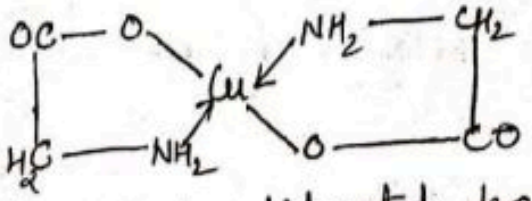
Complexation with Cu^{2+} ions :-

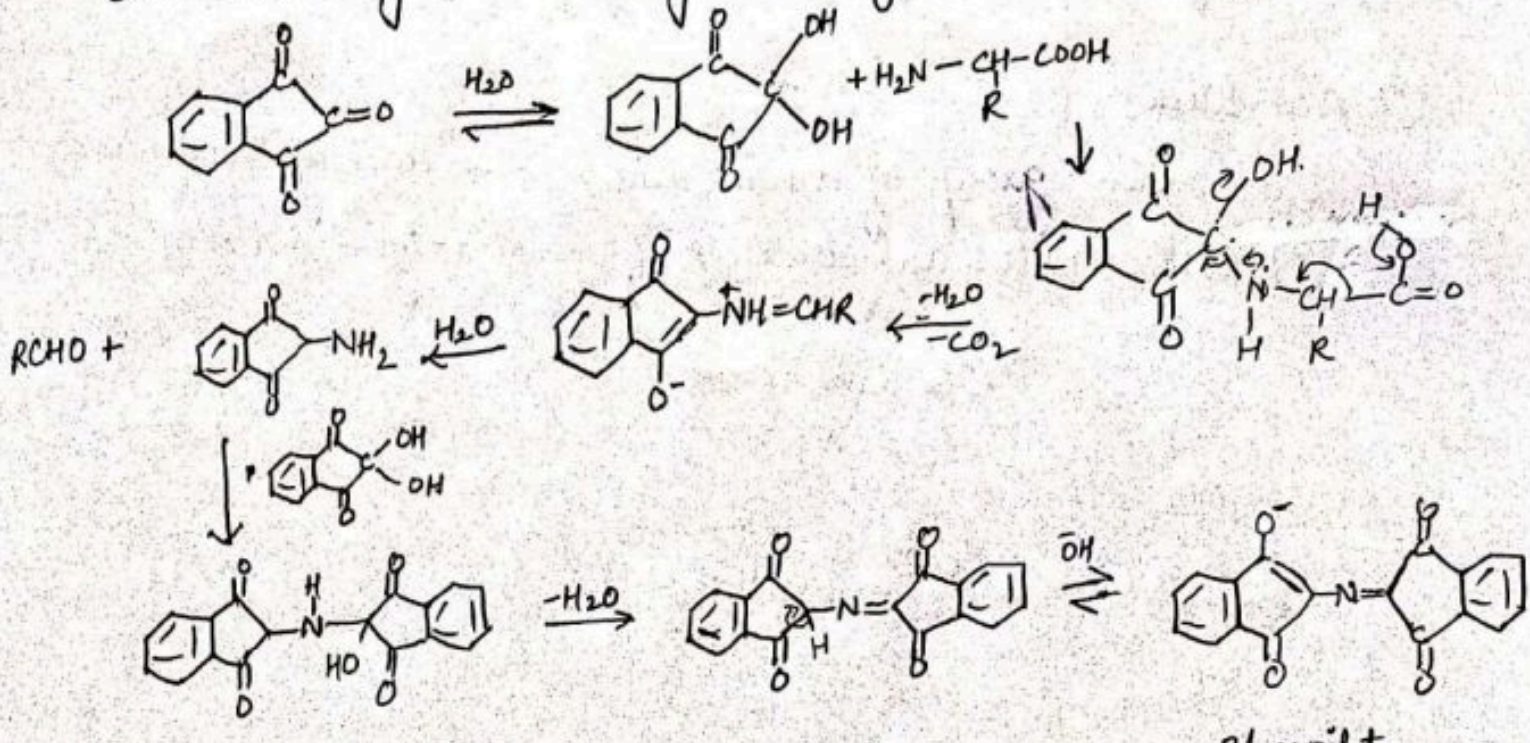
Amino acids form salts with metal ions; the salt of the heavy metals are chilate compounds. The Copper salt of glycine which has deep blue colour (needle) is formed by heating Copper oxide with an aqueous of glycine.



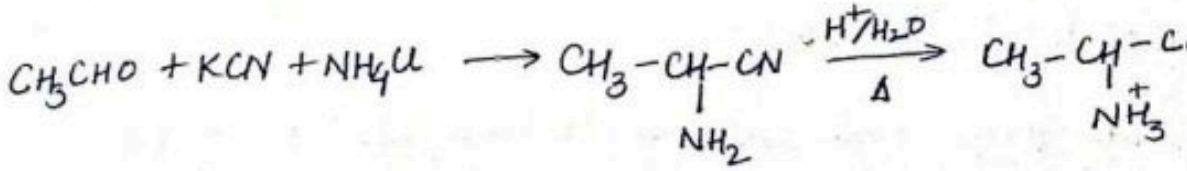
The amino acid may be liberatid from their alkali salts by treatment in ethanolic solution with ethyloxoamino cyanoacetate.

Ninhydrin Reaction :-

This reaction is used for identification of amino acids as amino acid on reaction with ninhydrin gives a blue voilet colour. Ninhydrin is a hydrate of indane-1,2,3 trione.



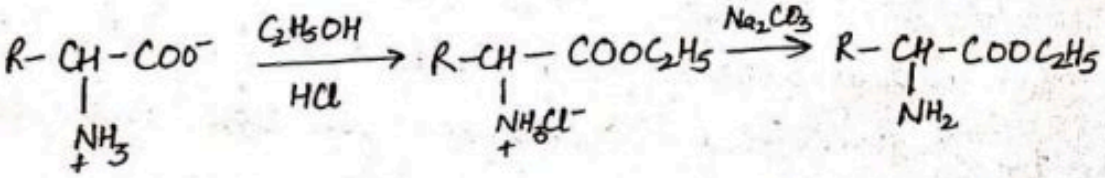
Blue violet Colour



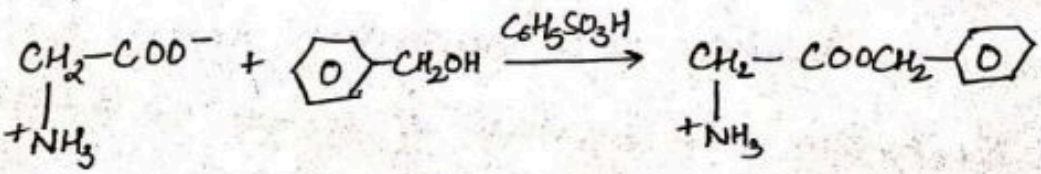
Reactions of Amino acids:-

① Esterification:-

The amino acid reacts with alcohol to produce ester hydrochloride The free ester may be obtained by the action of aqueous Na_2CO_3 on the ester salt.

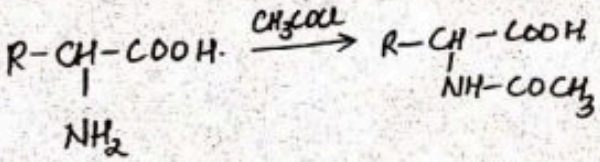


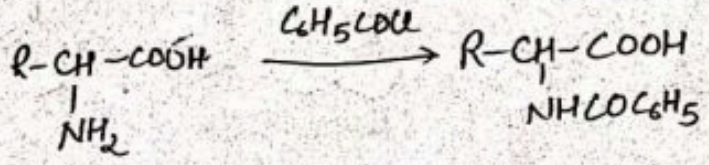
Benzyl esters are often prepared by using benzene sulphonic acid as the Catalyst. The water produced in the reaction is removed by azeotropic distillation



② Acetylation:

The amino group of amino acid reacts readily with acid Chloride, acetic anhydride to form N-acetyl divative

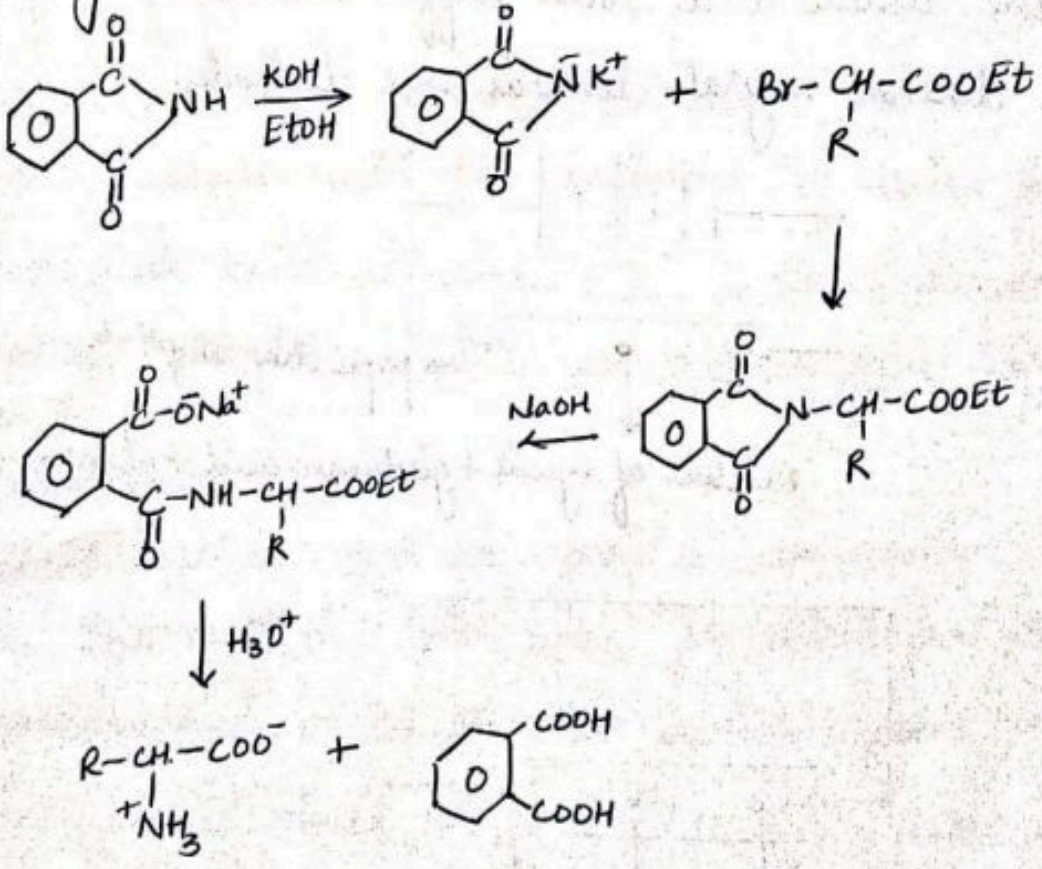




Synthesis

1) Gabriel phthalimide Synthesis :-

Better yields of amino acids are obtained by Gabriel Phthalimide Synthesis. The halogen in the α-halocsters is replaced by a phthalimido group either by fusion or by gentle heating with potassium phthalimide in DMF. The intermediate ester yield the desired amino acid by drastic hydrolysis or better in steps by treatment first with alkali followed by acid hydrolysis.



Strecker Synthesis :-

An aldehyde on reaction with KCN in presence of NH_3 or NH_4Cl result in the formation of α-amino nitrile. Hydrolysis of α-amino nitrile in acidic medium yields an α-amino Carboxylic acids. Reaction Basically involves conversion of aldehydes to α-amino Carboxylic acid one more Carbon than the parent aldehyde.