



MIND MAP FOR JEE ASPIRANTS

Organic Chemistry

Amines



By- Yogesh Jain (YJ) Sir

Today's Targets

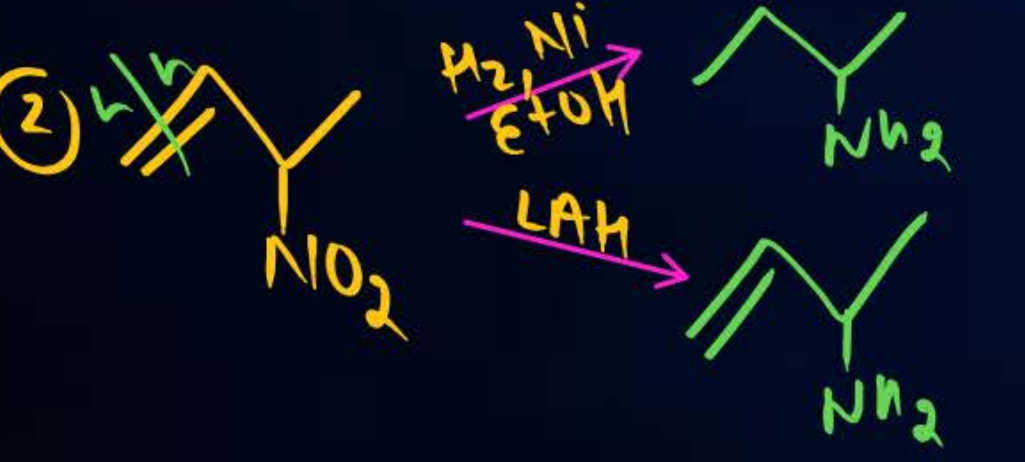
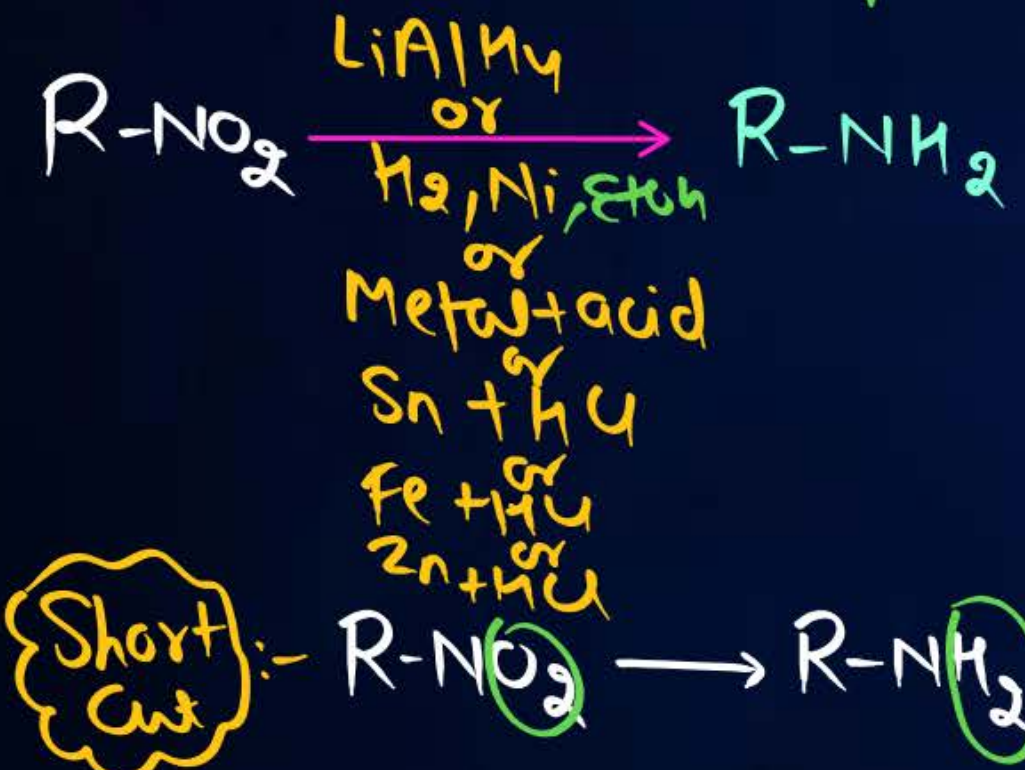


Amines

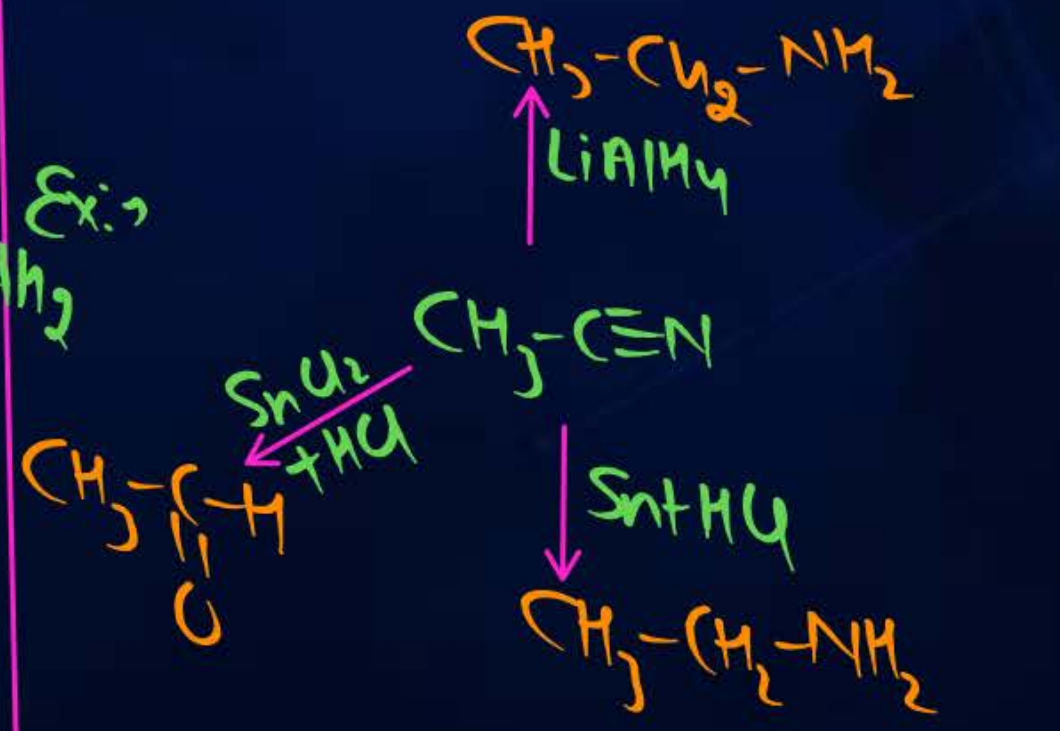
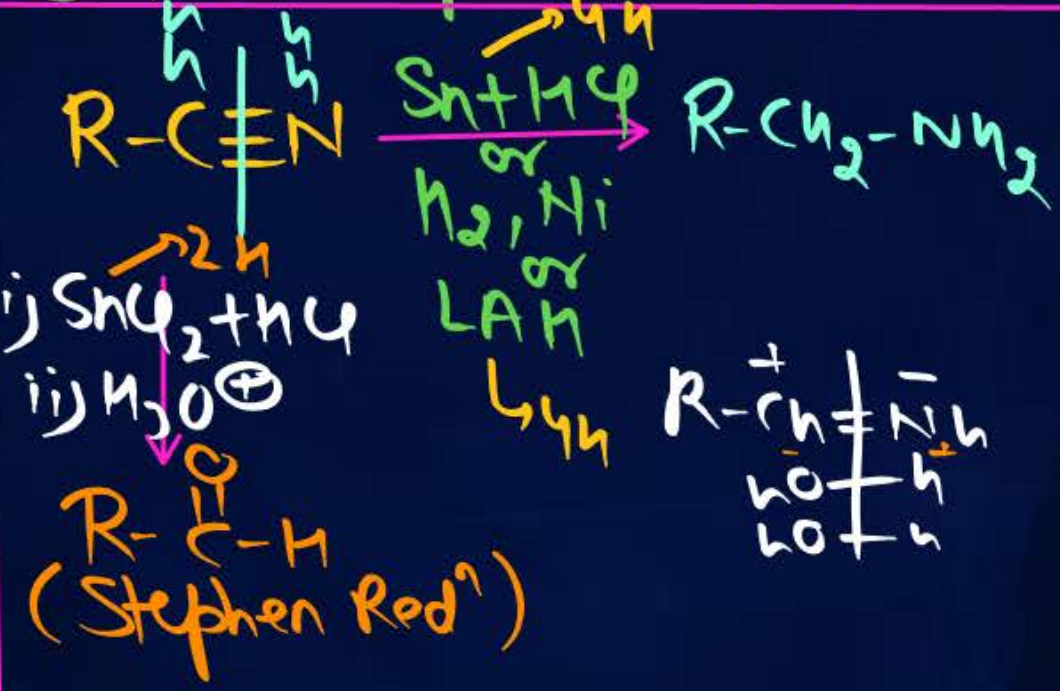


MOP of Amines $\left[\text{h}-\overset{\text{h}}{\underset{\text{h}}{\text{Al}}}-\text{h} \right] \text{Li}^+$

(1) Redⁿ of Nitro compds.



(2) Redⁿ of Nitriles



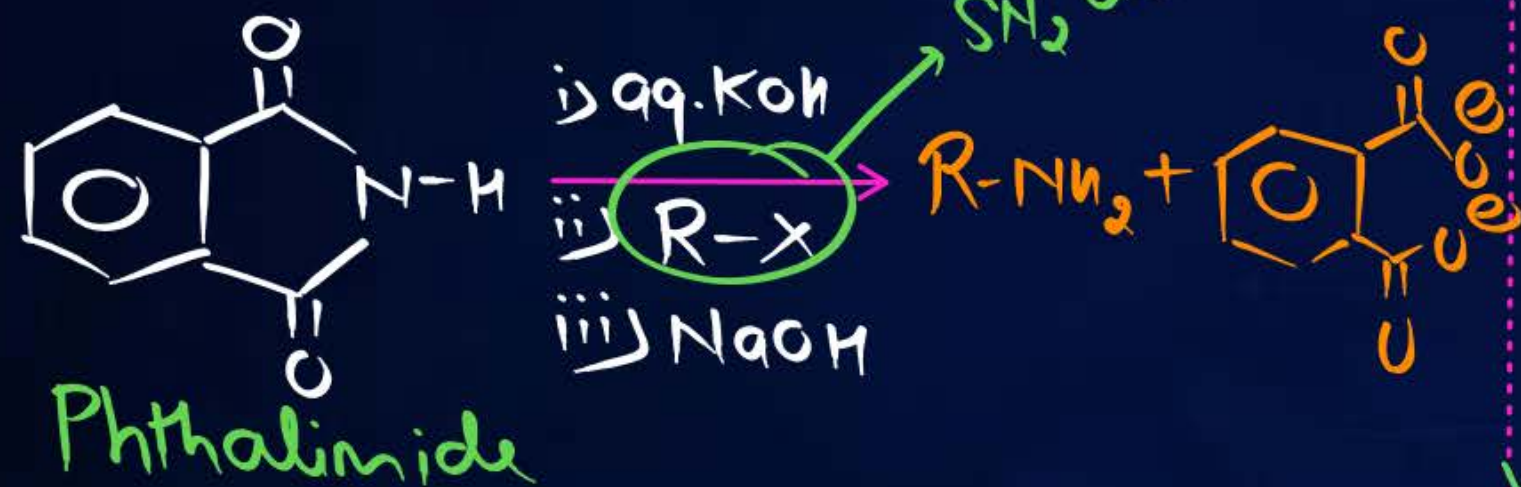
(3) Redⁿ of Amides



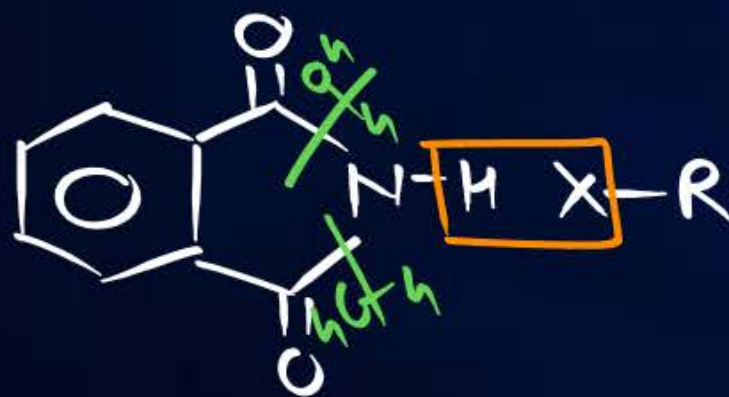
MOP of Amines



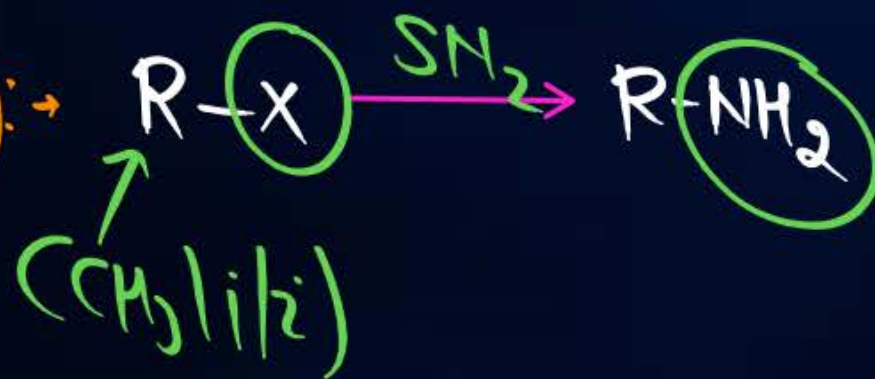
① Gabriel Phthalimide Synthesis



{Short Cut}



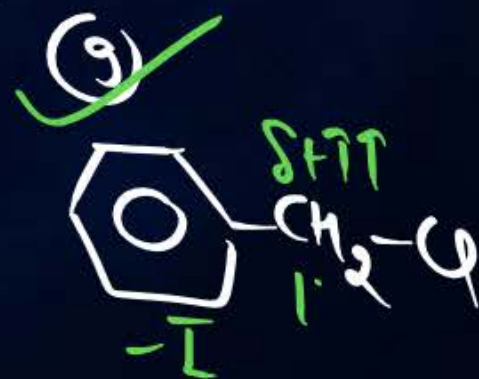
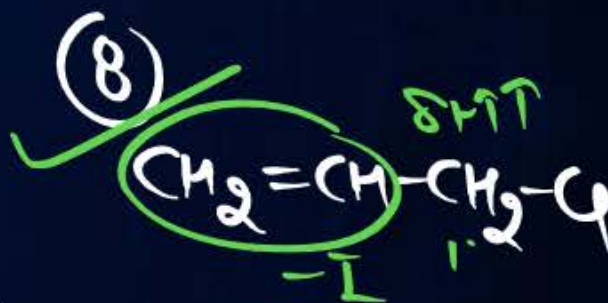
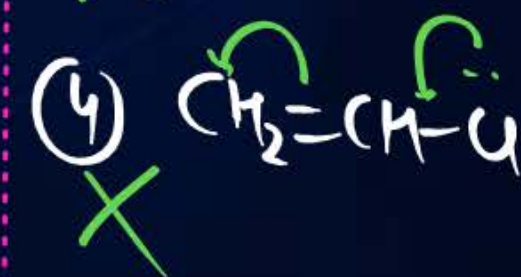
{Gehni Baat}



* Best Method for 1° amine ✓

* Only those R-X gives which shows S_N2 .

Ques Which of the following alkyl halide gives Gabriel phthalimide Synthesis:-

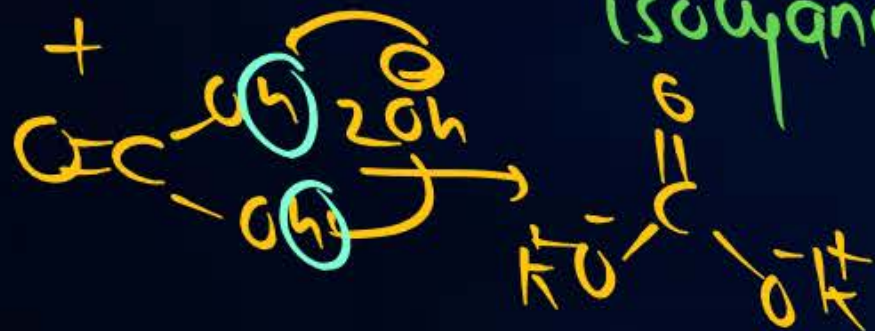
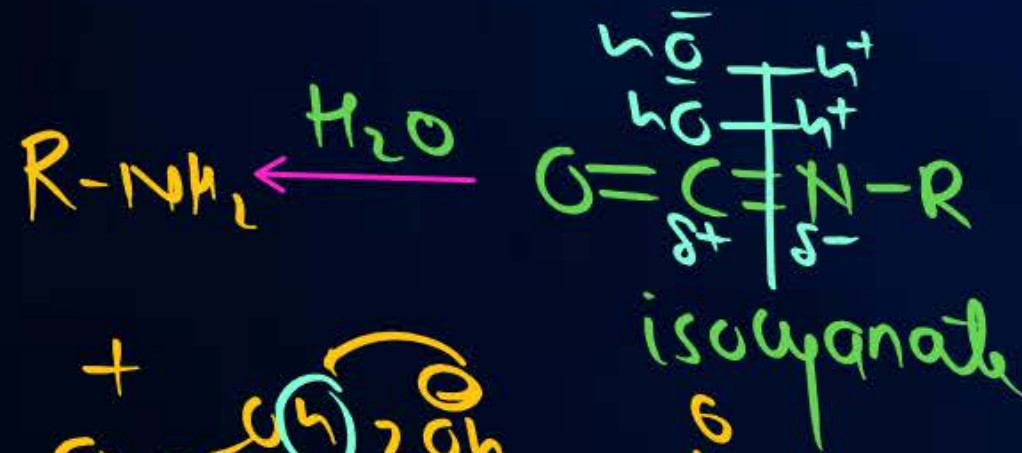
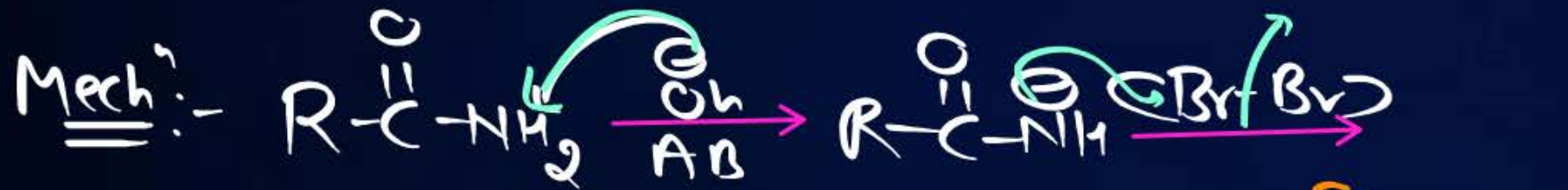


MOP of Amines

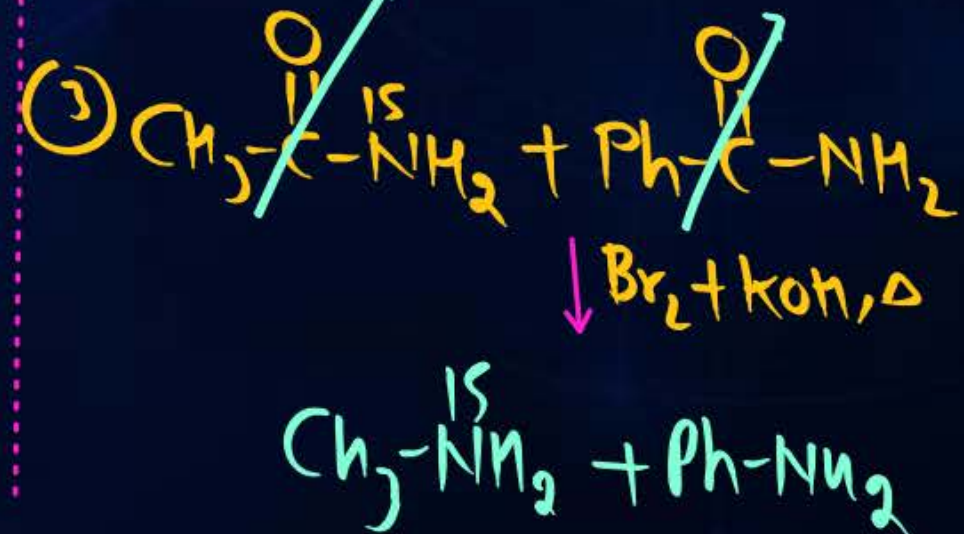
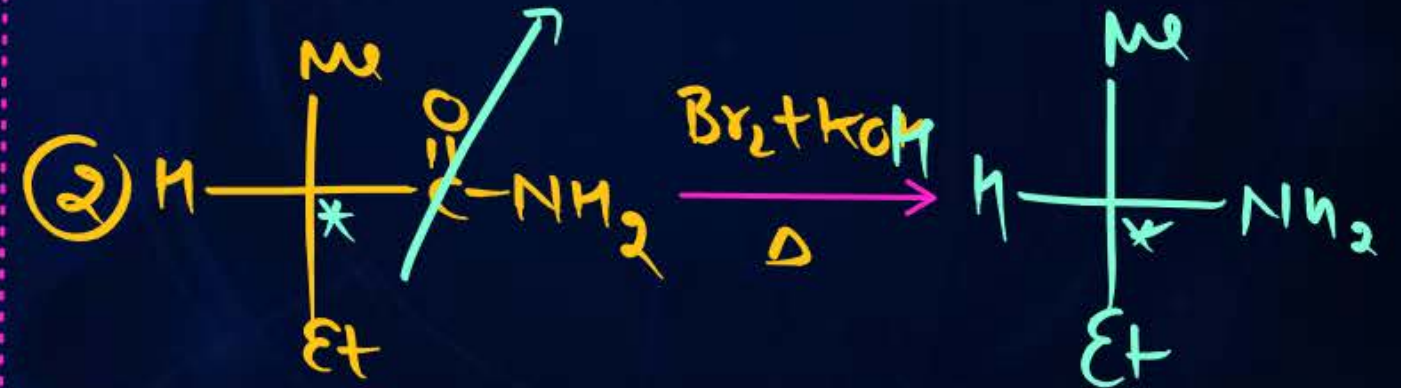
(Intramolecular Process)



⑤ Hoffmann Bromamide degradation Rxn.



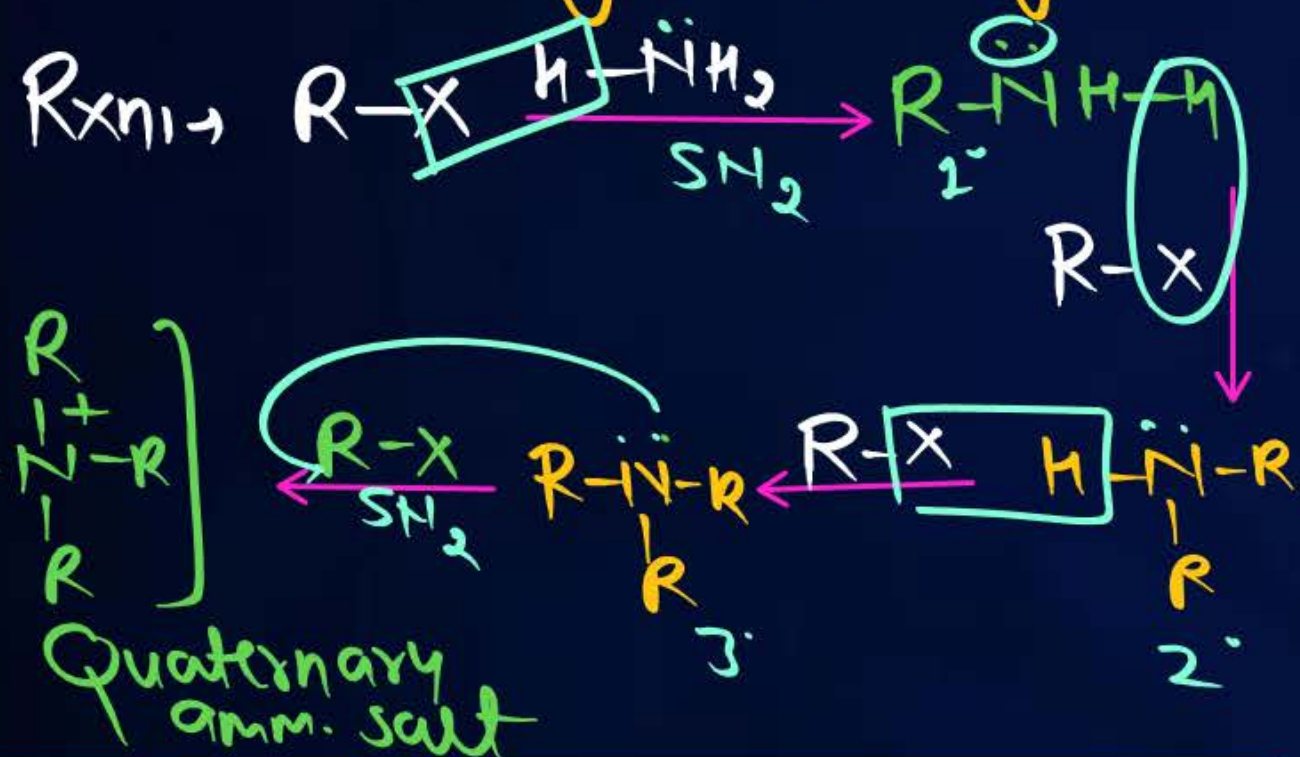
Ex. ①



Mop of amines



⑥ Ammonolysis of Alkyl Halide



No. of R-X
 consume to
 prepare
 Quaternary
 ammonium salt

= No. of l.p on N
 +
 No. of H attached
 with N

Qw. How many moles of R-X reqd.
 to convert following amines into
 quaternary ammonium salt:



3



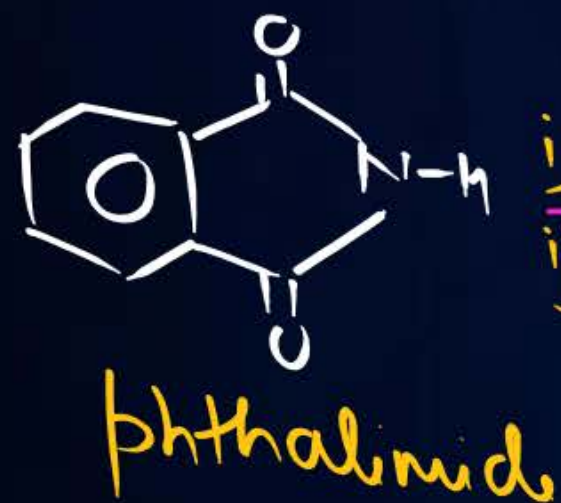
2



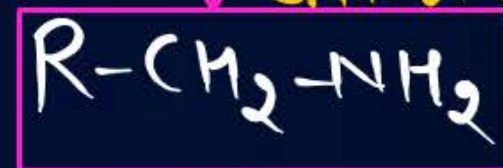
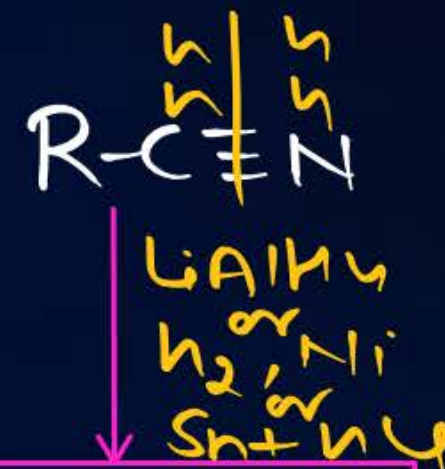
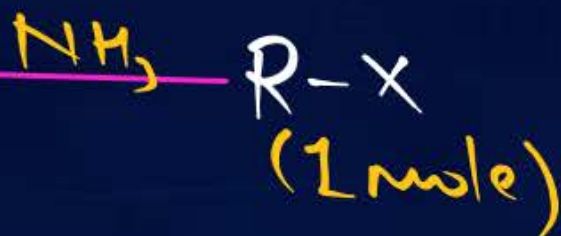
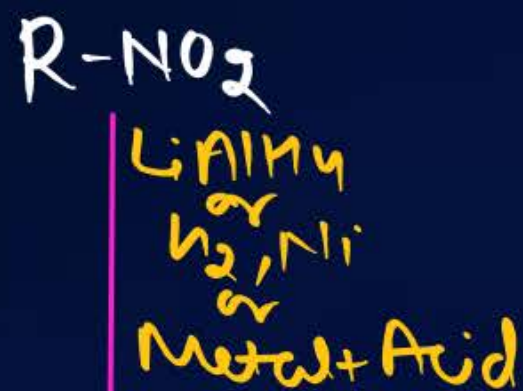
2



1



i) aq. KOH
 ii) R-X
 iii) NaOH



Chemical Properties of Amines

① Basic Strength

* More is the instability due to e^-
More will be B.S. ✓

Concept-1 $B.S. \propto \frac{1}{E.N.}$



Concept-3 $B.S. \propto \text{Ove charge}$



Concept-2 $B.S. \propto \frac{1}{Size}$



Concept-4
 $B.S. \propto e^-$ donation tendency
 $\propto e^-$ density
 $\propto \frac{EDG}{EWG} \propto \frac{+M > +H > +I}{-M > -H > -I}$

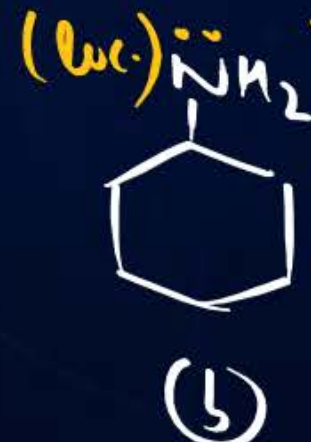
Ques Compare Basic Strength
 $E.N.: sp > sp^2 > sp^3$



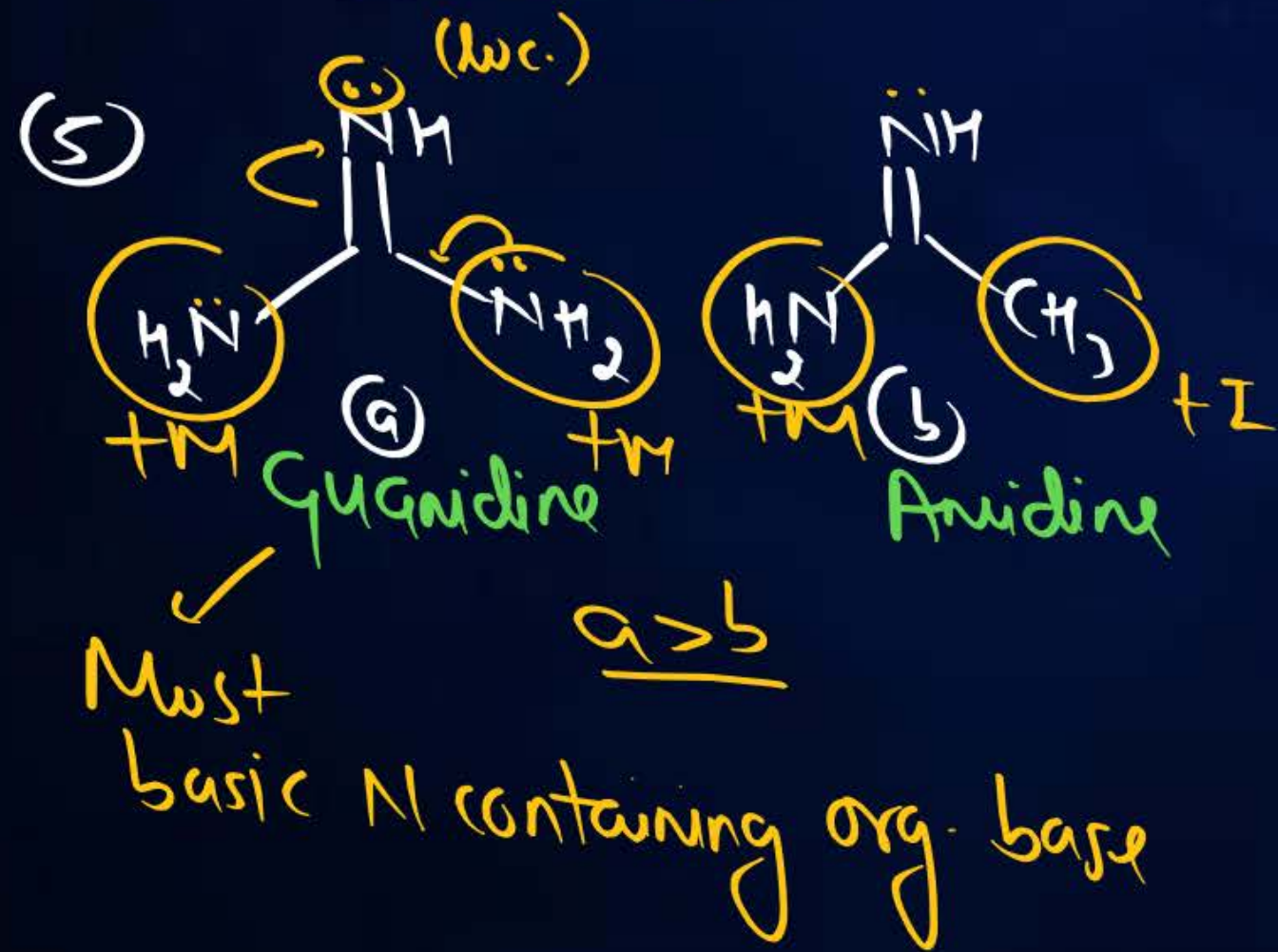
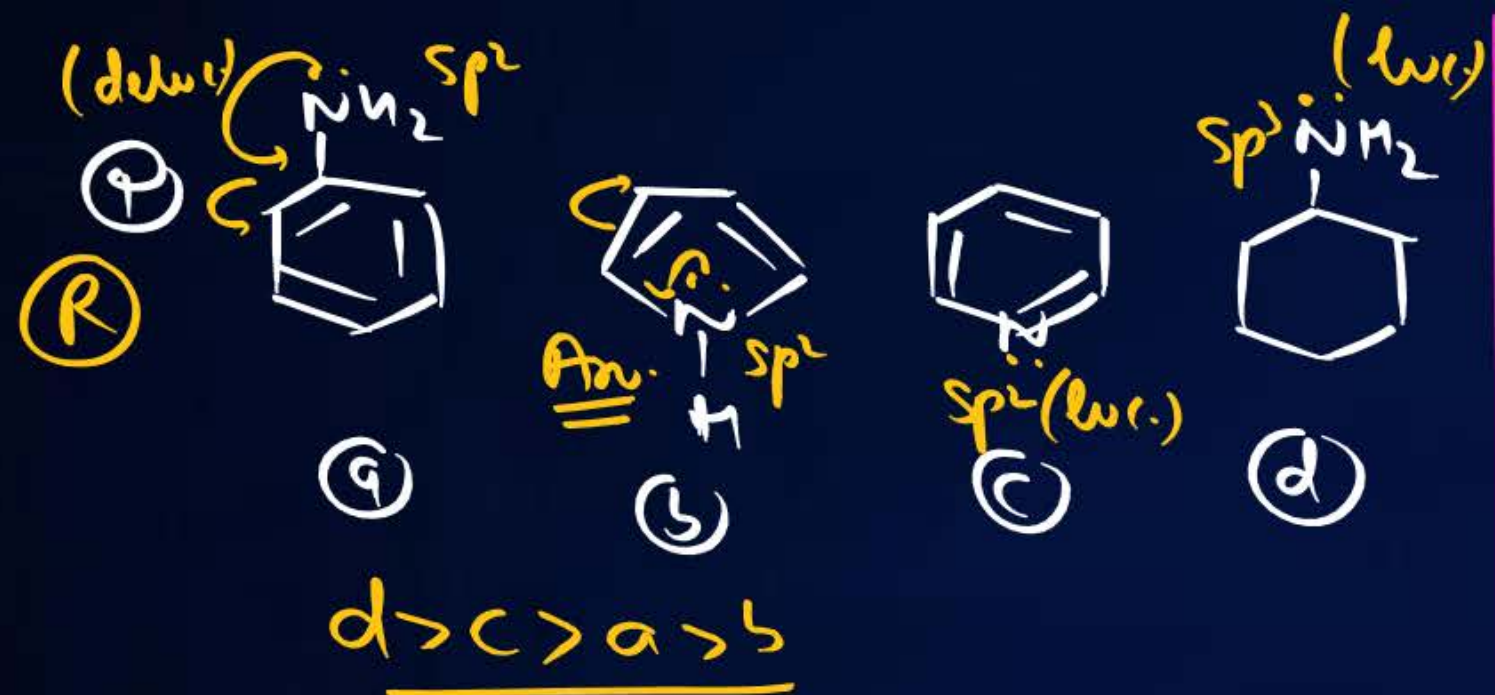
② $a > b > c$



$a > b > c$



$b > a$



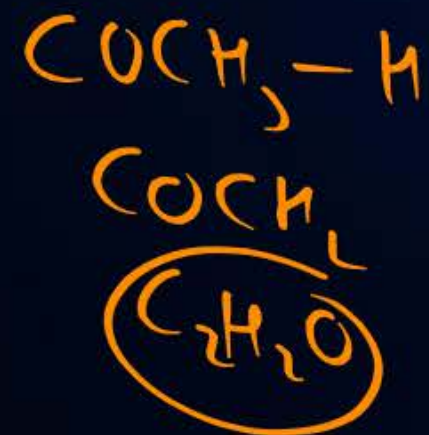
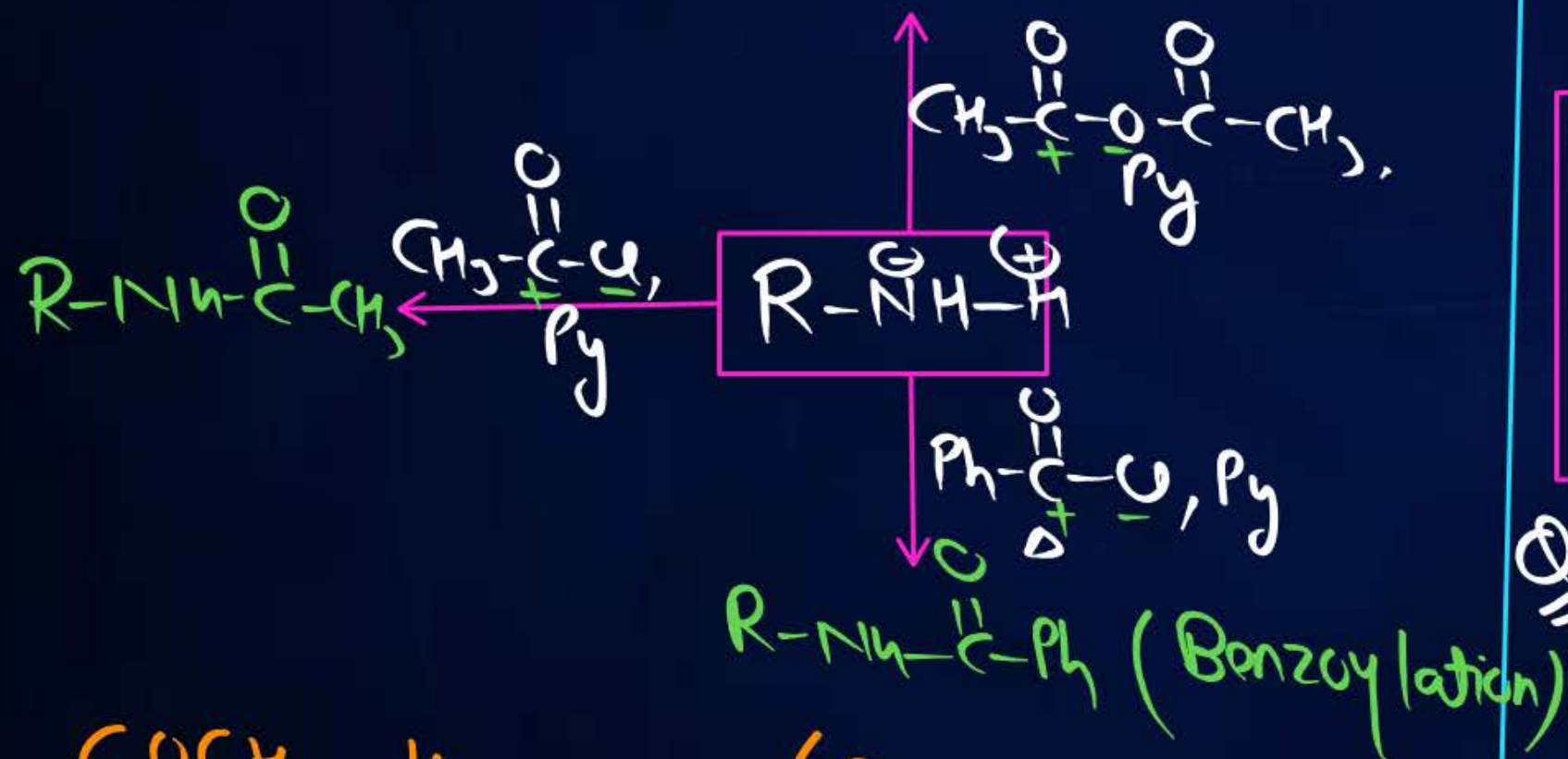
Basic Strength of Aliphatic amines.

(1) In gaseous phase:

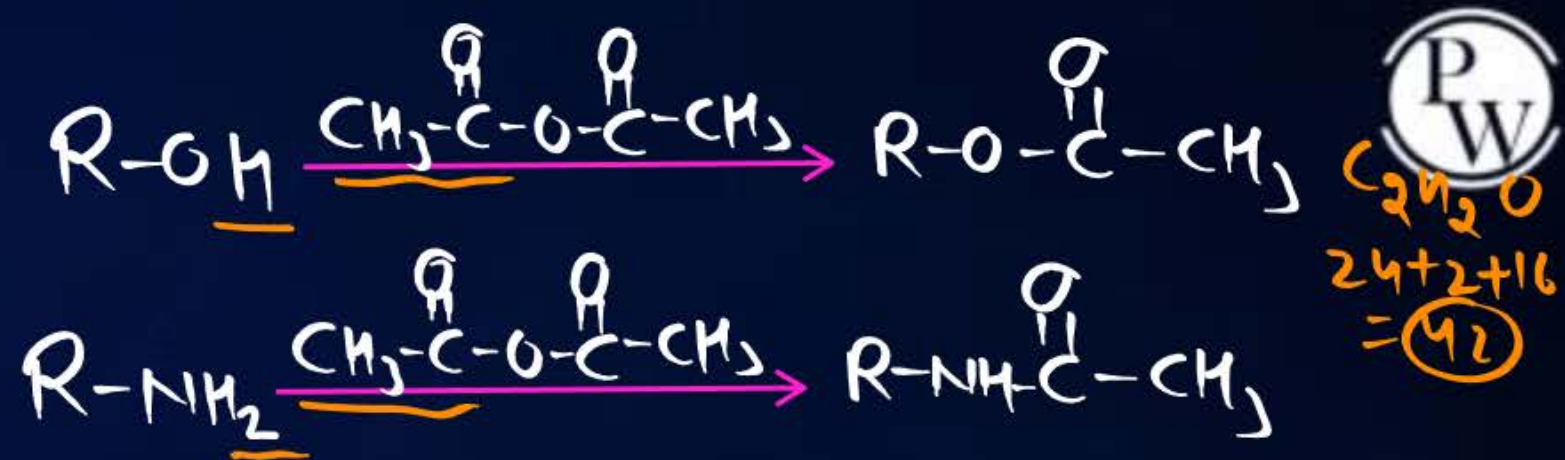


(2) In aq. phase

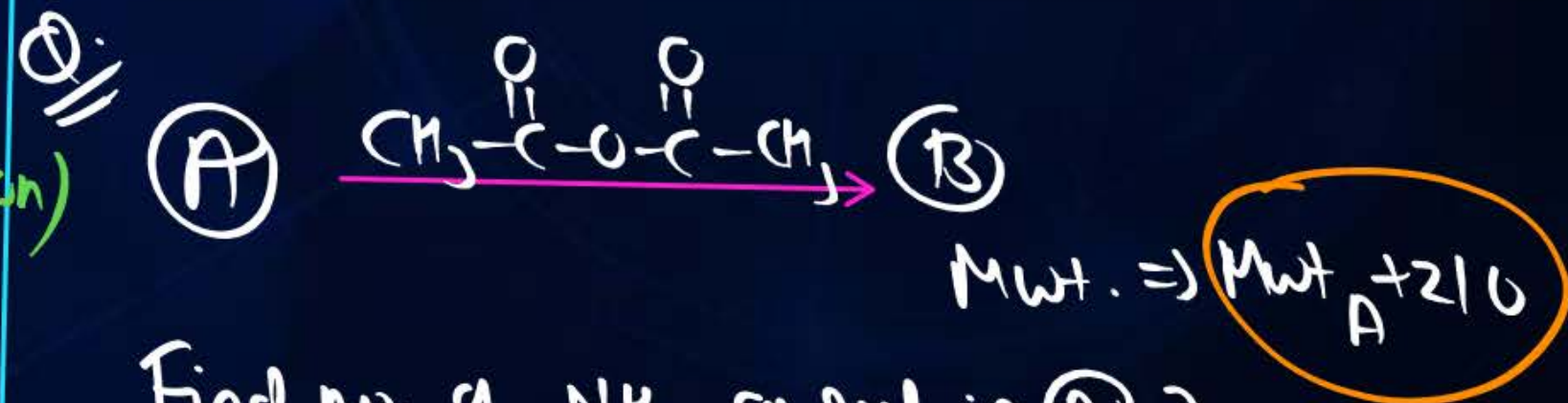




(Schotten
Baumann Rxn.)



No. of $-OH$ groups
 $= \frac{\text{Product Mwt.} - \text{Reactant Mwt.}}{42}$



Find no. of $-NH_2$ group in (A)

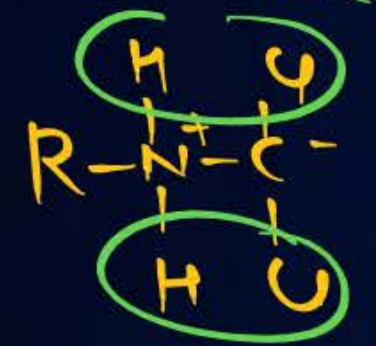
$$\text{No. of } -NH_2 \text{ group} = \frac{(Mwt_A + 210) - (Mwt_A)}{42} = \frac{210}{42} = 5$$

① Carbyl Amine Test

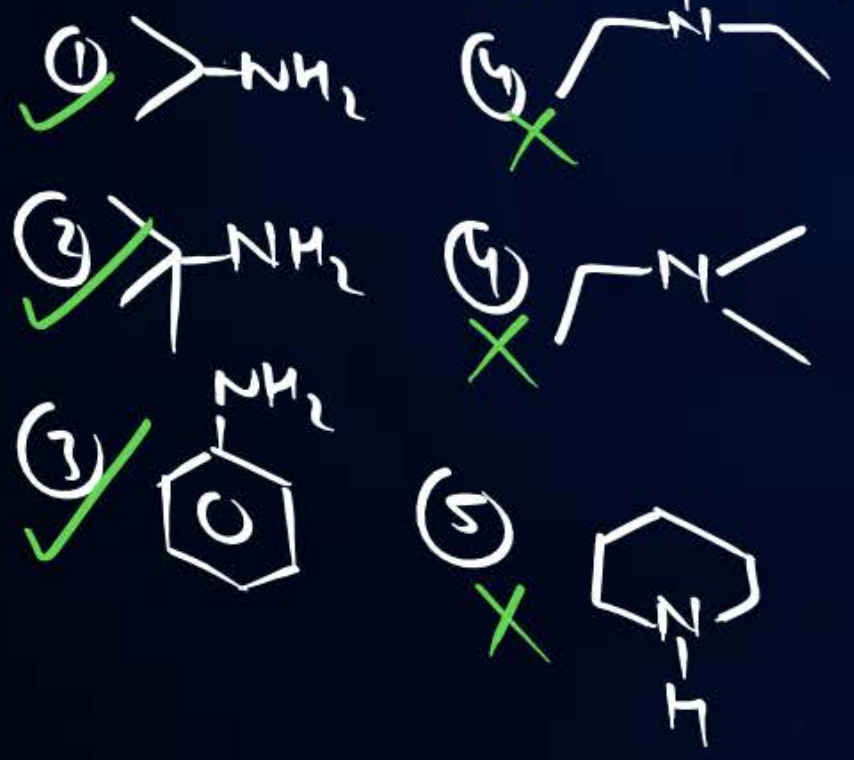
* Only given by 1° amine



Short Cut



Qw. which gives isocyanide test.



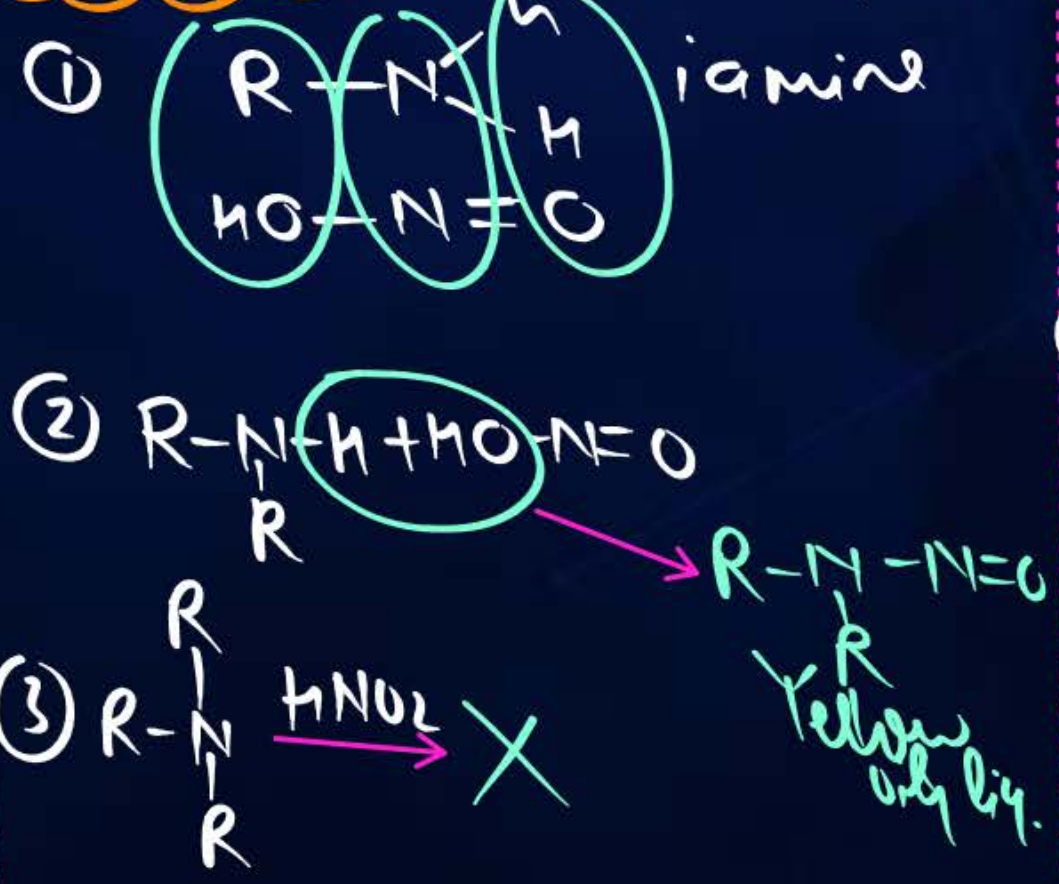
Test for AMINES

② Nitrous Acid Test

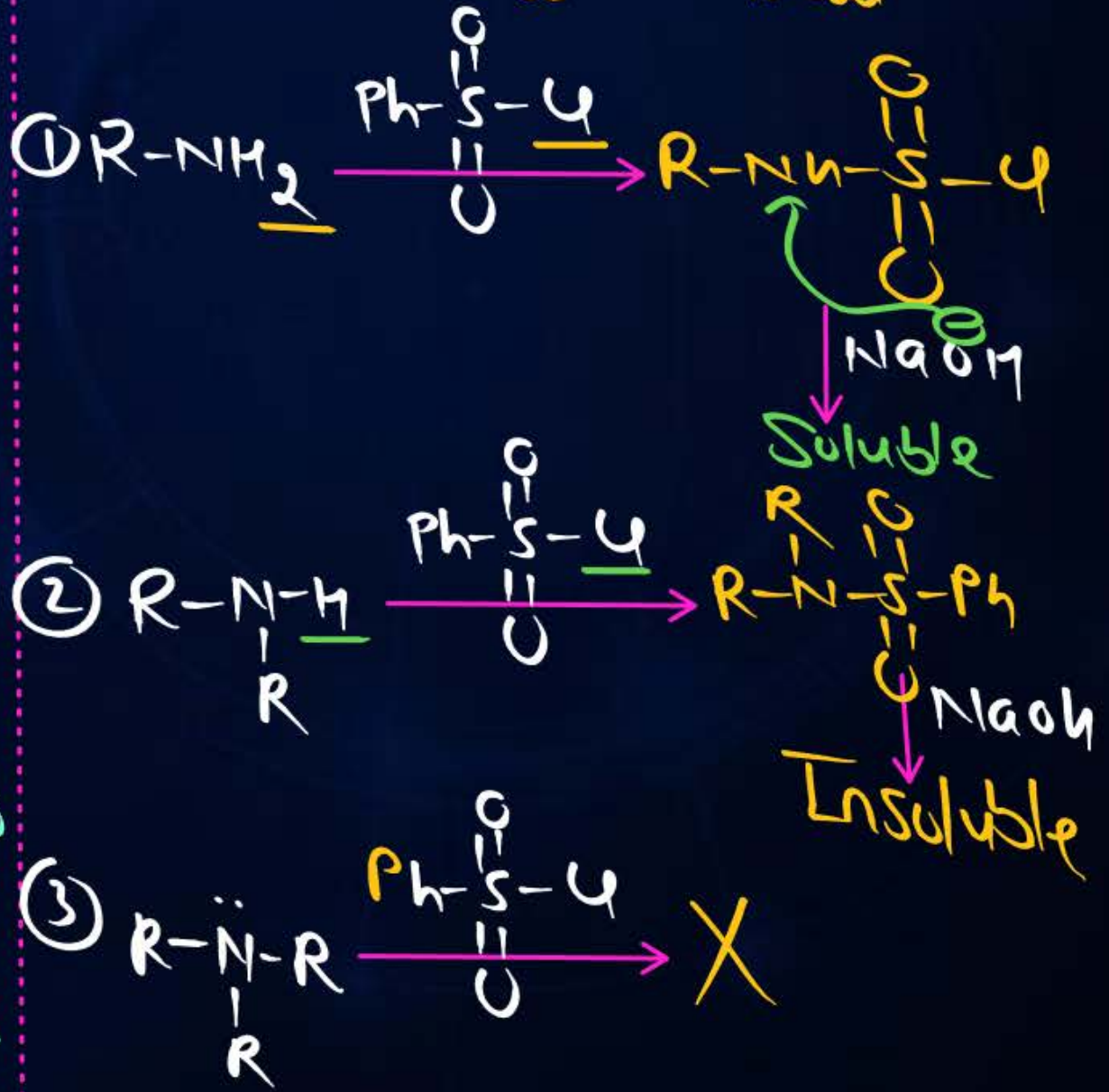
1° amine $\xrightarrow{HNO_2}$ N_2 gas (bubbles)
 2° amine $\xrightarrow{\quad}$ Yellow oily liq.
 3° amine $\xrightarrow{\quad}$ X



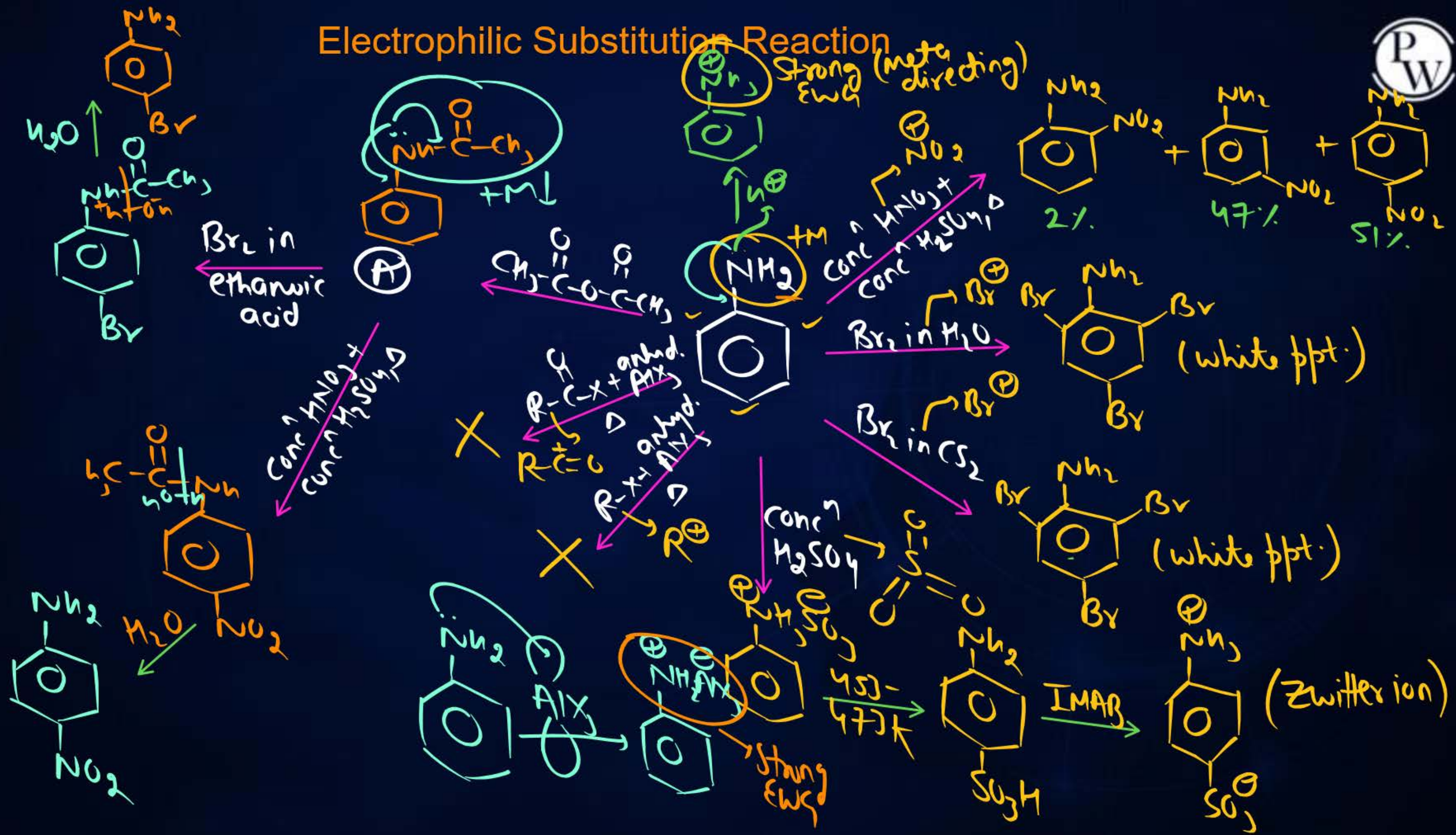
Short Tricks



③ Hinsberg Test Ph-S(=O)(=O)-Cl Benzene Sulphonyl chloride



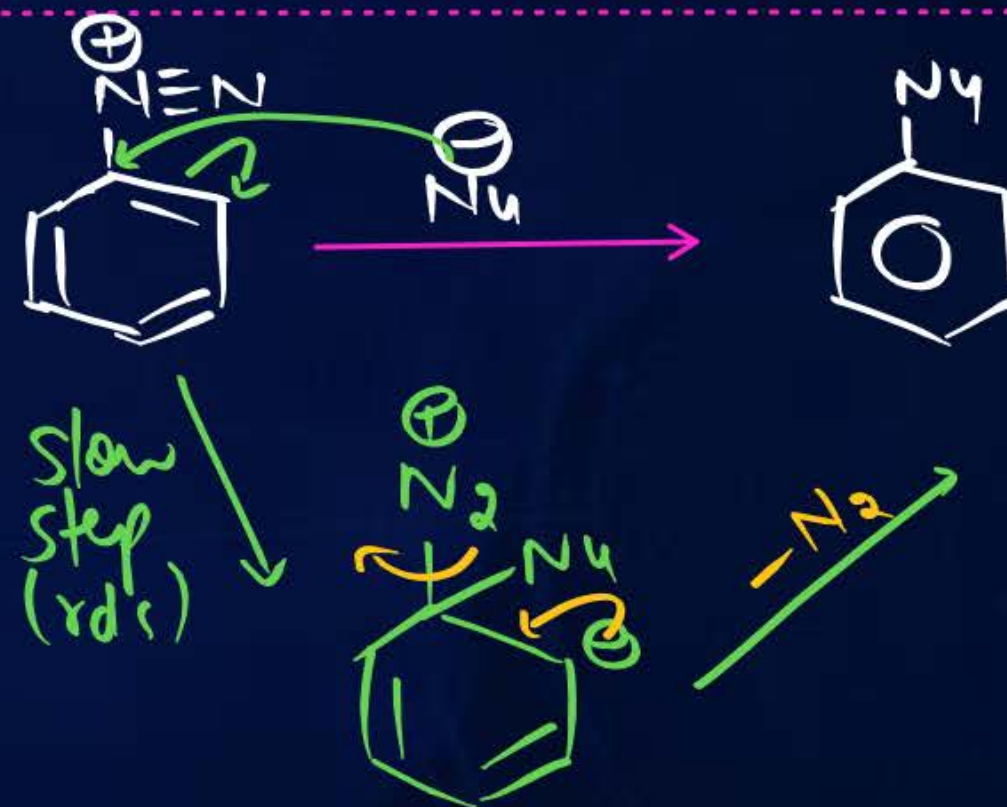
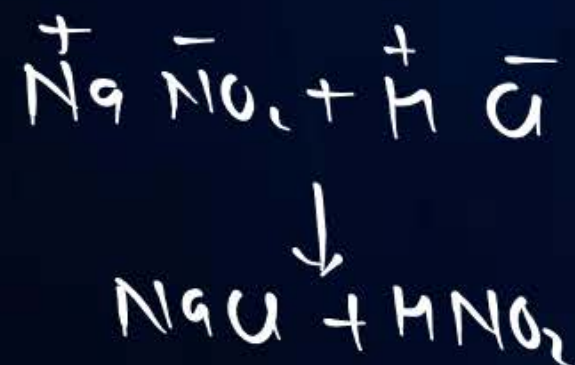
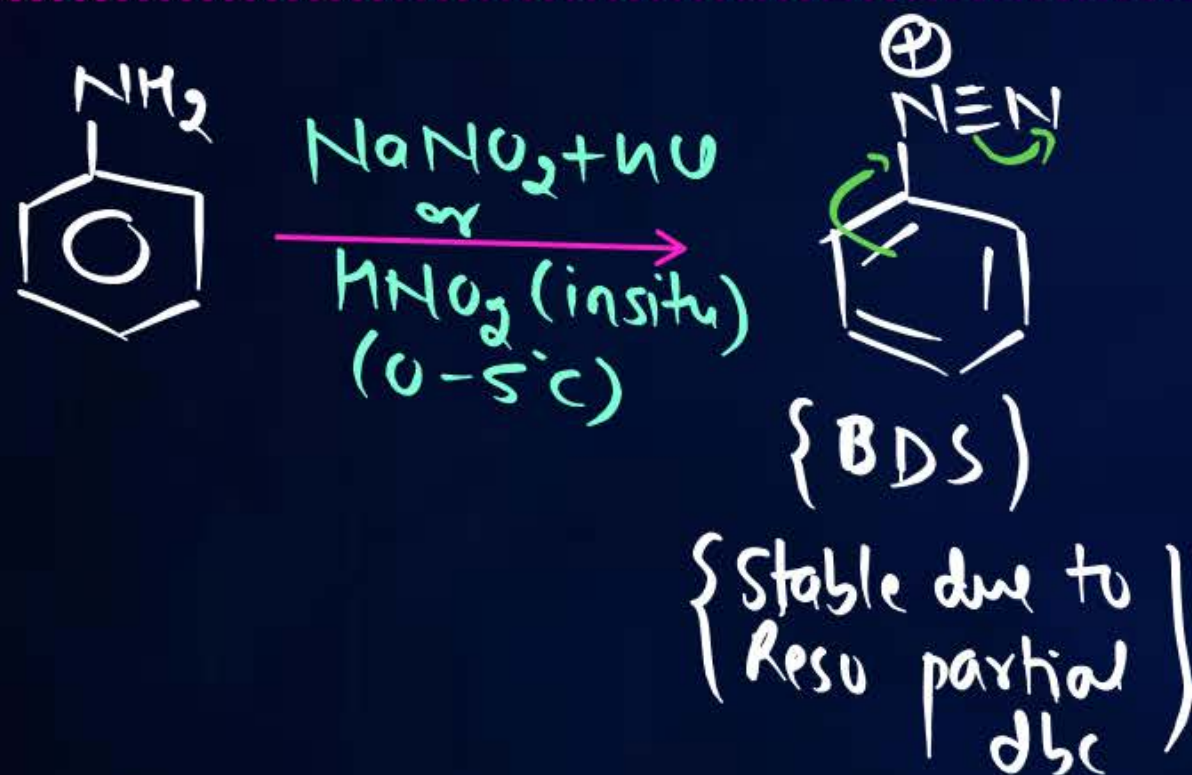
Electrophilic Substitution Reaction

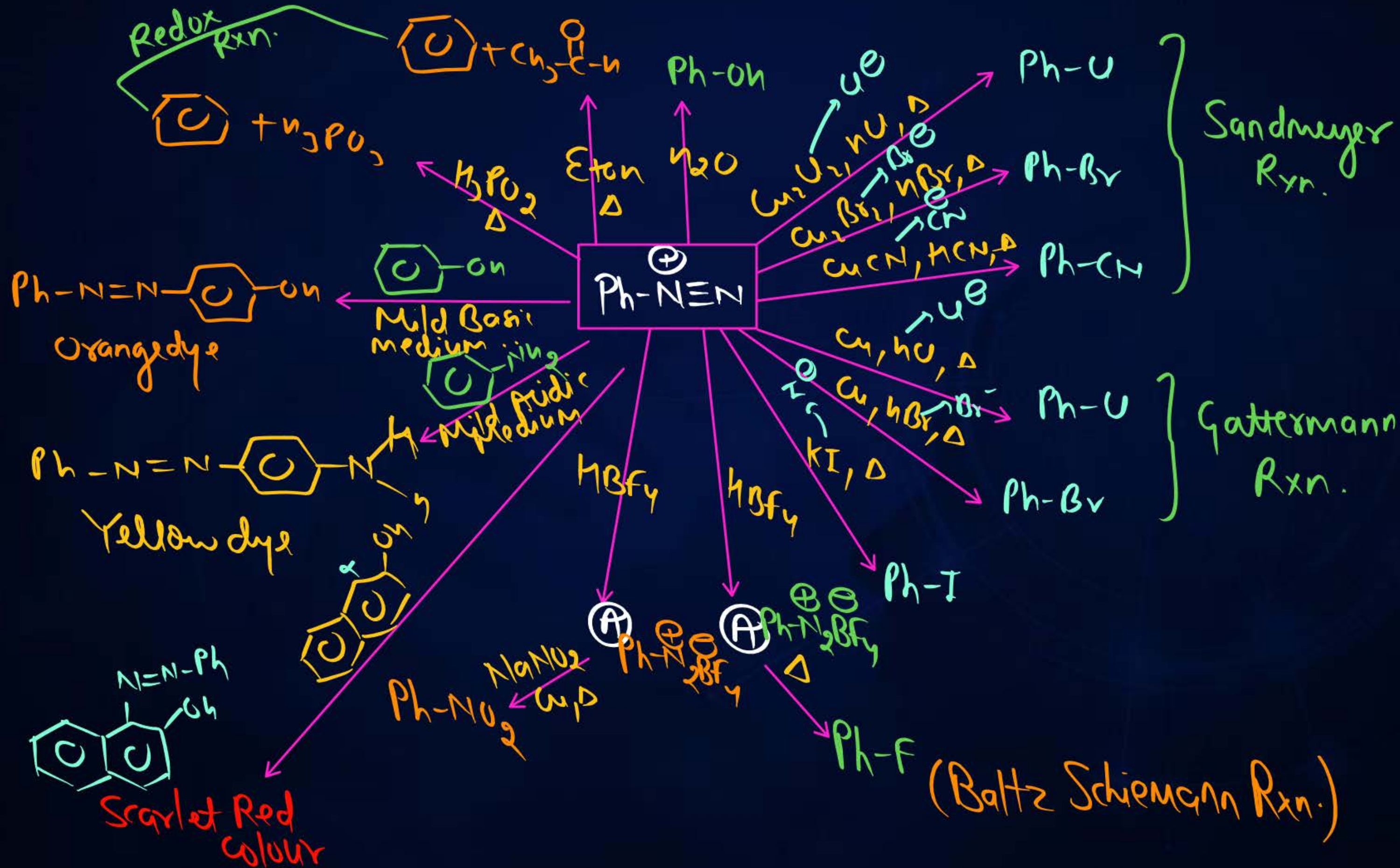


MOP of Benzene Diazonium salt

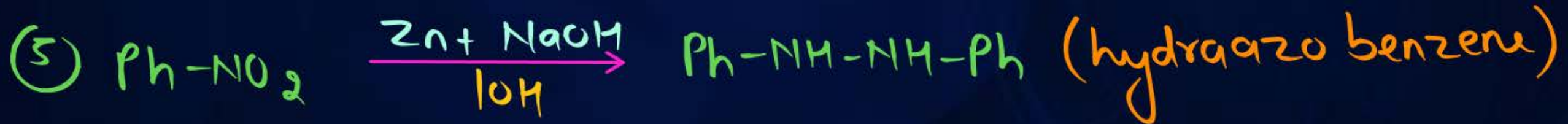


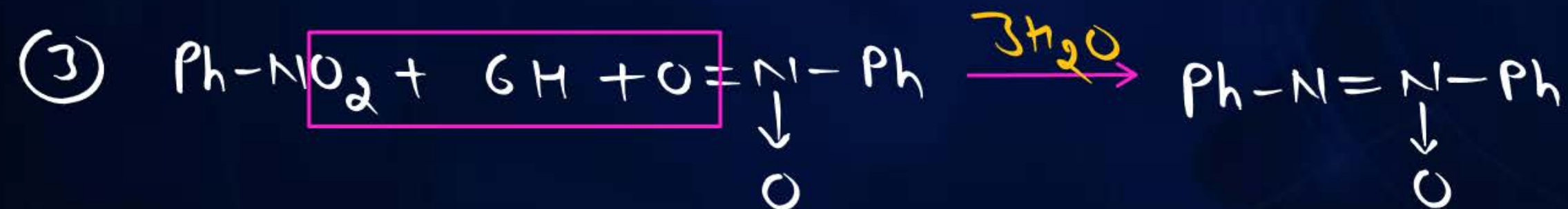
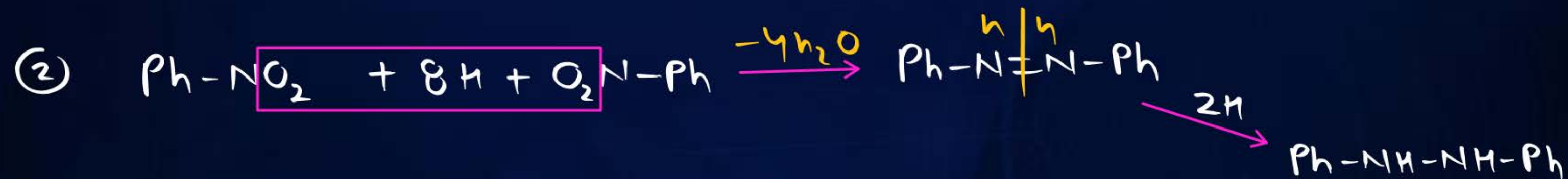
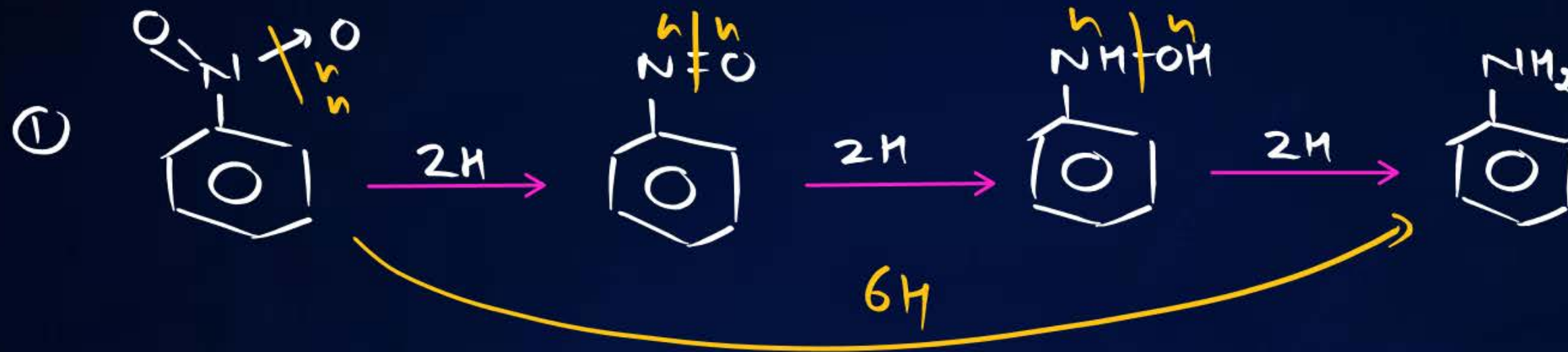
Nucleophilic substitution Reaction of BDS

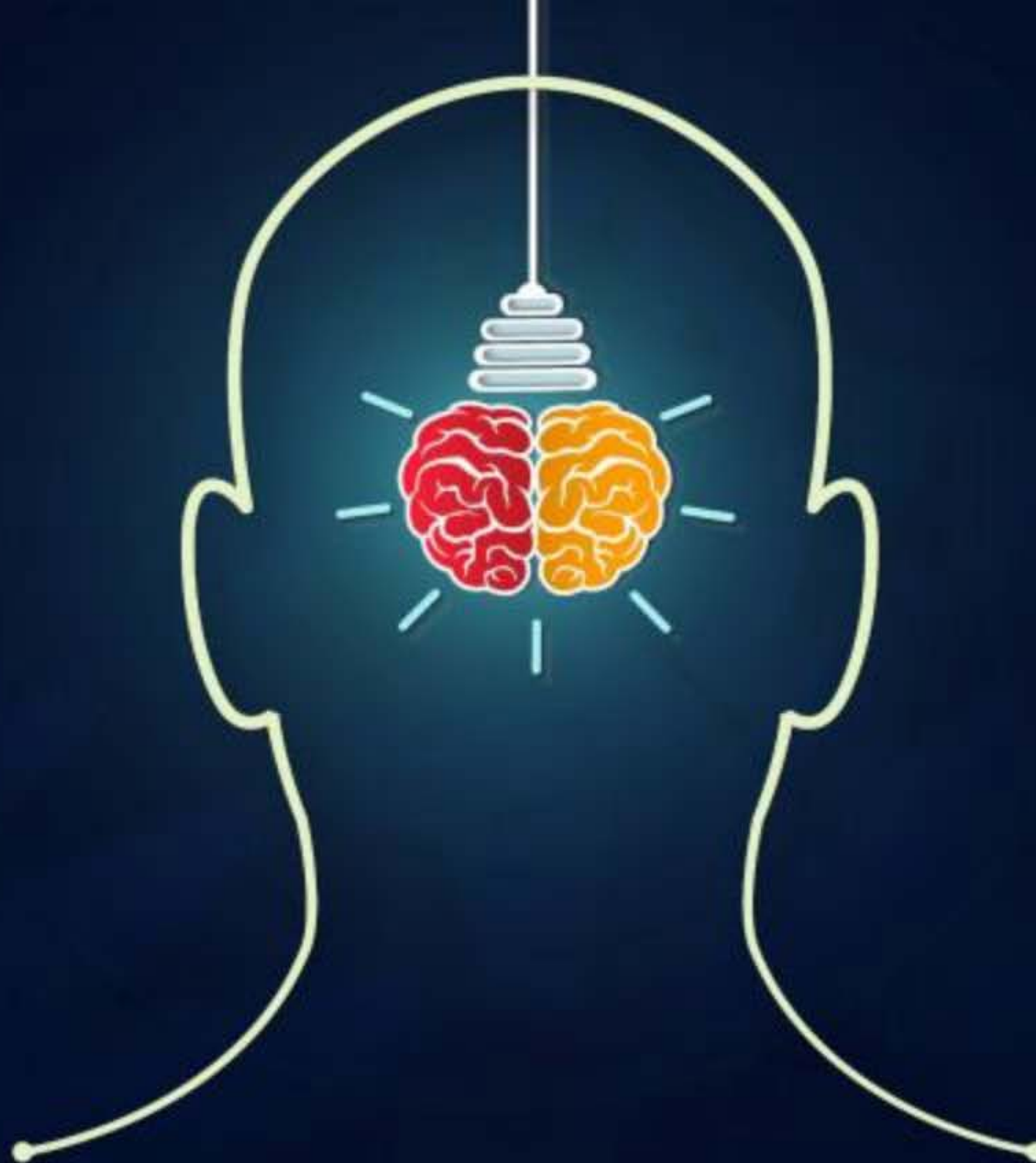




Reduction of Nitro Benzene







THANK YOU