

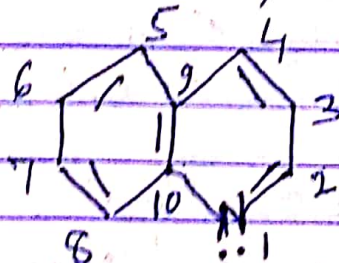
BSC-III, PAPER-VII

Quinoline structure and preparation.

Quinoline is a aromatic compound having 10 atoms in which one atom is nitrogen. All the ring atoms are sp^2 hybridized. The lone pair on nitrogen is on sp^2 hybridized orbital and does not take part in formation of delocalized π molecular orbital.

It satisfies Huckel's rule of aromaticity $4n+2$ π electrons. In quinoline $n=2$ and thus 10 π electrons are involved in formation of a delocalized π molecular orbital.

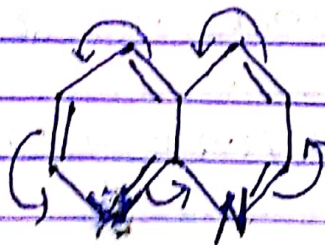
It is also known as 2,3-benzopyridine because 2,3 position of pyridine is fused with benzene ring.



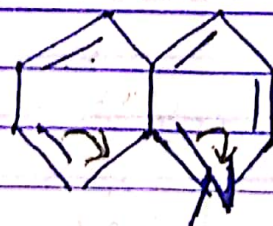
It has following resonance or canonical forms.



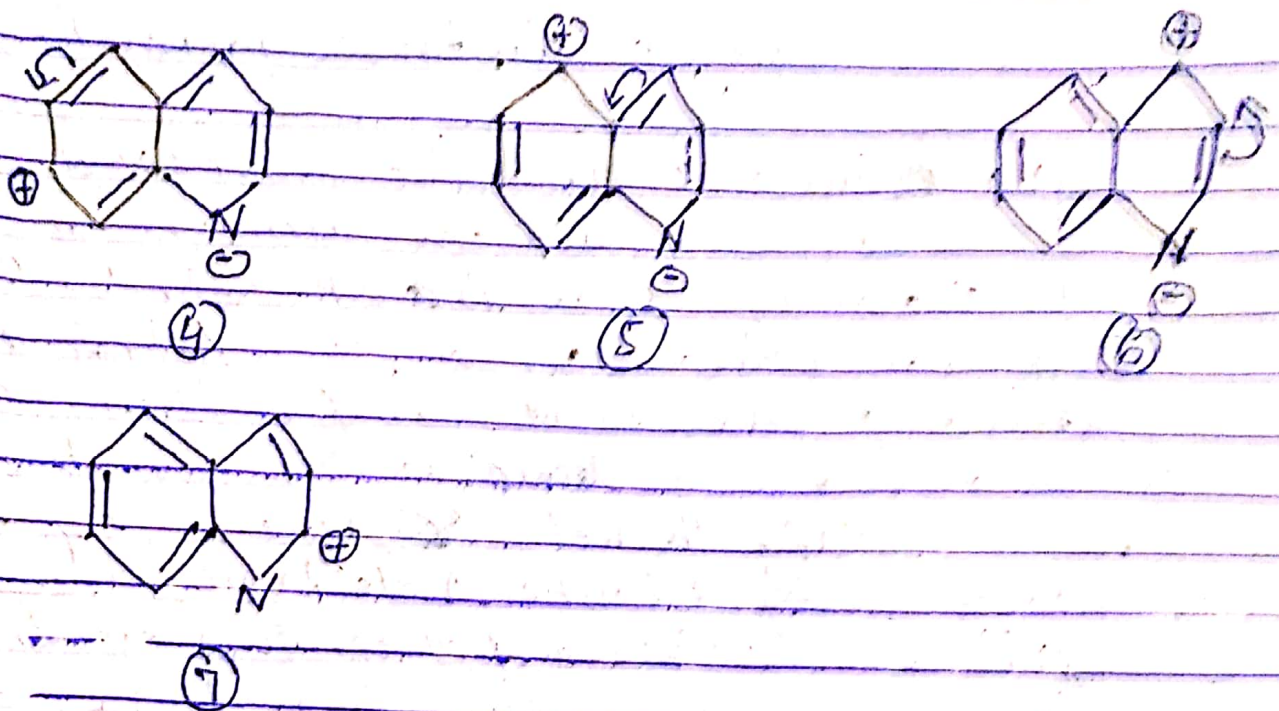
(1)



(2)



(3)

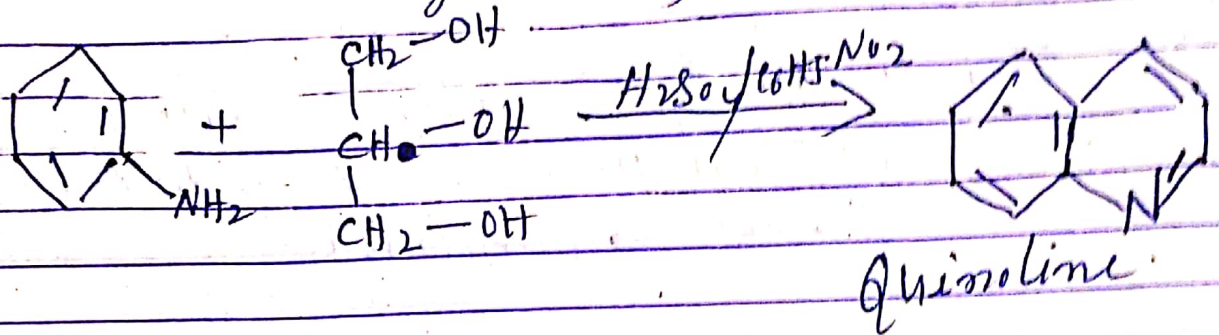


Thus Quinoline has seven canonical forms in which four canonical forms have positive charge ring and hence there are polar structures and hence show the effect of electron-attracting nitrogen atom on the molecule.

Quinoline is a good solvent and it is marginally weaker base than pyridine.

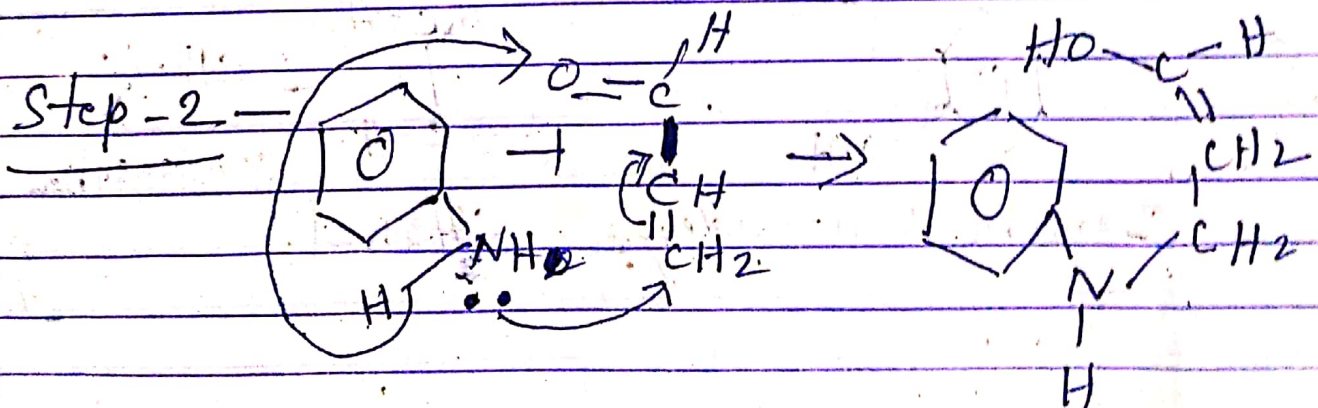
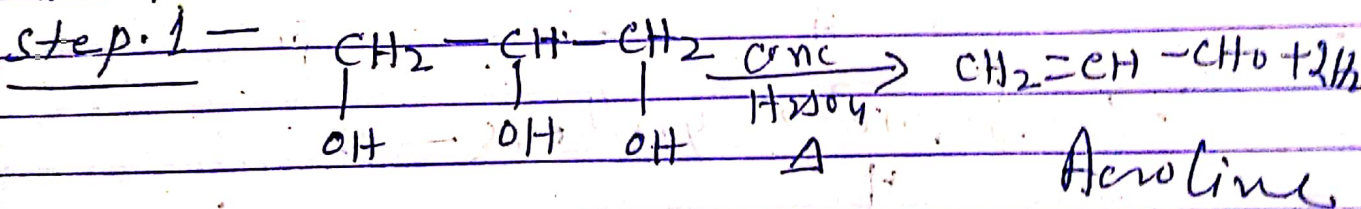
Synthesis of Quinoline: →

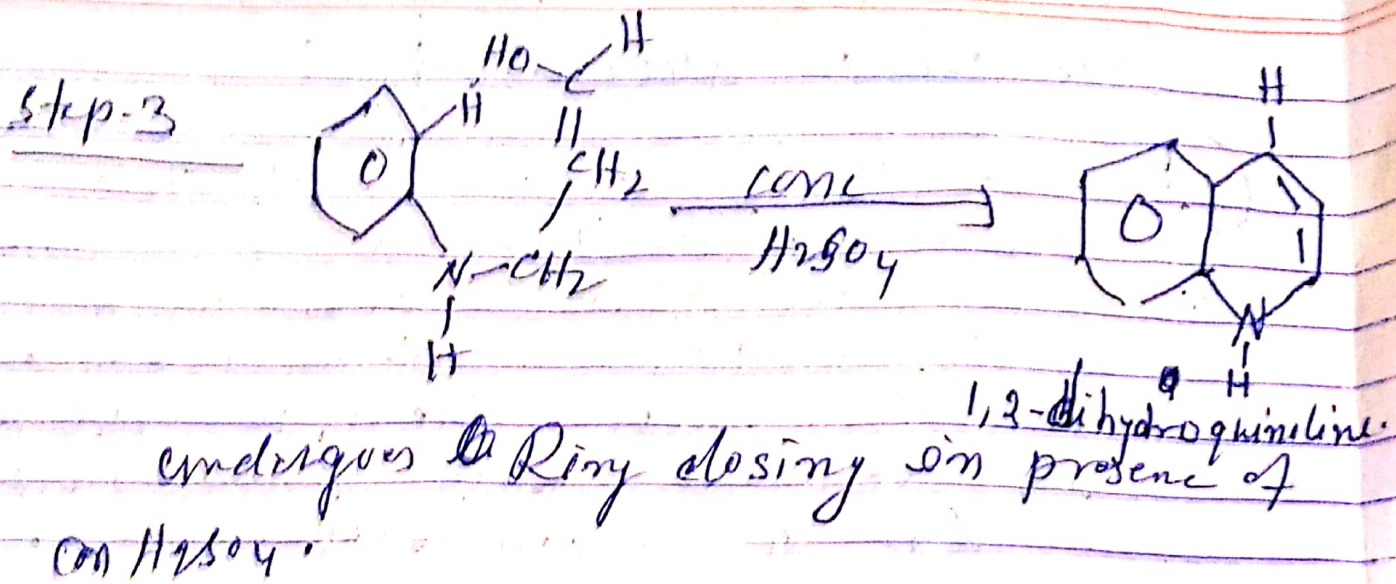
- ① When aniline mixture with glycerol is heated in the presence of sulphuric acid and a mild oxidising agent, usually ironbenzene. It is an exothermic reaction and very violent. To slow down the reaction rate ferric sulphate or boric acid is generally mixed.



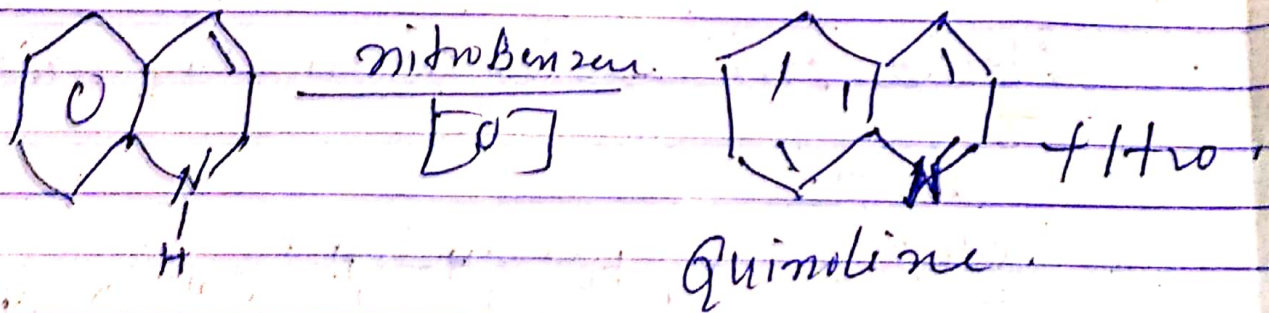
Mechanism: It occurs in following

step.





Step-4 1,2-dihydroquinoline undergoes oxidation in presence of nitrobenzene to form quinoline.



2. Friedlander Synthesis →

