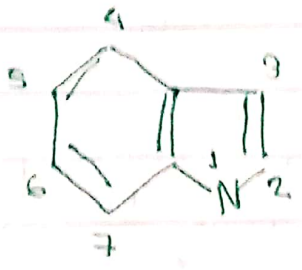


BICYCLIC RING SYSTEM DERIVED FROM PYRROLE

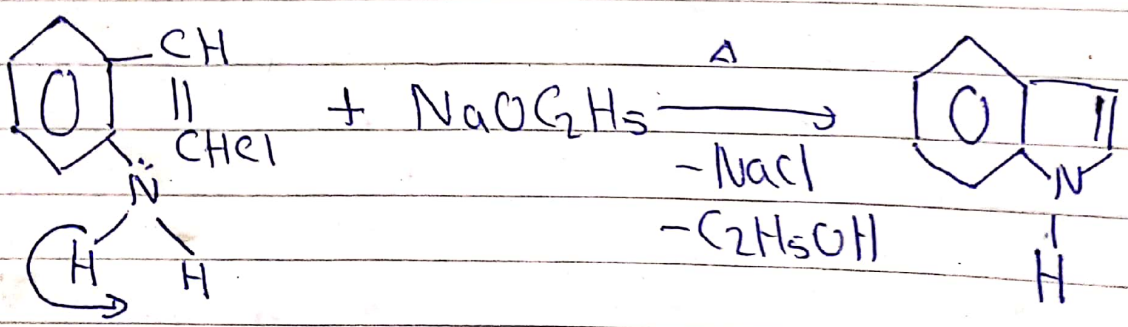
BENZOPYRROLE (INDOLE)



Indole consists of a benzene ring fused to the α, β position of a pyrrole ring. It occurs in coal tar and in oils of Jasmine and orange blossoms.

SYNTHESIS -

1) LIPP'S SYNTHESIS - It is prepared by treating α -amino β -chlorostyrene with sodium ethoxide at $160^\circ - 170^\circ \text{C}$.

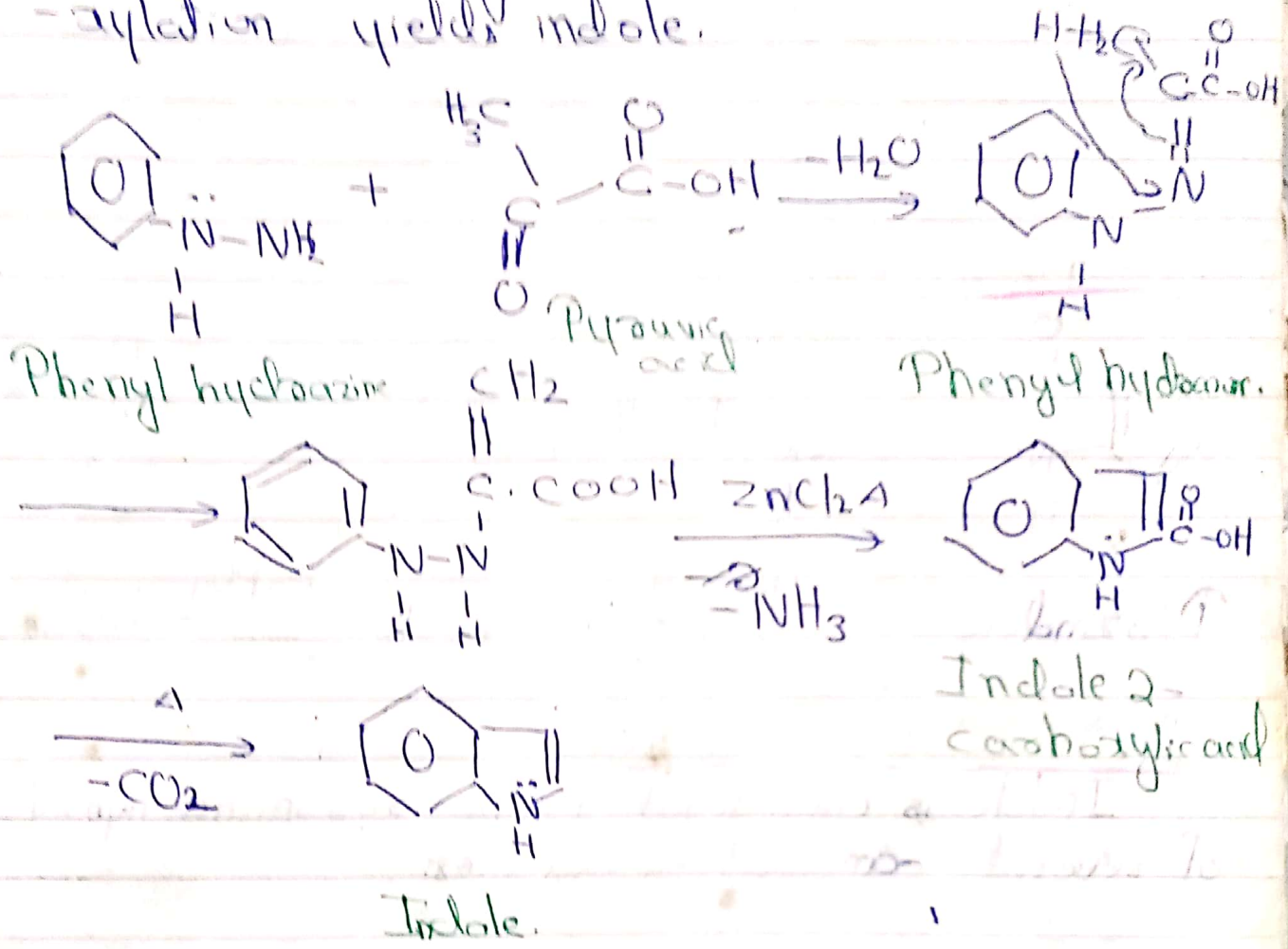


α -amino β -chlorostyrene.

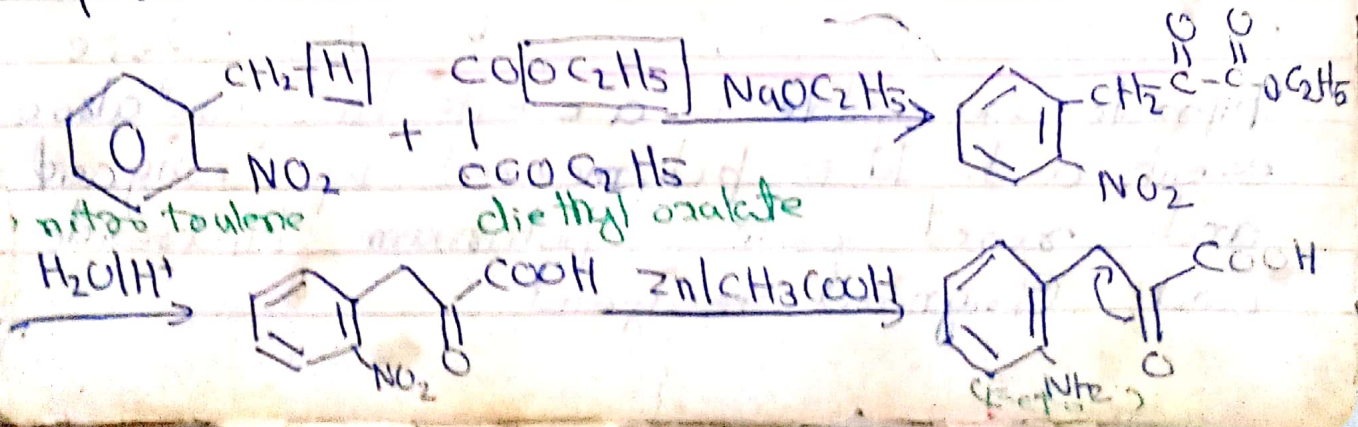
Indole.

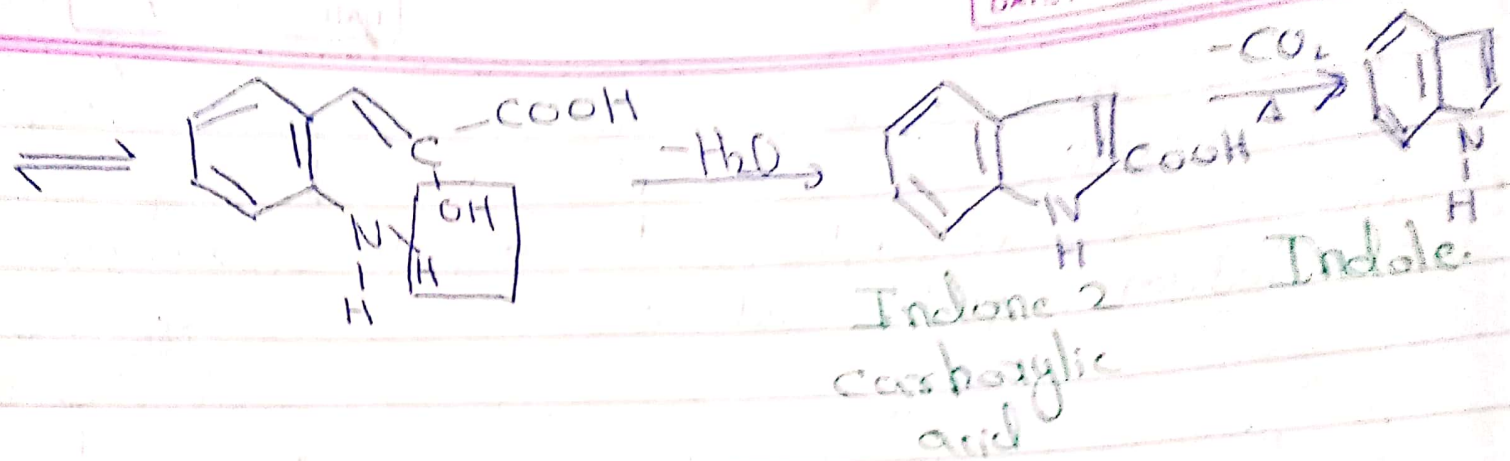
2. FISHER INDOLE SYNTHESIS. In this method pyruvic acid is first treated with phenylhydrazine to form corresponding

Phenyl hydrazine. The hydrazone is heated with anhydrous zinc chloride to give indole 2-carboxylic acid which on decarboxylation yields indole.



3. THE REISSERT SYNTHESIS → It involves a base catalysed condensation of o-nitro toluene with diethyl oxalate in the presence of sodium ethoxide. The resulting product on hydrolysis followed by reduction yields indole.





(4) INDIGO TO INDOLE

