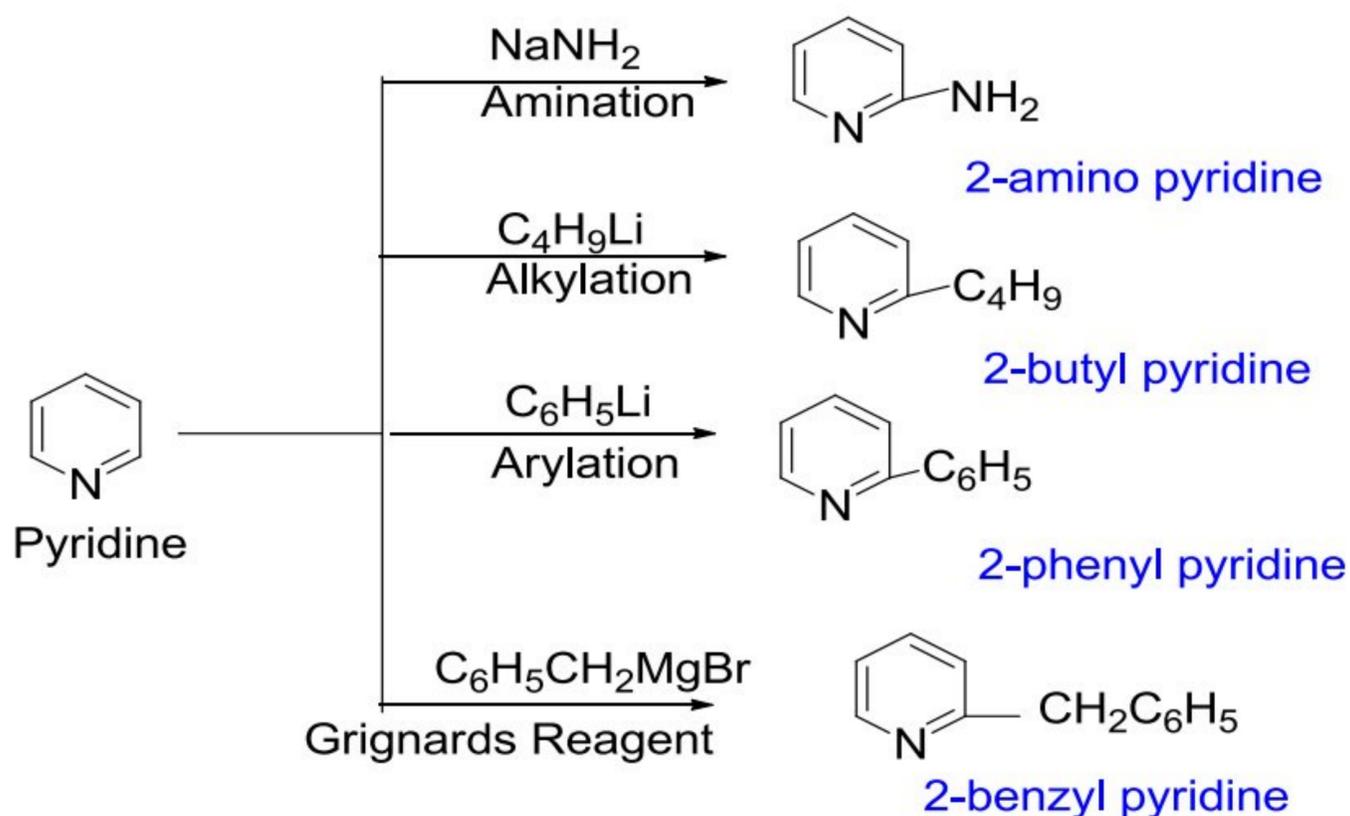
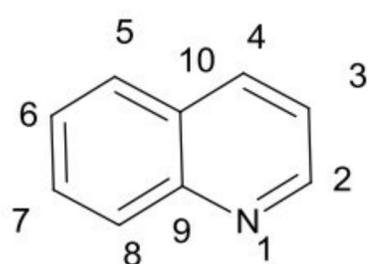


Nucleophilic substitution-II electron deficient



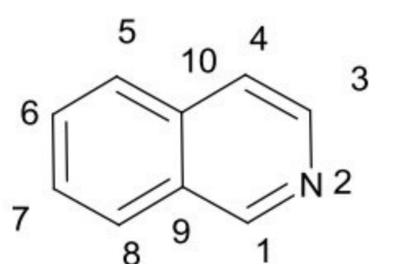
2.7 QUINOLINE AND ISOQUINOLINE

Quinoline:



Benzo[b]pyridine

Isoquinoline:



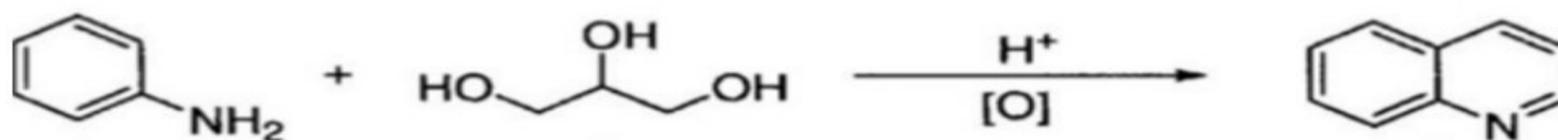
Benzo[c]pyridine

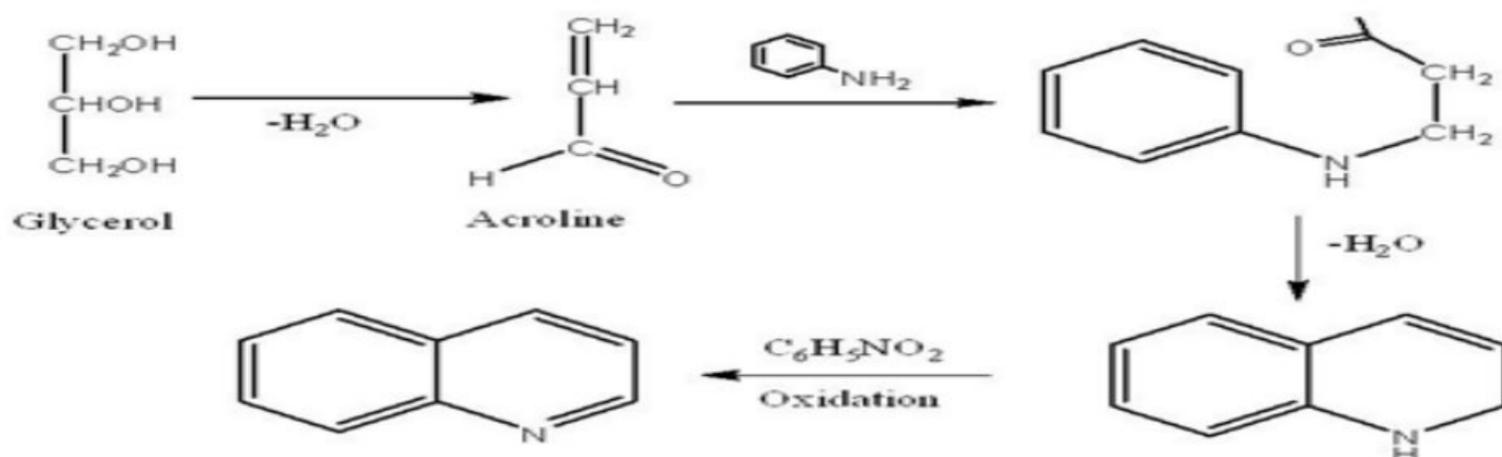
Aromatic; sp² hybridization; 10e-s; Planar Basic in nature.

4.7.1 Synthesis of quinoline

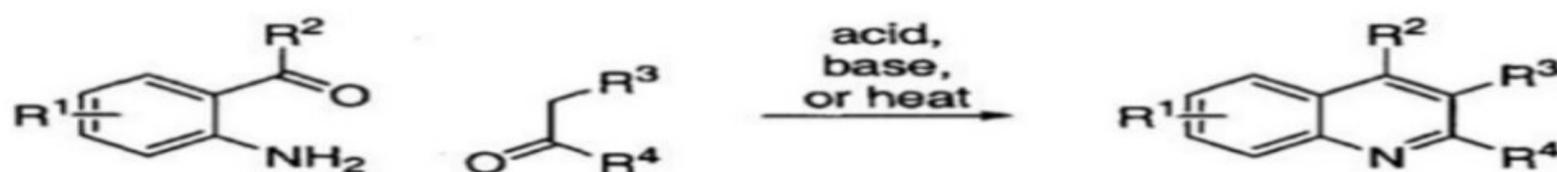
1) Skraup synthesis:

Reaction of aniline and glycerol in the presence of acid and oxidant.

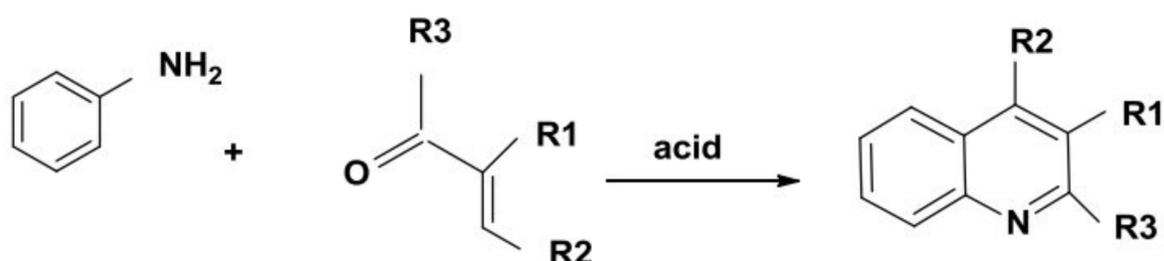




2) Friedlander's synthesis: Condensation of O-aminobenzaldehyde and aldehyde in the presence of alkali.

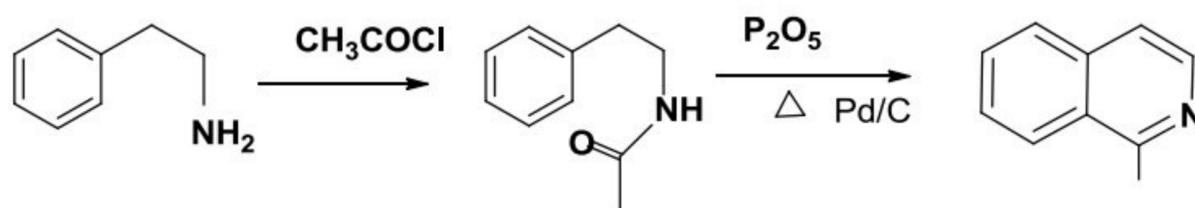


3) Doebner-Miller synthesis: Condensation of aniline with α,β -unsaturated carbonyl compound.

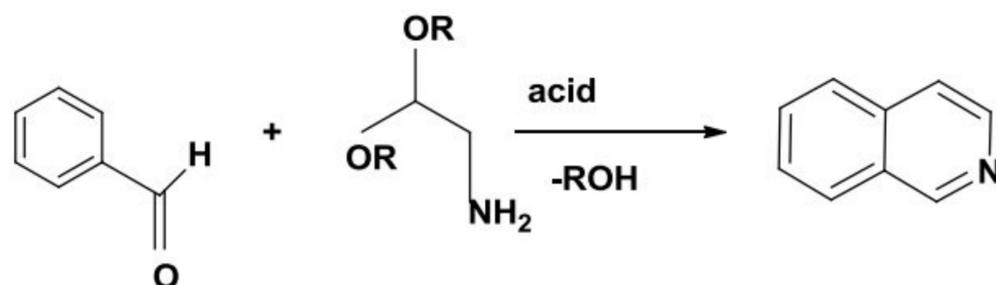


4.7.2 Synthesis of Isoquinoline

1) Bischler-Napieralski synthesis: Reaction of 2-aryl ethanamine with acylchloride followed by cyclization and reduction.

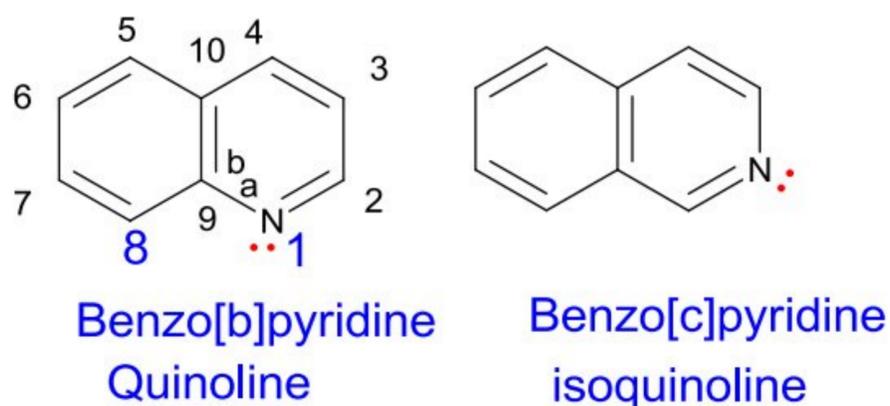


2) Pomeranz-Fritsch synthesis: Reaction of benzaldehyde with dialkoyethylamine.



4.7.3 Resonance structures

Quinoline and Isoquinoline contains a pyridine ring fused to a benzene ring.



The Nitrogen has a deactivating effect on the ring towards electrophilic substitution.

Hence, it takes place less vigorously at position 5 and 8 in the benzene ring. Nitrogen lone pair is not released into the aromatic system. The nitrogen withdraws electrons makes it an Π electron deficient systems.

Quinoline:

