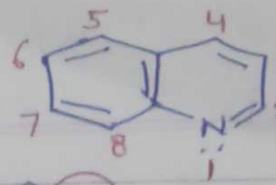
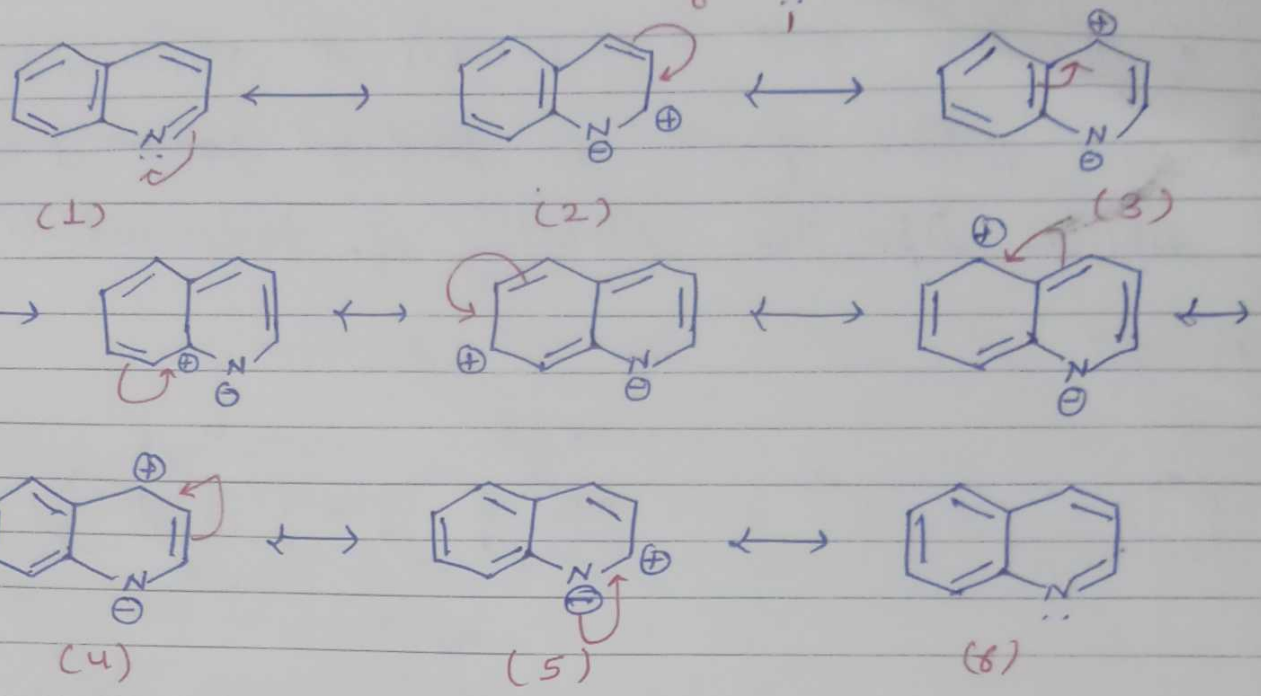
Quinoline





structure No. 1, 2, 3, 4, 5, 6 → have max. contribution in resonance hybrid (अनुनाद संकर).
bcoz in these structure aromaticity on one ring (i.e. Benzene) remains intact.

* बेंजीन वलय की ऐरोमैटिकता बनी रहती है।

While in remaining structure, aromaticity of both the rings destroyed. (least contribution)

* दोनों वलय की ऐरोमैटिकता नष्ट हो जाती है। (न्यूनतम योगदान)

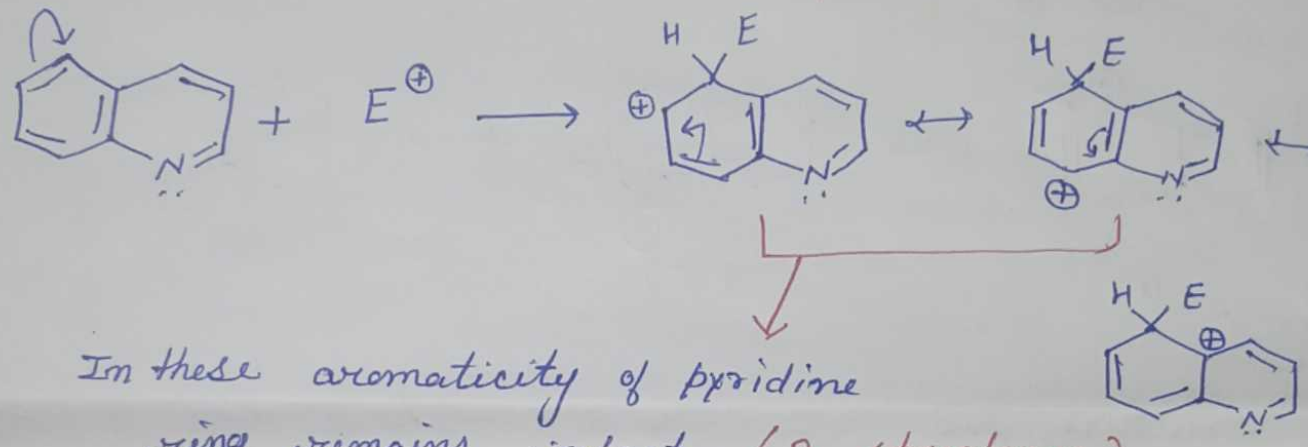
Hence E^+ may attack on all the positions of benzene ring in spite of having +ve charge (on 5 and 7th position).

* इसलिये $E^{\oplus}$ बेंजीन वलय की सभी स्थितियों पर आक्रमण कर सकता है (चाहे कार्बन न. 5 व 7 पर +ve आवेश हो तो भी)

E^+ ;- 5, 6, 7 व 8^{th} position पर attack कर तो सकता है पर कौनसी position पर सबसे ज्यादा attack होता है वो निर्भर करता है - मध्यवर्ती के स्थायित्व पर

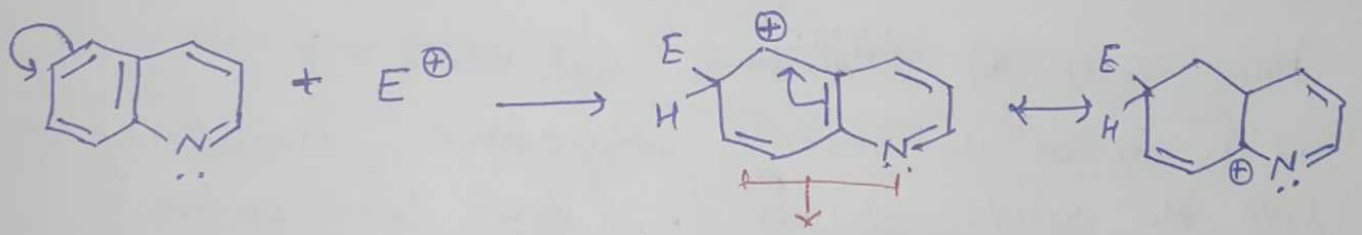
* Now which $posi^n$ is ~~preferred~~ ~~pref~~ preferred depends upon the stability of intermediate

1.) If $E^{\oplus}$ attacks on 5^{th} position :-



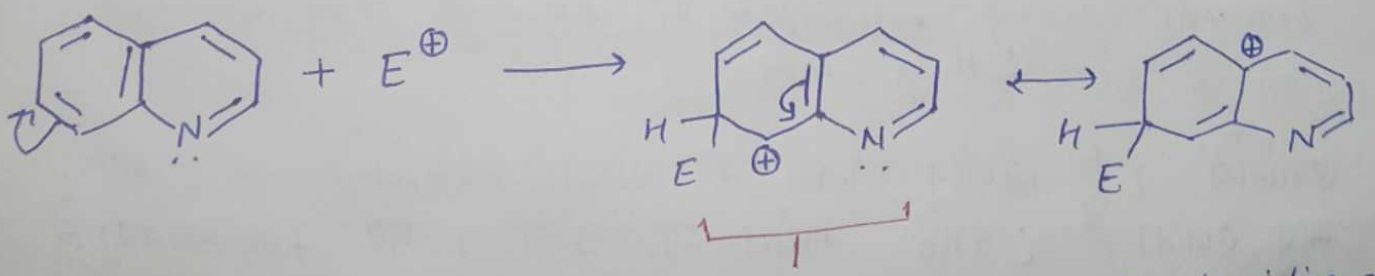
In these aromaticity of pyridine ring remains intact. (2 structures.)

2) if $E^{\oplus}$ attacks on 6^{th} position :-



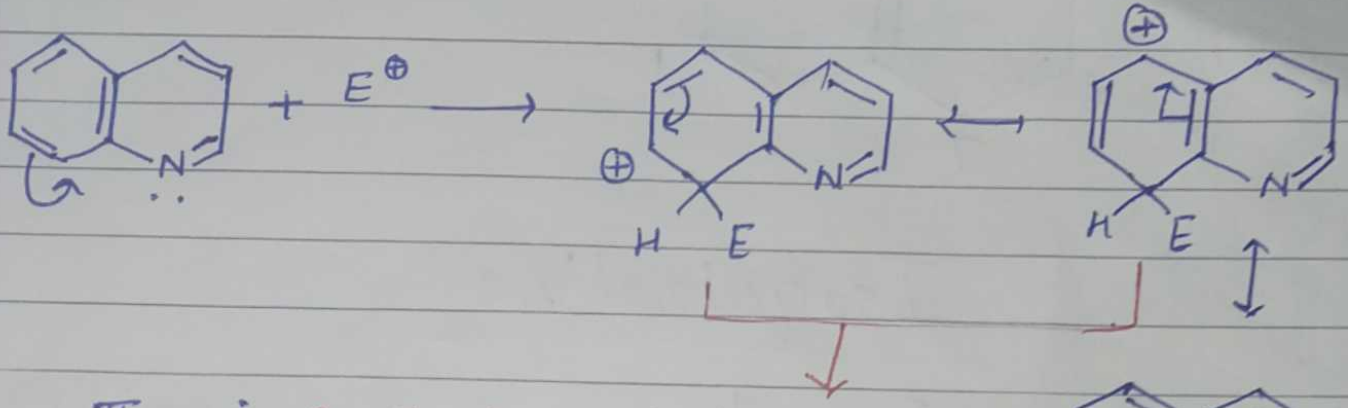
only 1 structure with aromatic pyridine ring.

3) If E^+ attacks on 7^{th} position :-

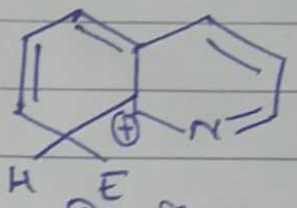


only 1 structure with aromatic pyridine ring

4) If $E^{\oplus}$ attacks on 8^{th} position :-

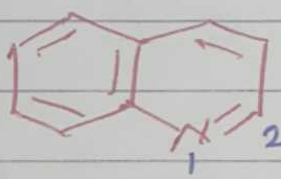


There is 2 structure which has an aromatic ring intact.



उपर्युक्त अभिक्रियाओं के आधार पर हम कह सकते है कि जब E^{+}, 5^{th} व 8^{th} posi^{n} पर attack करता है तो बनने वाला मध्यवर्ती (intermediate) ज्यादा stable होता है अत: $E^{\oplus}$ 5^{th} व 8^{th} Position पर attack करता है।

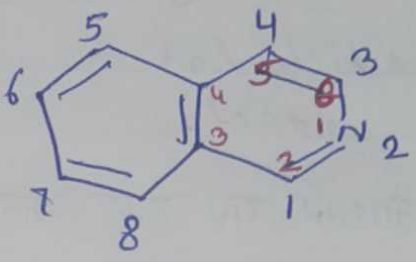
resonating structures में हमने देखा कि 8^{th} posi^{n} पर +ve (धनावेश) नहीं आता है इसलिये 8^{th} posi^{n} is most preferred.



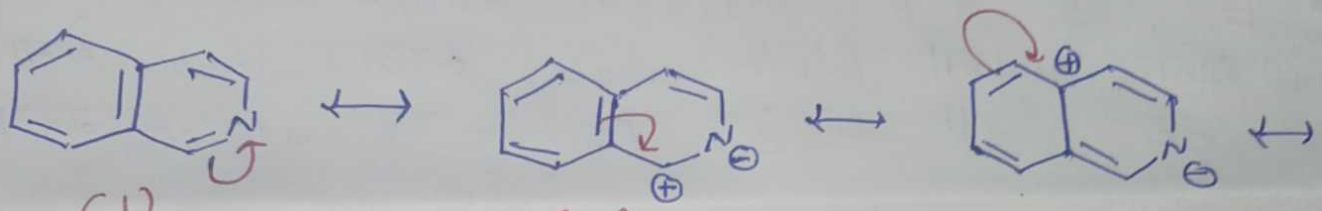
pyridine ring में नाइट्रोजन होने के कारण e⁻ deficient (e-न्यून) हो जाती है इसलिये इस पर $Nu^{\ominus}$ attack करता है और 2^{nd} posi^{n} N के सबसे close है इसलिये वहां e⁻ की density सबसे कम हो जाती है और Nu^{-} easily attack करता है

In quinoline E^{+} attacks on 5^{th} and 8^{th} positions and Nu^{-} attacks on 2^{nd} position.

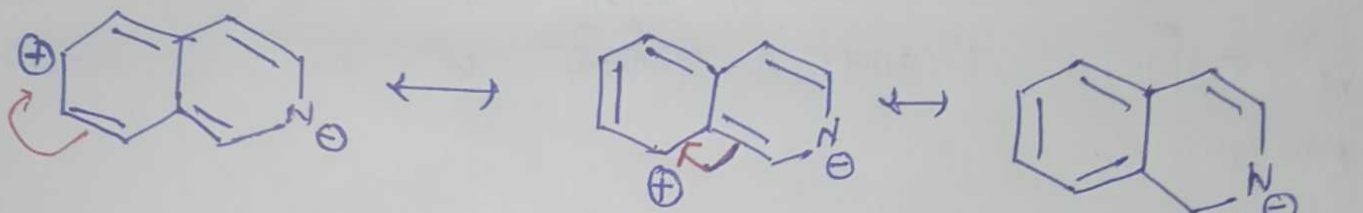
Isoquinoline



3,4-Benzopyridine



(1) (2)



(3)

(4)

1, 2, 3, 4 structures have maximum contribution in resonance hybrid.

Same as quinoline, E^+ ∞ may attacks on each carbon of Benzene but due to stability of intermediate (मध्यवर्ती) E^+ attacks on 5th and 8th.

* In above structures, +ve charge is not on 5th so most preferred posi^n is 5th.

In Isoquinoline: E^+ attacks on 5th and 8th carbon and Nu^- attacks on 1st position.