS 12

(NCERT Based Notes of Chapter - 11)

GANESH KUMAR

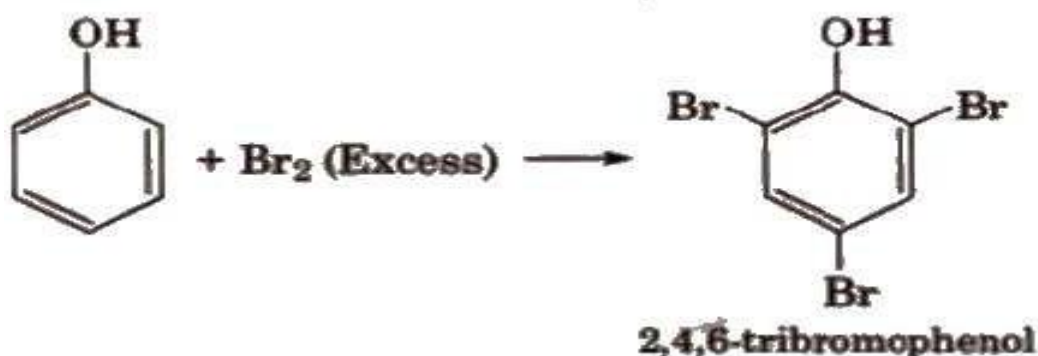
DATE:- 20/09/2021

Alcohols, Phenols and Ethers

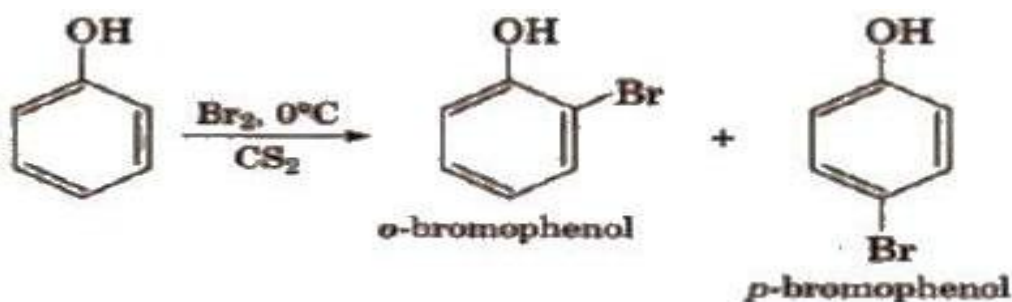
Reactions of Phenols

(i) **Electrophilic substitution reactions** The -OH group attached to the benzene ring activates it towards electrophilic substitution at ortho and para positions .

(a) Halogenation



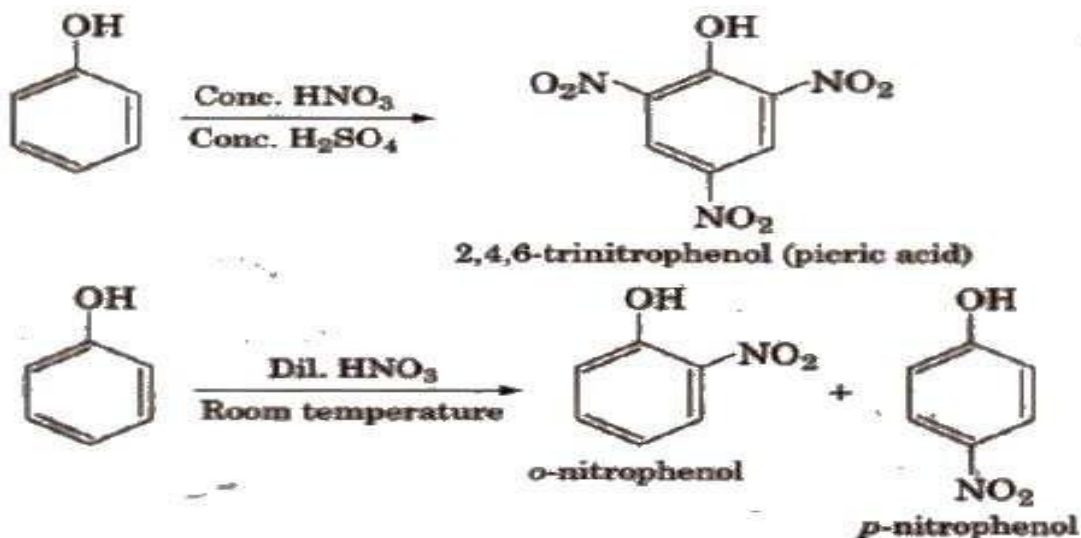
With calculated amount of Br₂ in CS₂ or CHCl₃ it gives ortho and para product.



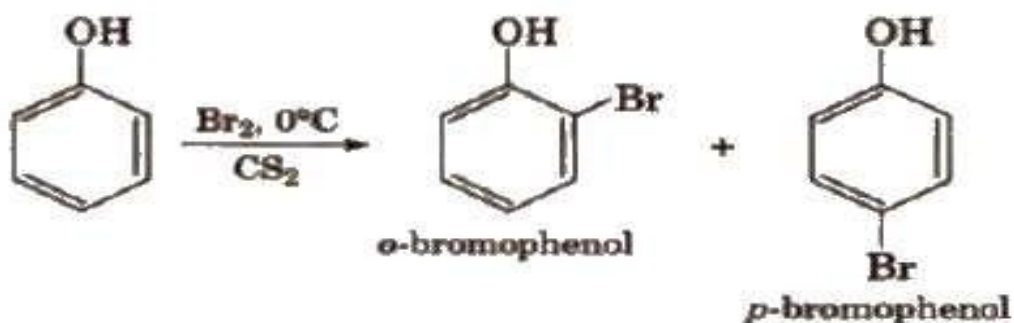
(b) Sulphonation



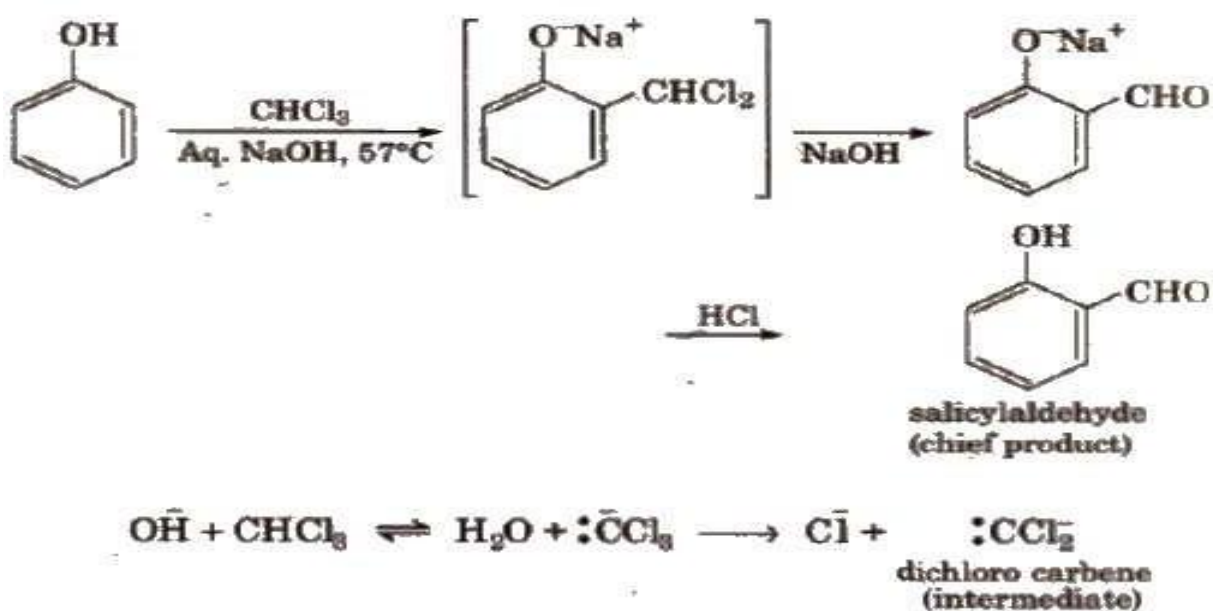
(c) Nitration



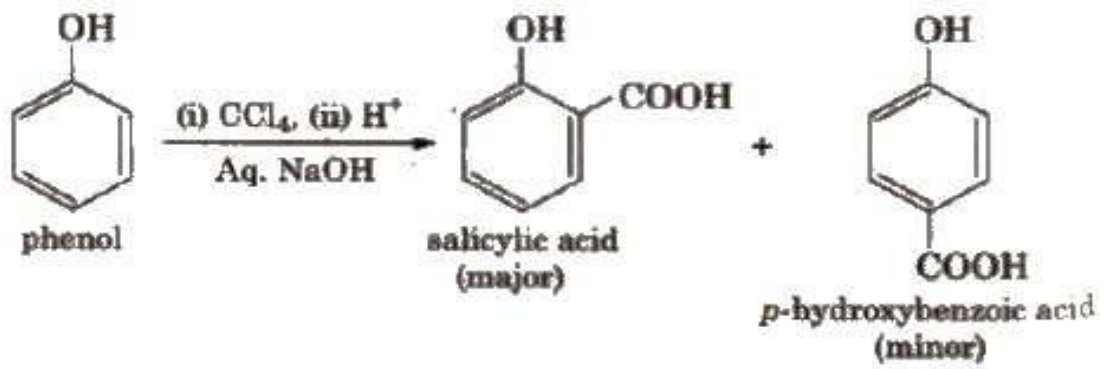
The ortho and para isomers can be separated by steam distillation. This is because *o*-nitrophenol is steam volatile due to intramolecular hydrogen bonding while *p*-nitrophenol is less volatile due to intermolecular hydrogen bonding which causes the association of molecules.



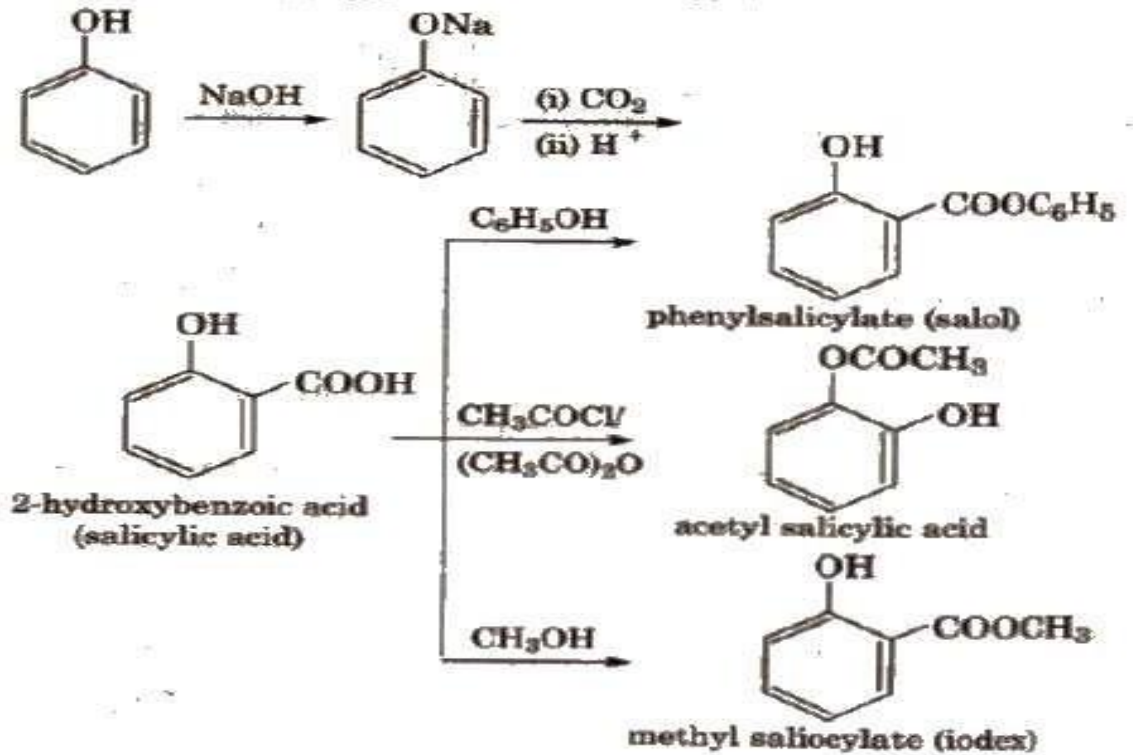
(d) Reimer-Tiemann reaction



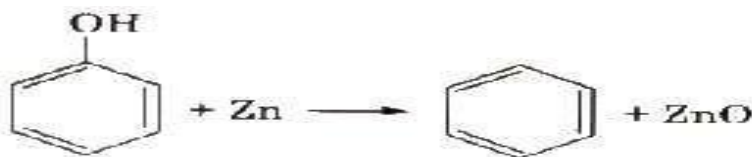
This reaction is an electrophilic substitution reaction and electrophile is dichlorocarbene. Similarly with carbon tetrachloride and alkali, *o*- and *p*-hydroxybenzoic acid are obtained



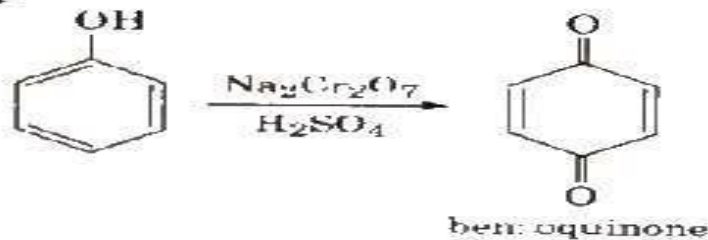
(ii) Kolbe's reaction



(iii) Reaction with zinc dust



(iv) Oxidation



(v) Fries rearrangement

