

SUBJECT - CHEMISTRY

CLASS - B.Sc (Sub/sem) PART-II

GROUP - C

TOPIC - ELECTROPHILIC SUBSTITUTION IN PHENOLS.

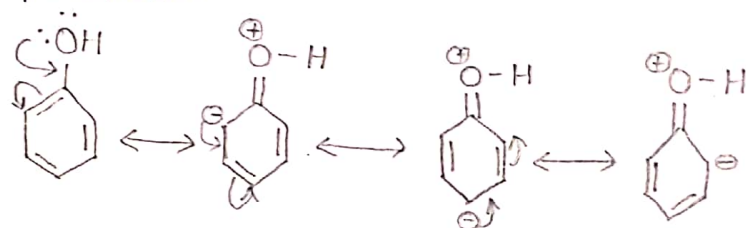
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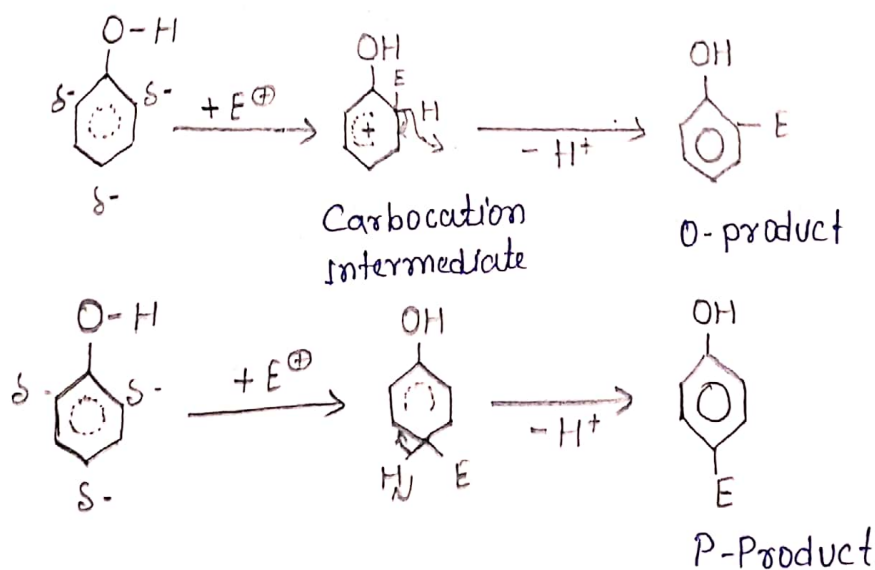
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Q Discuss electrophilic substitution in phenols.

Ans The delocalisation of the non-bonding pair of electrons of -OH groups activates the ring for electrophilic attack at O- & P-positions which is evident from the presence of -ve charge at these positions -

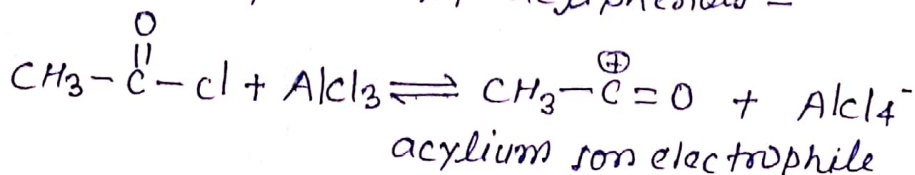


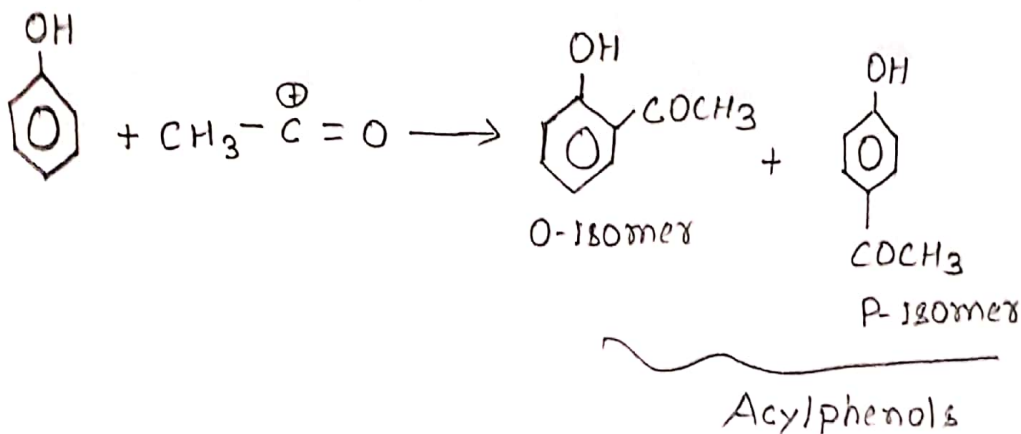
Therefore, phenols readily undergo electrophilic substitutions at O- & P-positions -



As -OH group is a very powerful activator, so it is necessary to check polysubstitution in the ring.

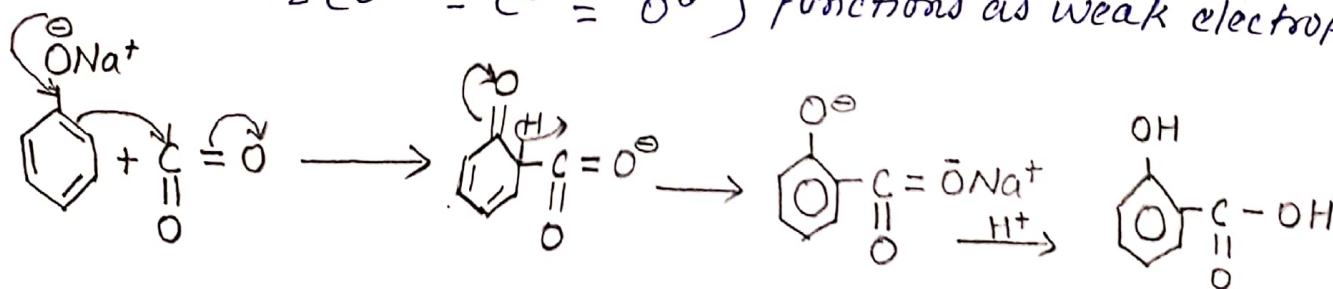
Acylation: phenol reacts with acylchloride in presence of $AlCl_3$ to form O- & P-acylphenols -





Carboxylation: When CO_2 is passed over Sodium phenoxide at about 125° , o-hydroxybenzoic (or Salicylic) acid is formed. This is called Kolbe's reaction. If the carboxylation of Sodium phenoxide is done at $250-300^\circ$, p-product is formed.

Here CO_2 ($\text{O}^{\delta-} = \text{C}^{\delta+} = \text{O}^{\delta-}$) functions as weak electrophile.



Q write the resonating structures of phenol.

Ans Resonating structures of phenol are given below -

