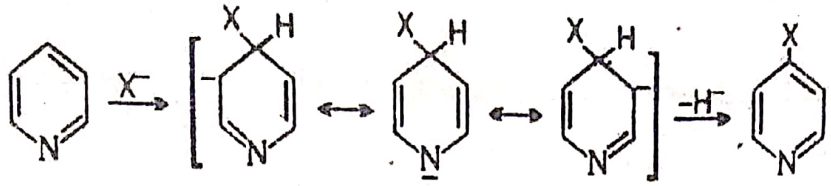
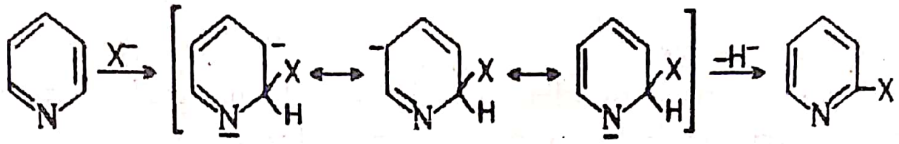
the substitution at position-2 and 4 in pyridine gives the similar resonating structures. After observing minutely the role of N-atom as–I effect, it attracts electron from position-2 more than that from 4.

Nucleophilic attack on position-4 :



Most Stable

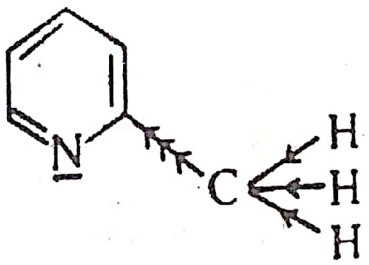
Nucleophilic attack on position-2 :



Most Stable

Q.26. Methyl group in 2-position is very reactive in pyridine–Why ?

Ans. : Due to electronegative nature, N-atom becomes negative as a result of +M effect and C-atom of $-CH_3$ group at 2 position becomes positive. Further $-CH_3$ group has also +I effect which helps the +M effect to operate as shown in figure. This causes a positive charge on C-atom and thus C–H bonds are weakened and H-atom becomes reactive due to its labile nature–



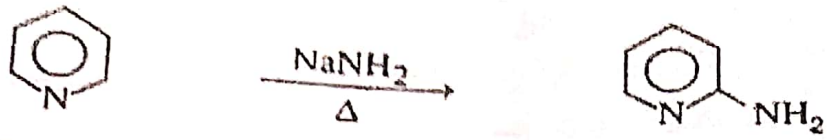
Q.27. How would you convert pyridine into

(i) 2-amino pyridine

(ii) Pyridine N-oxide

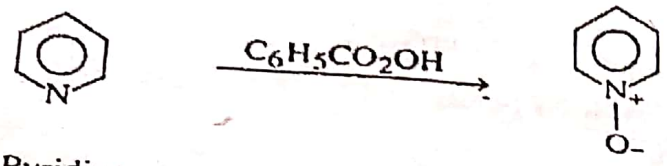
(iii) 3, 5-dibromo pyridine.

Ans. : (i) 2-amino pyridine : When pyridine is heated with sodamide, the main product 2-amino pyridine is formed–



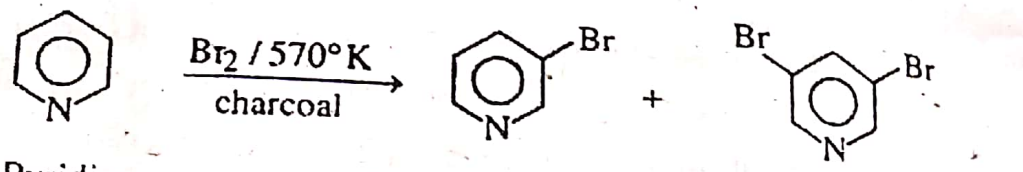
Pyridine 2-aminopyridine

(ii) Pyridine N-oxide : Pyridine is oxidised by H_2O_2 or per acid to its N-oxide—



Pyridine Pyridine N-oxide

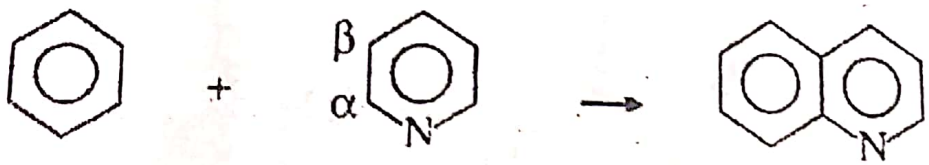
(iii) 3, 5-dibromopyridine : At 570K in the presence of charcoal or pumice, pyridine forms a mixture of 3-bromopyridine and 3, 5 dibromopyridine—



Pyridine 3-bromopyridine 3, 5-dibromopyridine

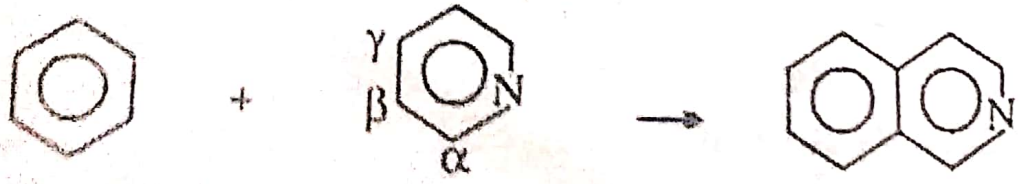
Q.28. What is the difference between quinoline and icoquinoline ?

Ans. : Quinoline has a benzene ring fused to α, β- positions of a pyridine ring. So, it is α, β benzopyridine—



Benzene Pyridine Quinoline

whereas isoquinoline has a benzene ring fused to β, γ - positions of pyridine ring. So it is β, γ benzopyridine—



Isoquinoline