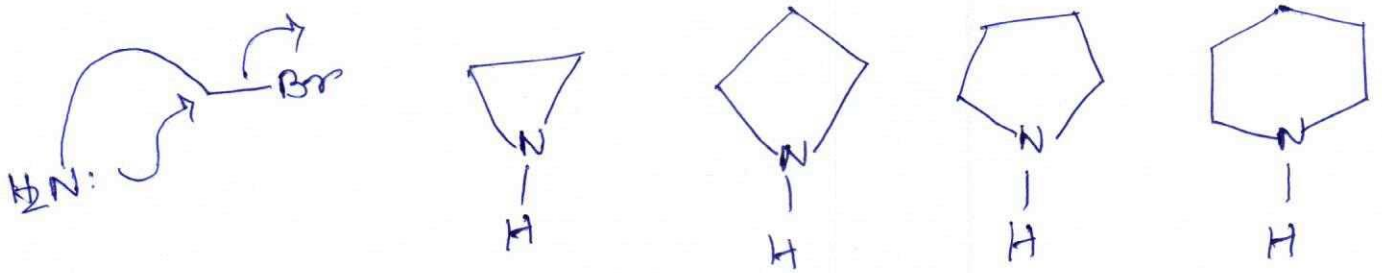
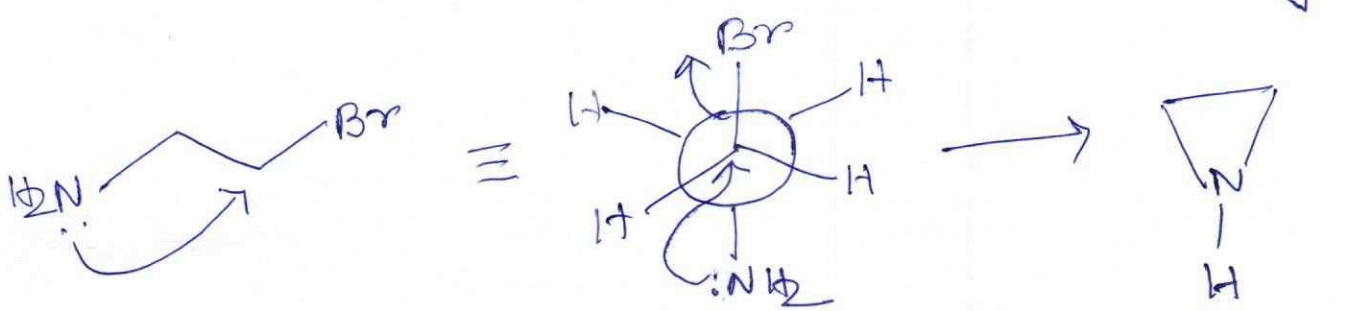
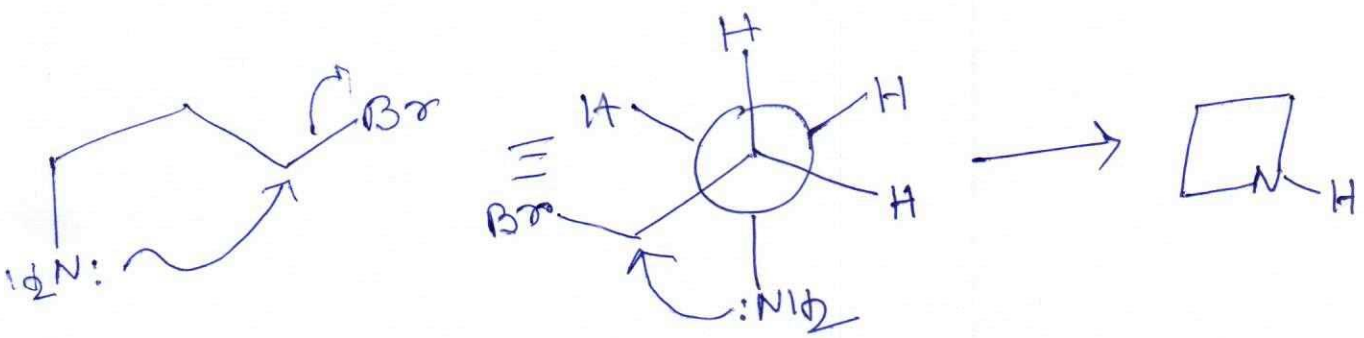
Ring Synthesis: Saturated Heterocycles:



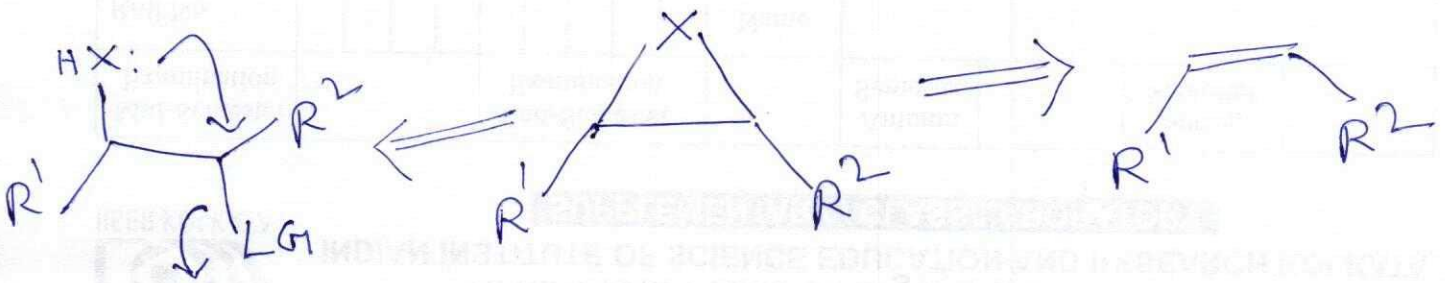
Relative Rate:	70	1	6×10^4	1×10^3

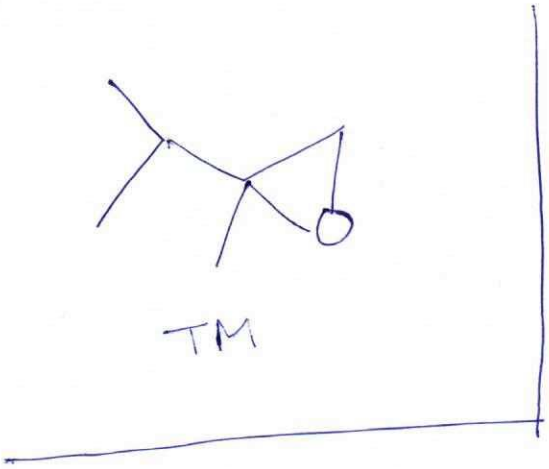
Depends on the reactive conformation & ring stability.

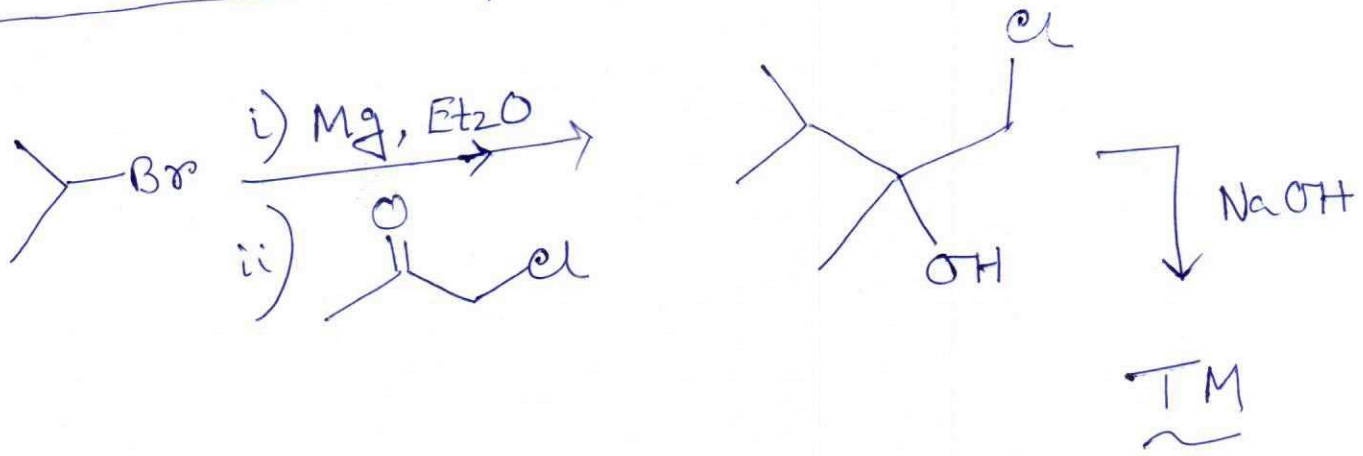




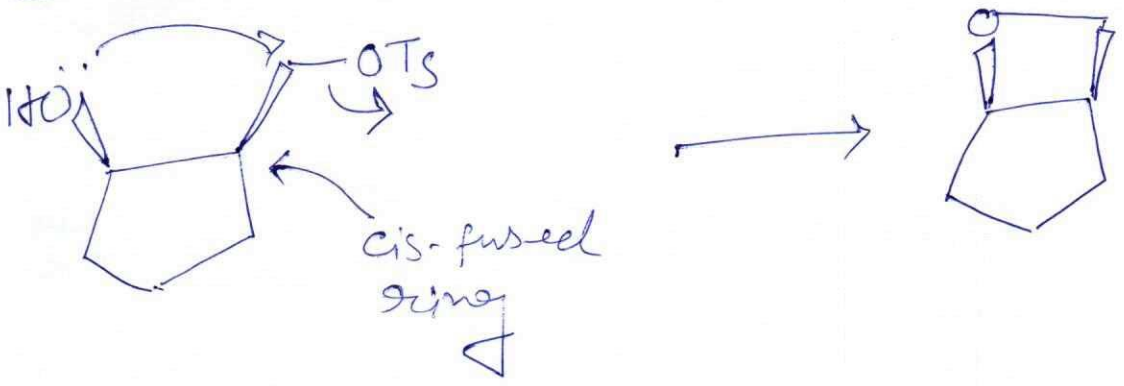
Three Membered Ring:



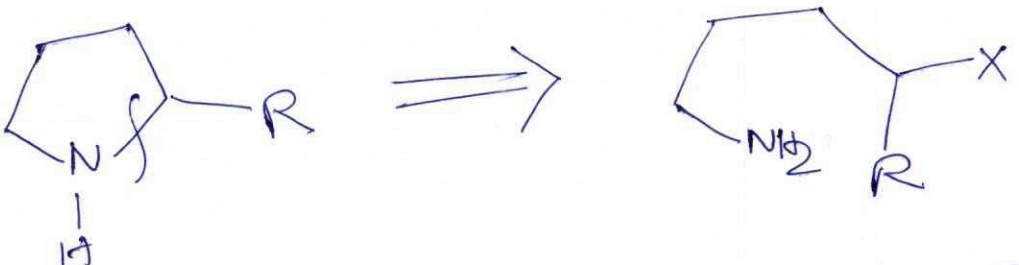


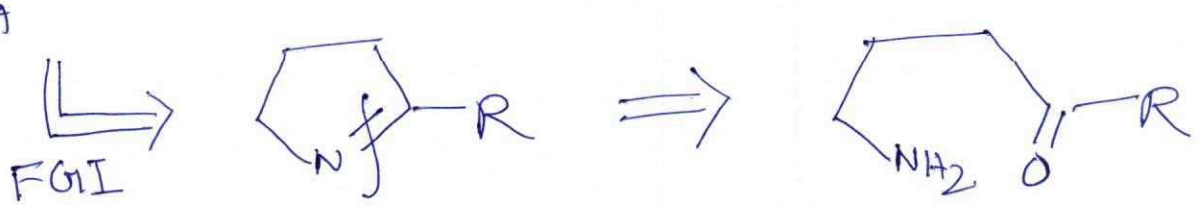


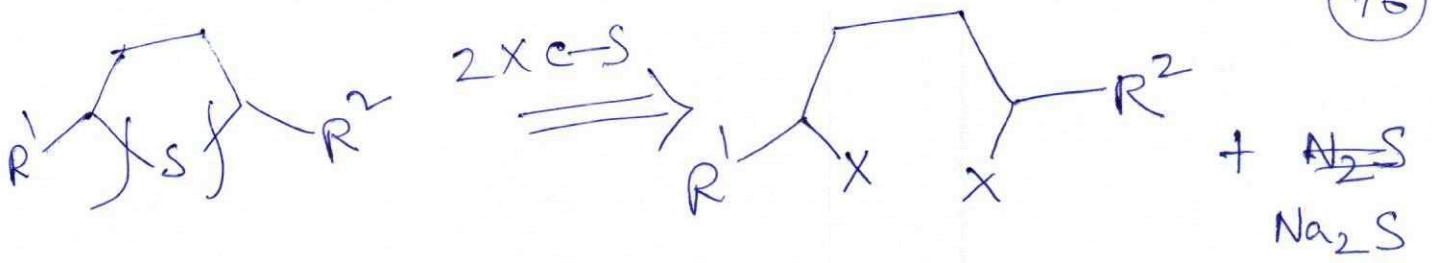
Four membered: Least favourable



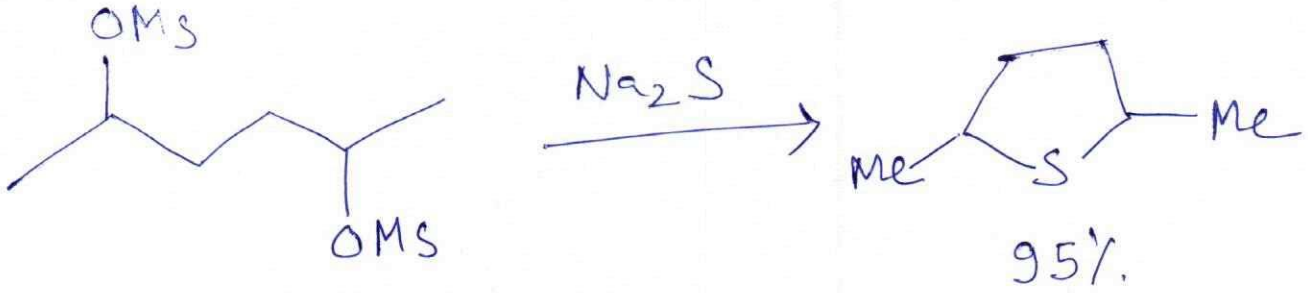
Five Membered Ring: Most favourable

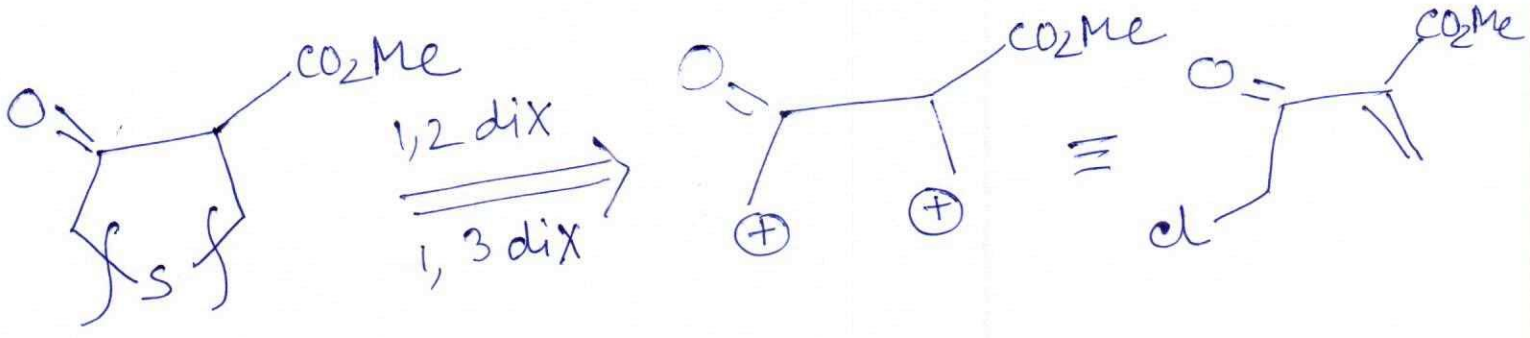


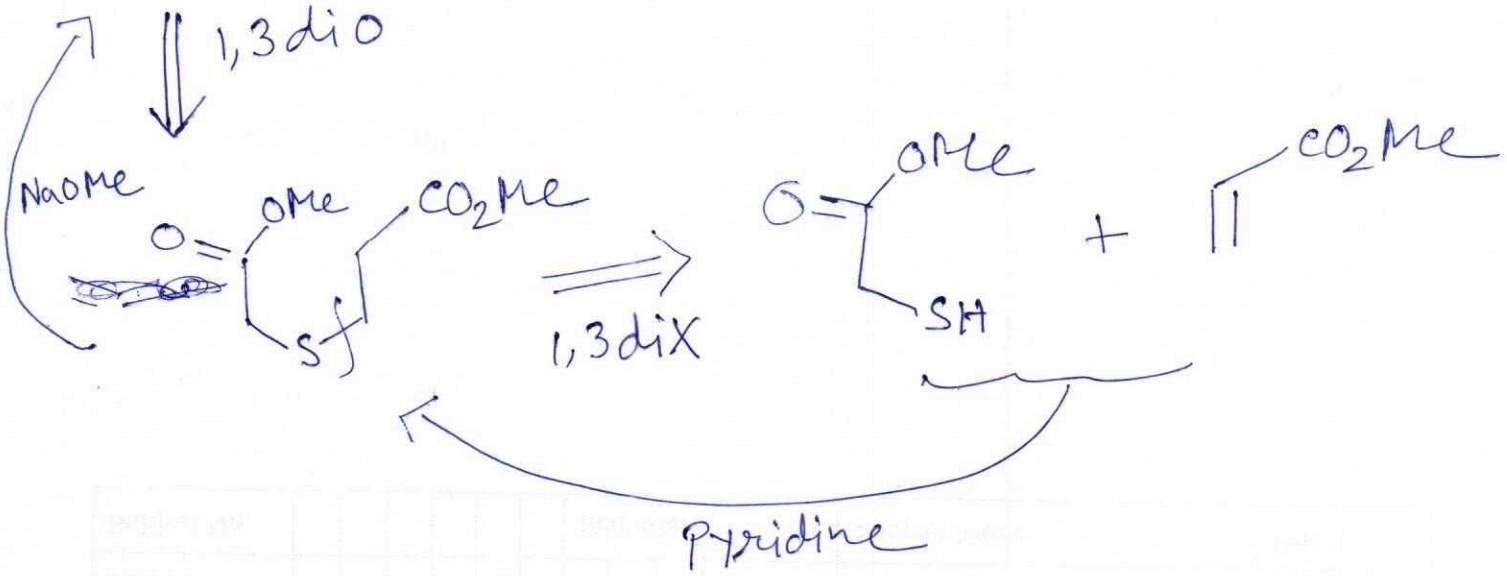




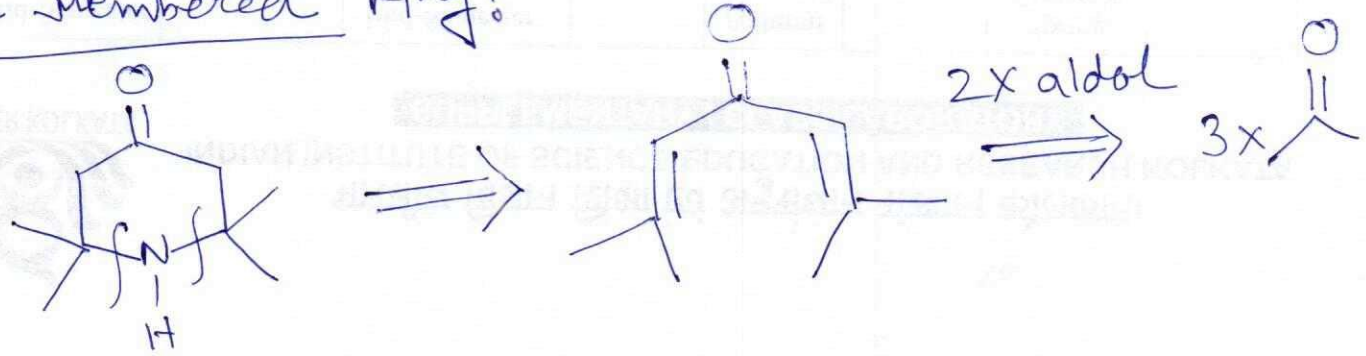
Eg:

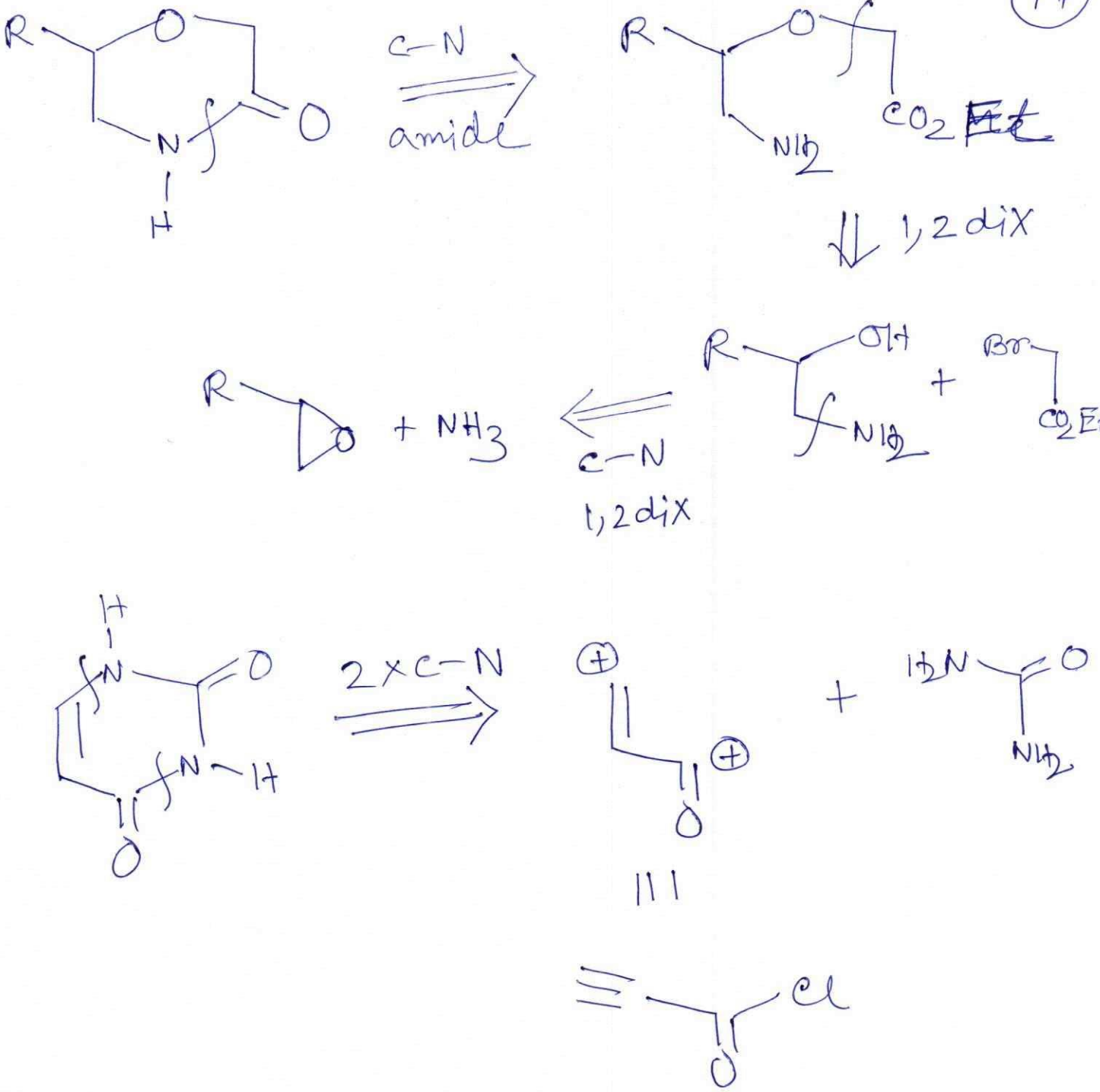




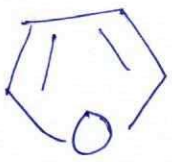


Six membered Ring:

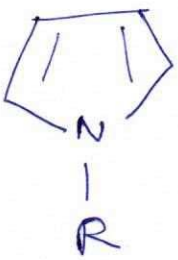



C–N
amide
1,2 dix
+ NH3
C–N
1,2 dix
2 x C–N
+

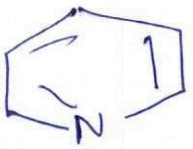
Aromatic Heterocycles:



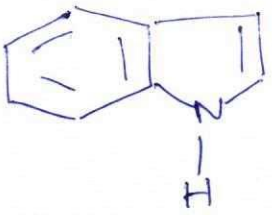
Furan



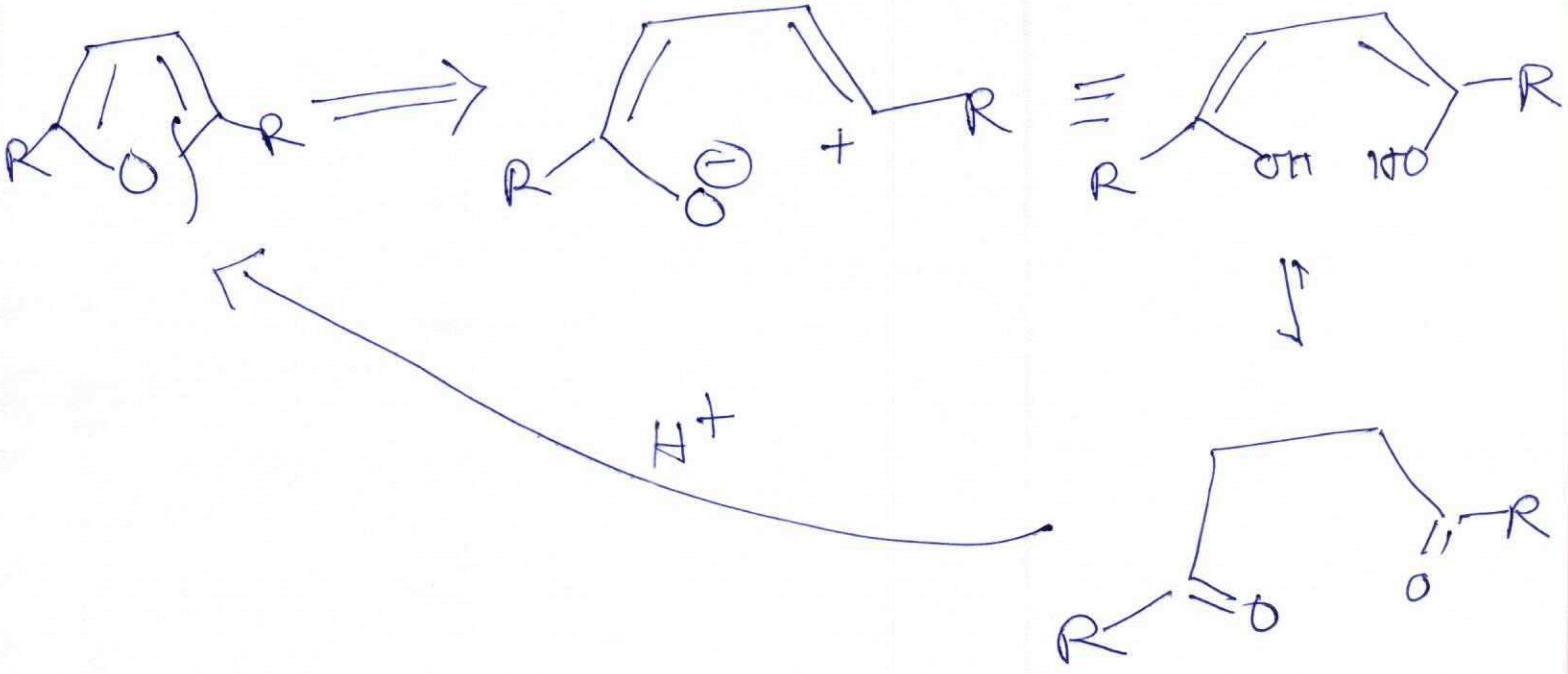
Pyrrole

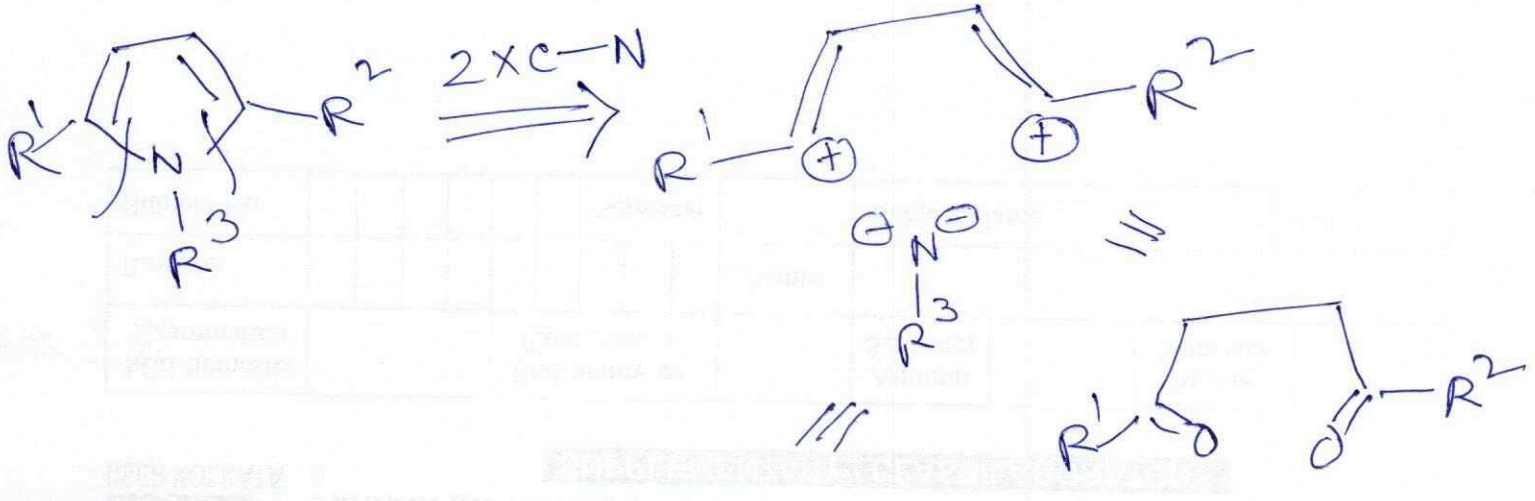


Pyridine

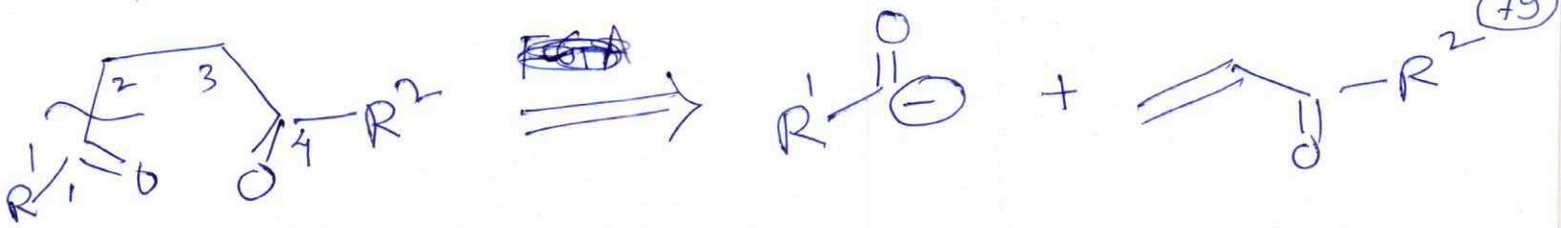


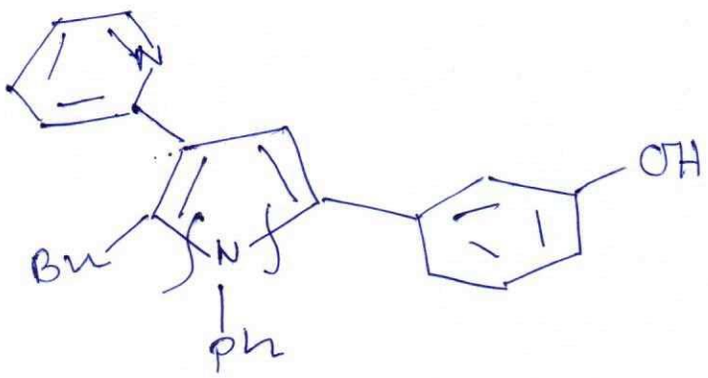
Indole

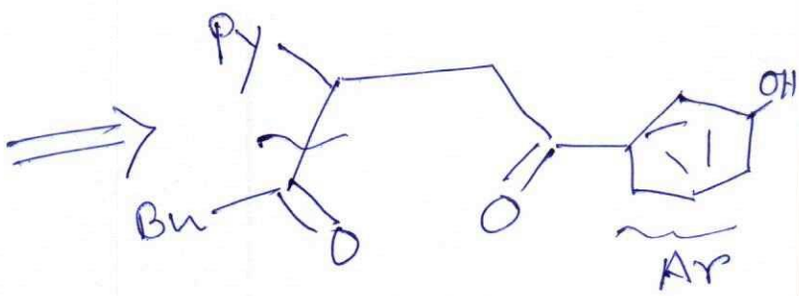


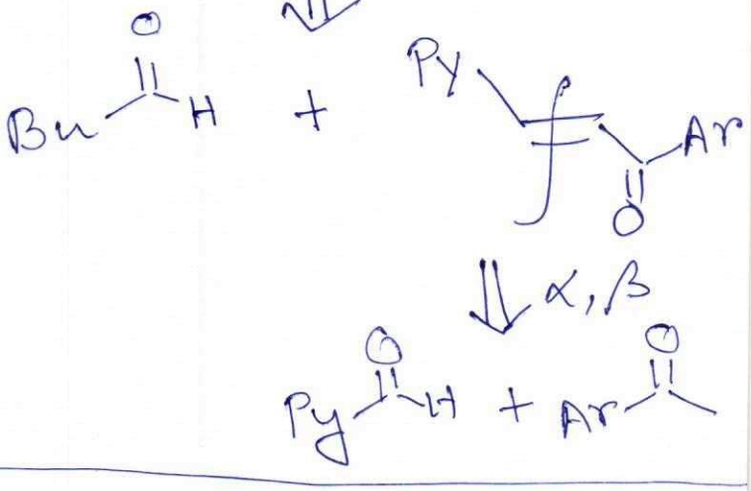


R^3-NH_2

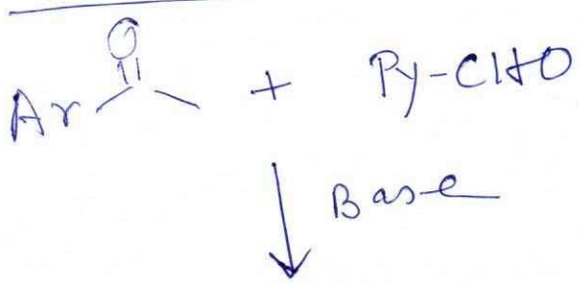


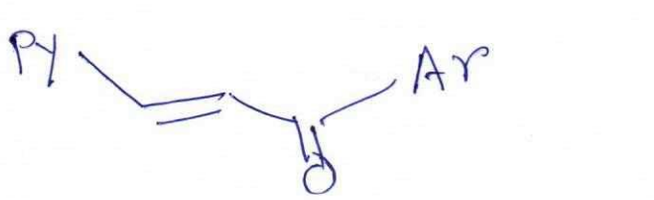


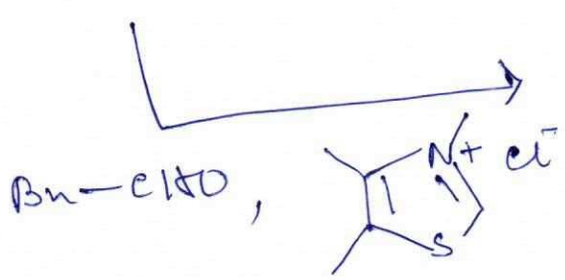


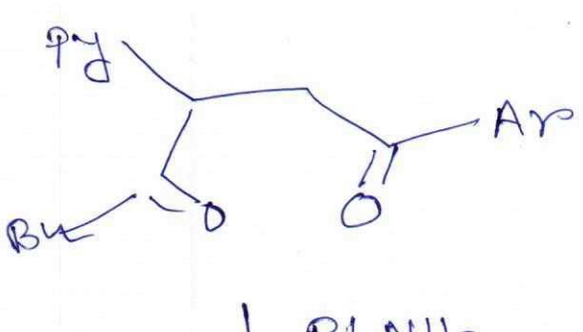


Synthesis:

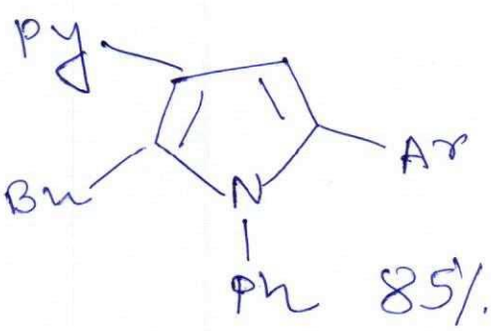






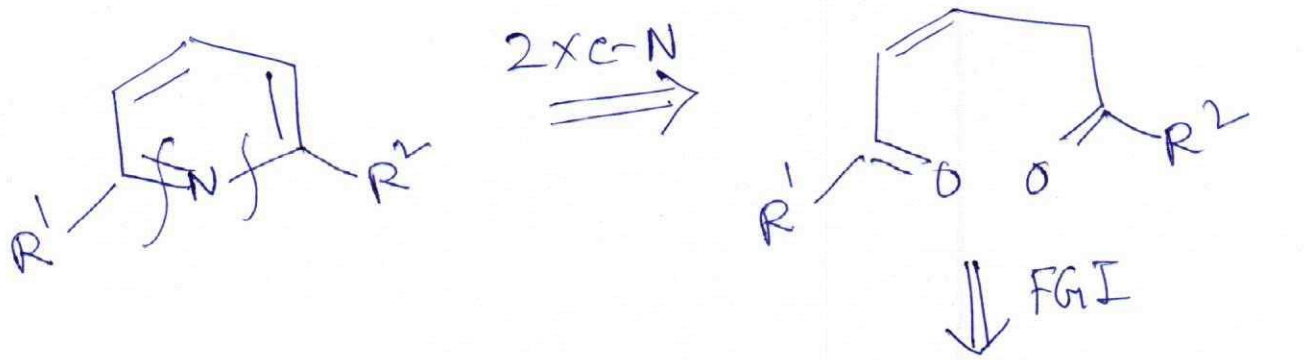


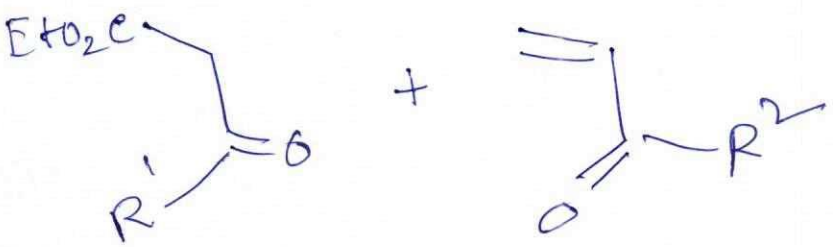
Stetter Rxn



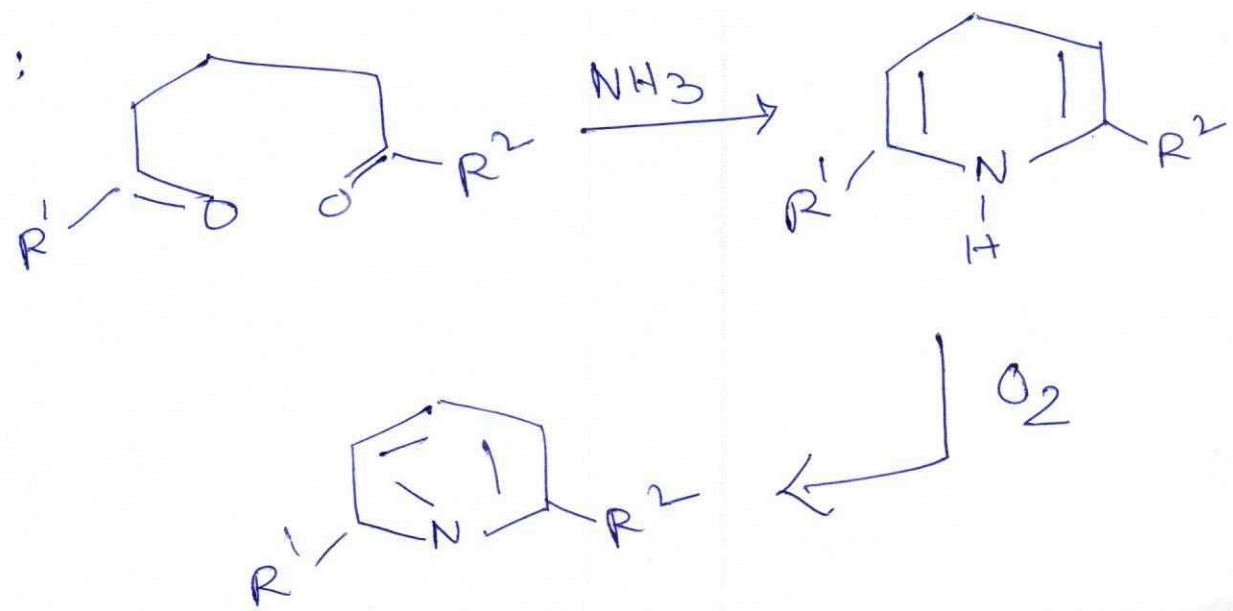
85%

Pyridine:

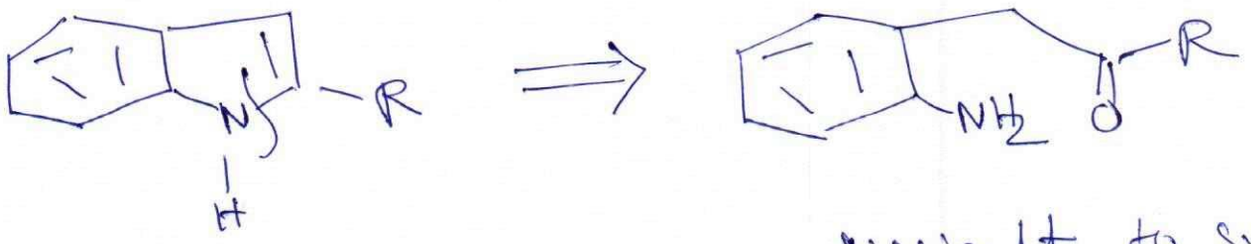




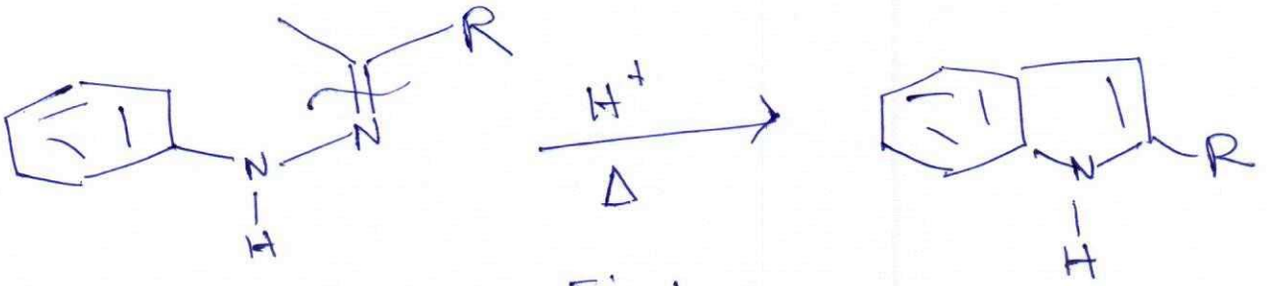
Synthesis:



Indole



Difficult to synthesize



Fischer Indole synthesis