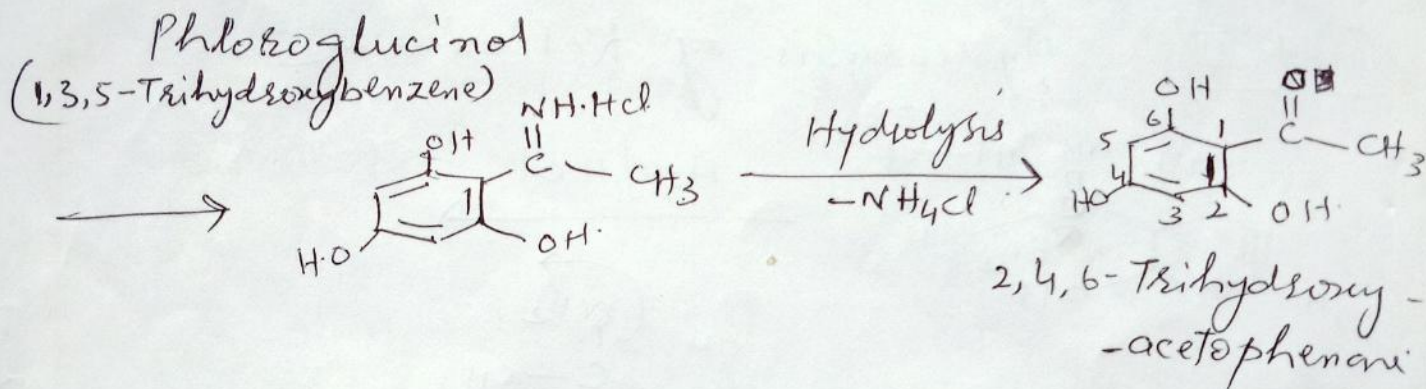
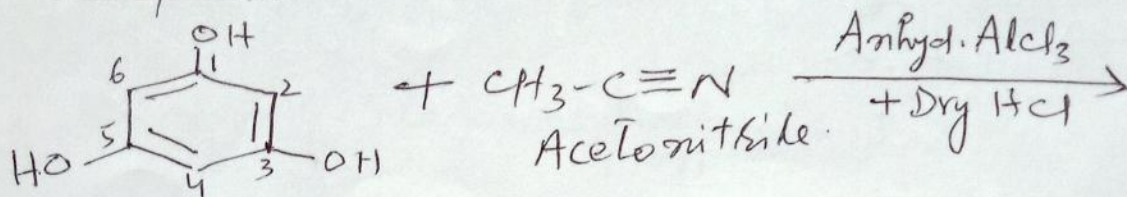


Houben-Hoesch Reaction

(1)

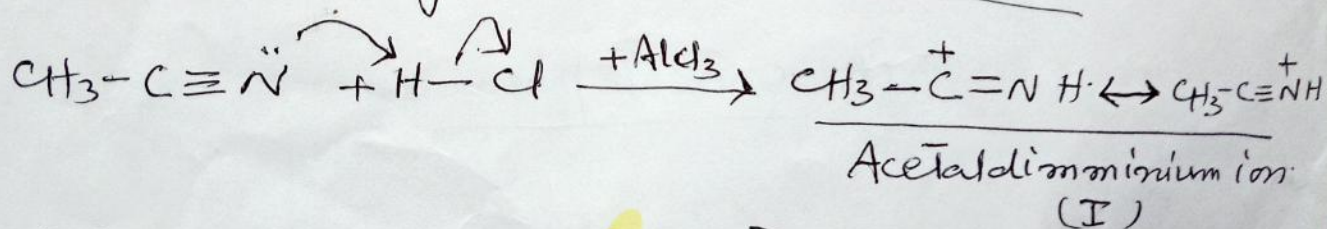
It is an organic reaction in which a nitrile reacts with reactive alkene compound to form an aryl ketone. It is a type of Friedel-Crafts acylation with HCl and Lewis acid as catalyst.

Example:



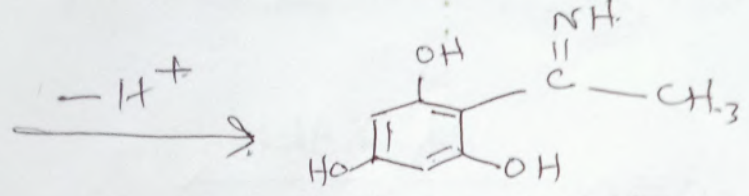
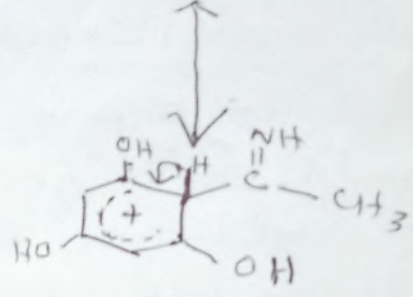
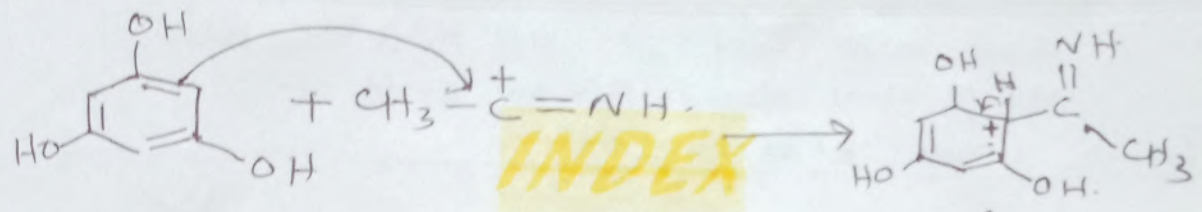
Mechanism: Step I.

Formation of acetaldiminium ion.



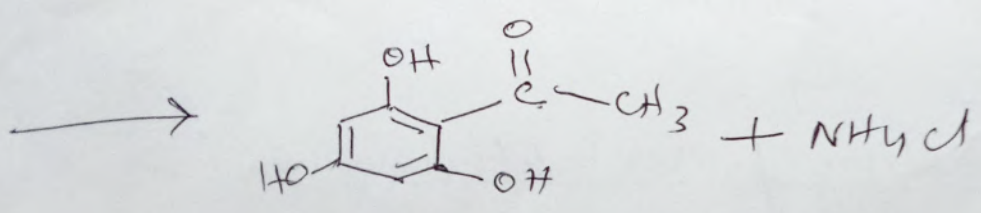
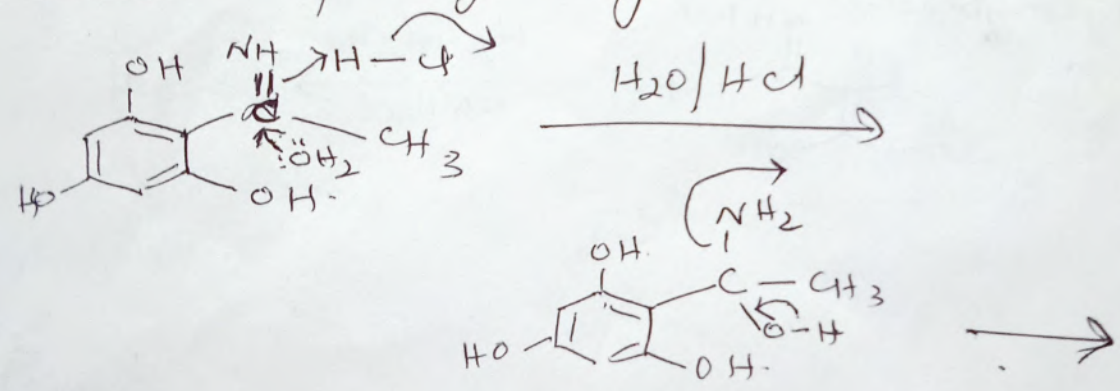
Step II: Nucleophilic addition of alkene to iminium ion - I

P.T.O



Ketimine intermediate
II

Step III Hydrolysis of Ketimine - II

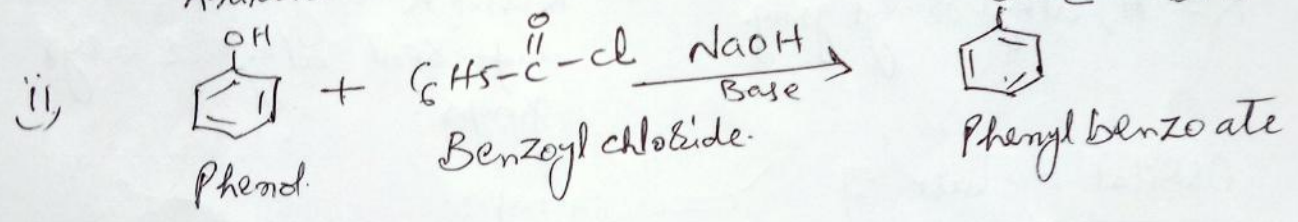
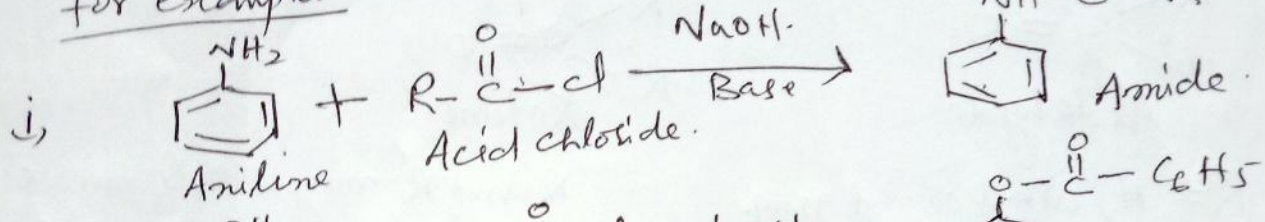


Phloeoacetophenone

Schotten-Baumann reaction:

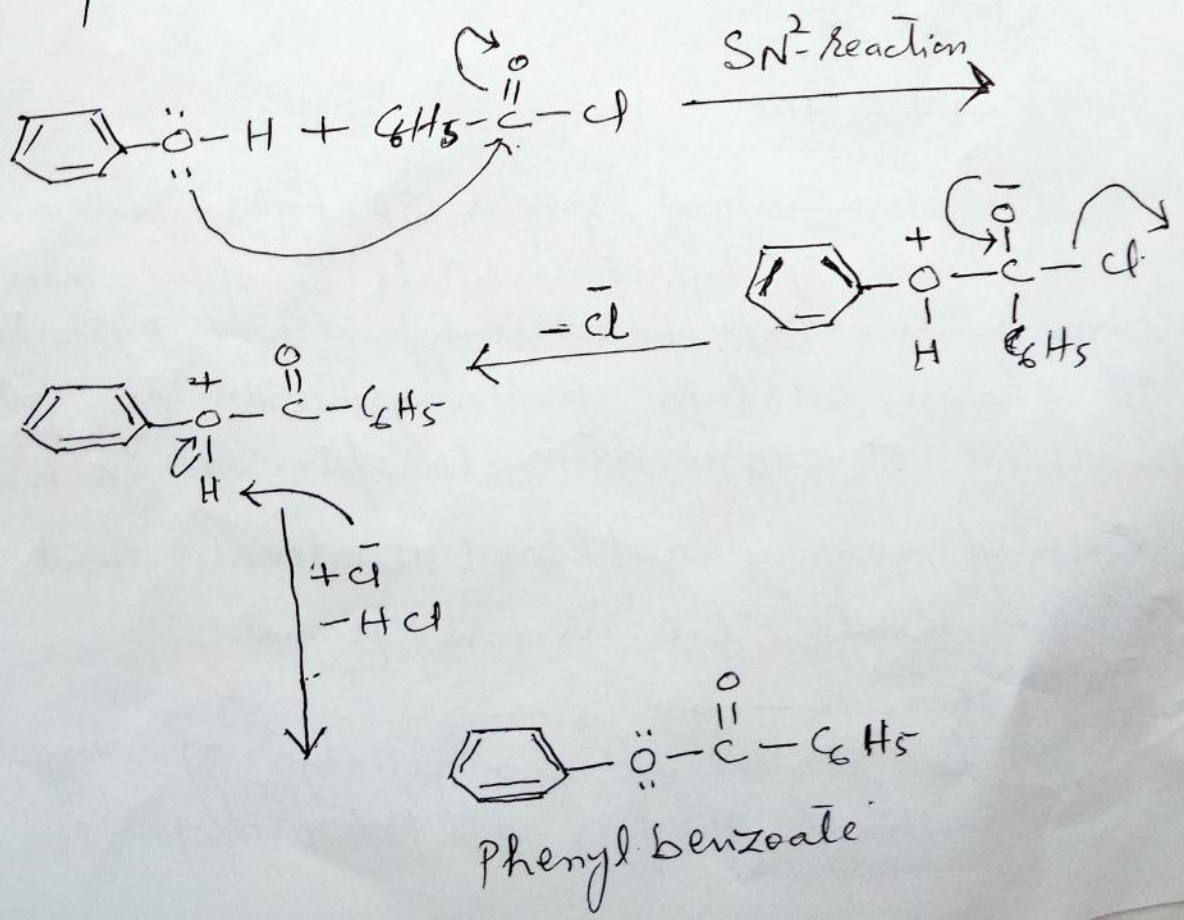
This reaction involves synthesis of amides from amines and acid chlorides and also synthesis of esters from reaction between an acid chloride and an alcohol.

For example:



Mechanism: →

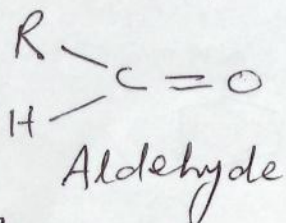
Reaction of phenol with benzoyl chloride in presence of NaOH.



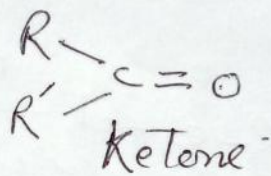
Aldehydes and Ketones

(4)

Aldehydes and Ketones are organic compounds which incorporate carbonyl ($>C=O$) group. The general formulae of aldehydes and ketones are:

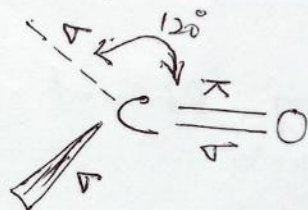
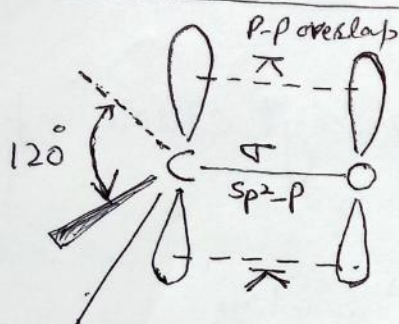


$R = H$, alkyl or aryl group



R and R' may be same or different alkyl or aryl groups.

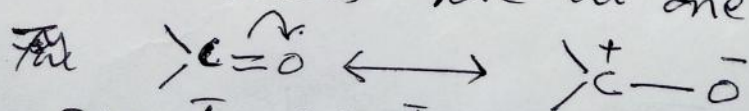
Orbital picture of $>C=O$ group:



sp^2 -hybridised C-atom

C-atom in carbonyl group is sp^2 -hybridised and it uses three sp^2 -hybrid orbitals to form three sigma bonds. Half filled unhybridised p-orbital of C-atom overlaps sideways with half filled p-orbital of oxygen atom to form one π -bond.

Carbonyl group is a planar molecule and all the bonds lie in one plane.



Due to greater electronegativity of oxygen atom, the carbonyl group is a polar molecule.