

REACTION & MECHANISM

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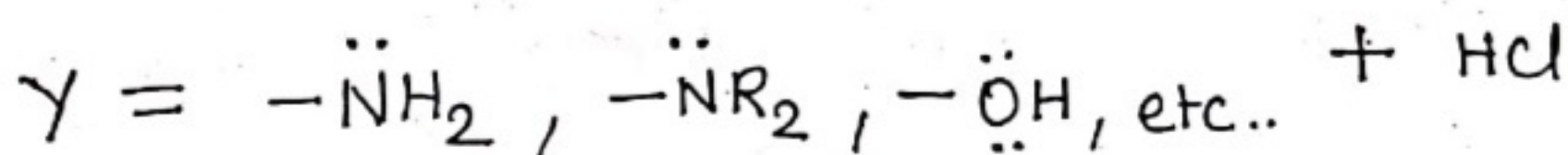
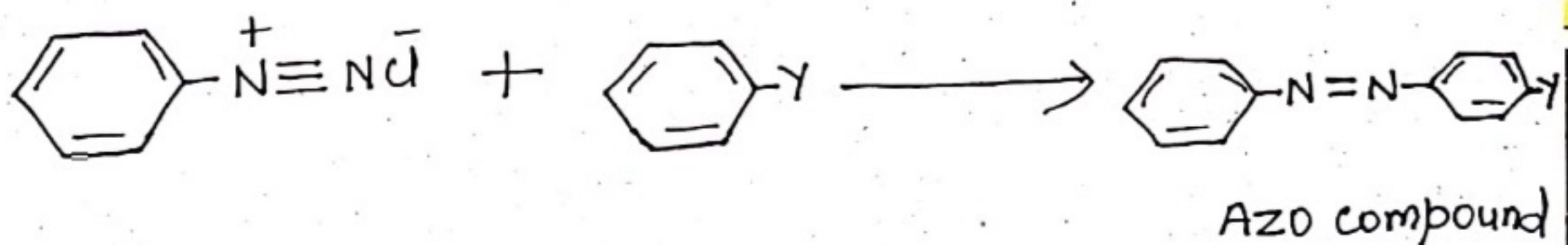
(Lecture -8)

Degree-II (SUB.)
Chapter-'5'
Group- 'C'
(Organic Portion).

~TOPIC~

~ DIAZOCOUPPLING REACTION ~

The second general reaction of diazonium salt is coupling. When diazonium salt is treated with an aromatic compound that contains strong electron donor group, the two rings join together to form an azo compound, a compound with nitrogen-nitrogen double bond.

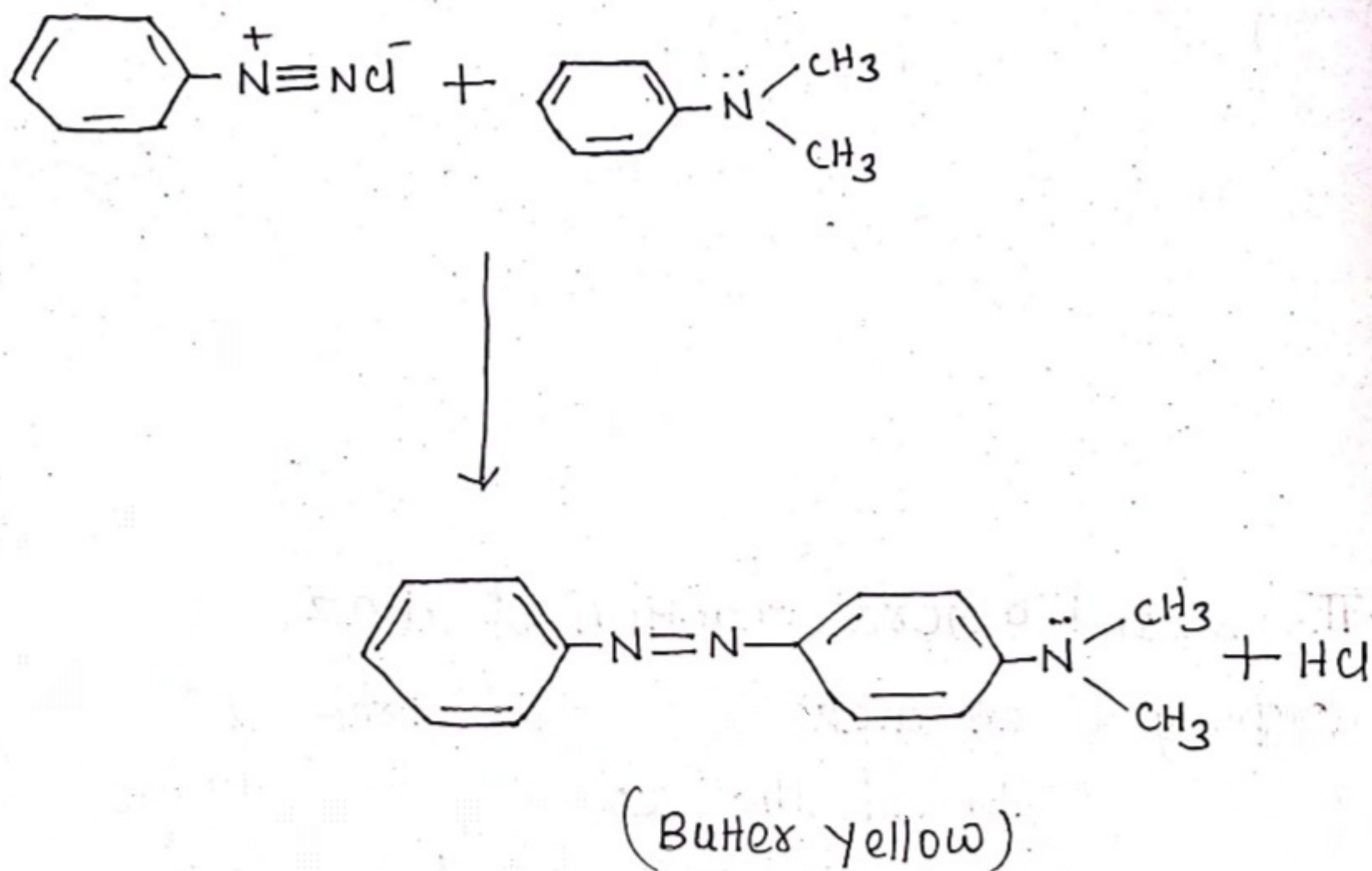


Azo compounds are highly conjugated, rendering them coloured.

* many of these compounds, such as the azo compound "butex yellow" are synthetic dyes.

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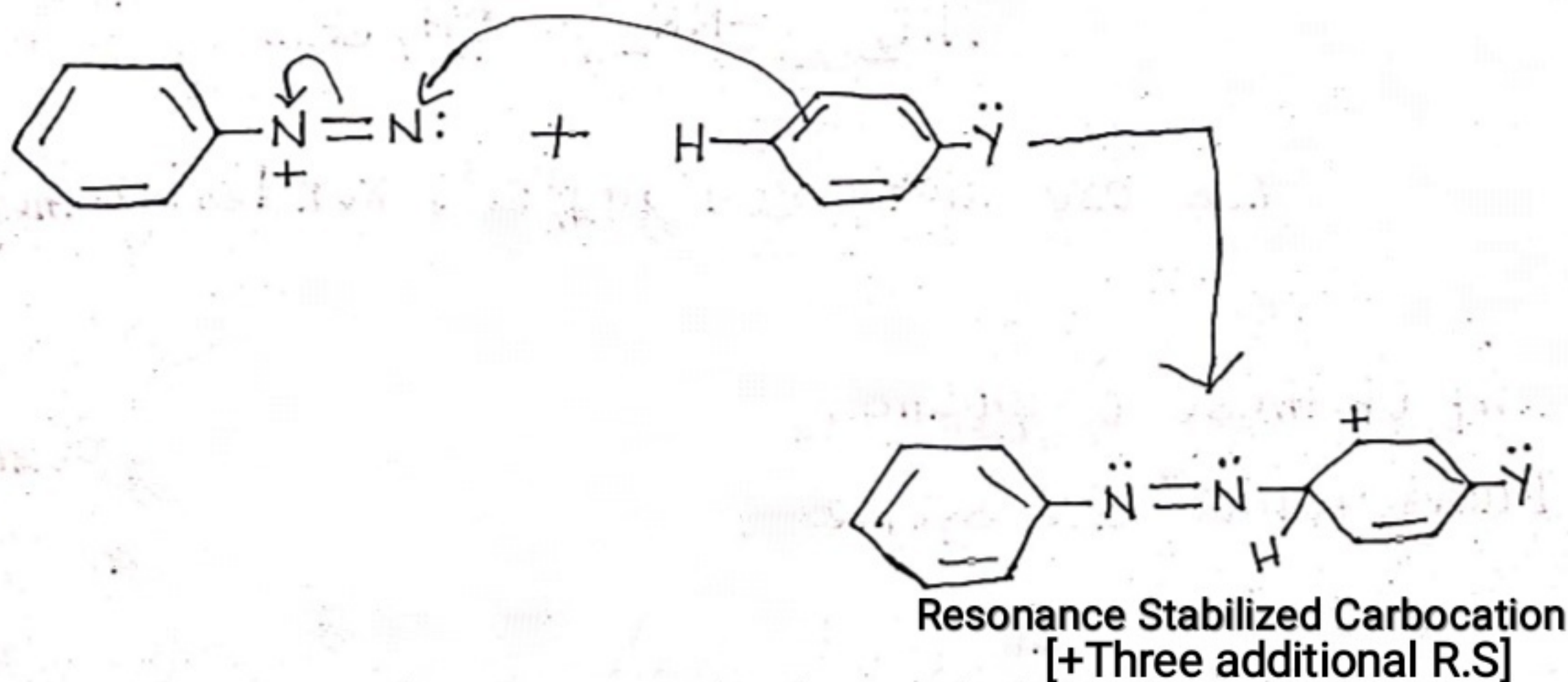
example,



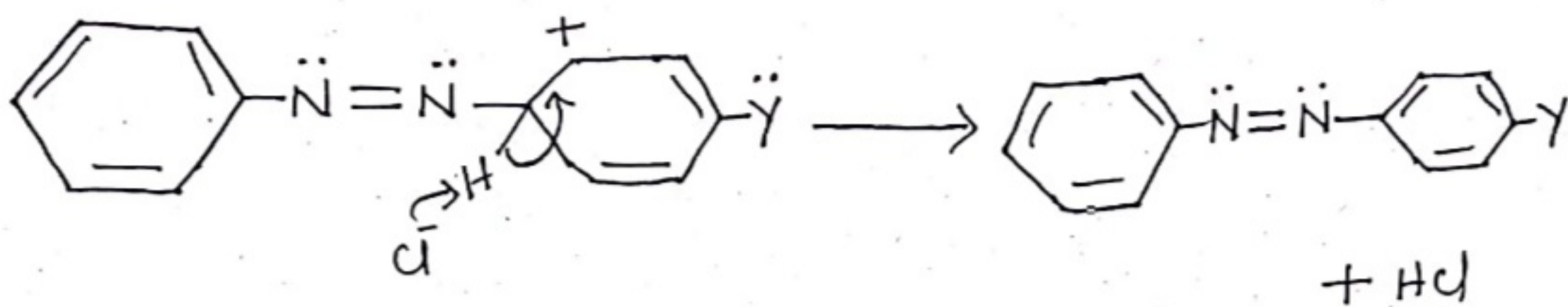
Mechanism

All azo coupling reactions take place by the following steps: ---

Step 1. Electrophilic diazonium ion resonance-stabilized carbocation.



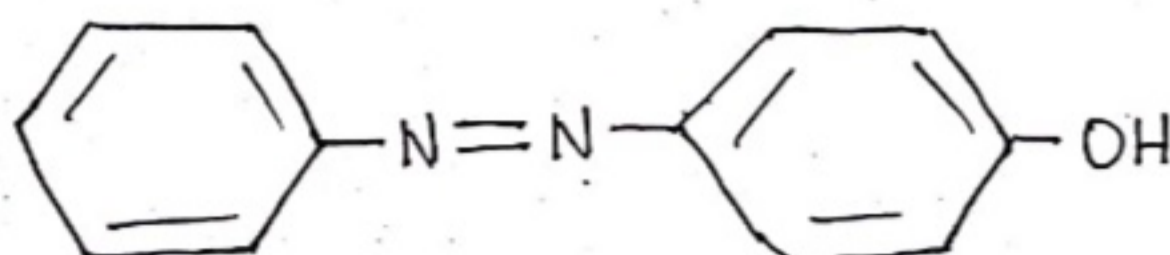
step 2. Loss of Proton Regenerates The Aromatic Ring



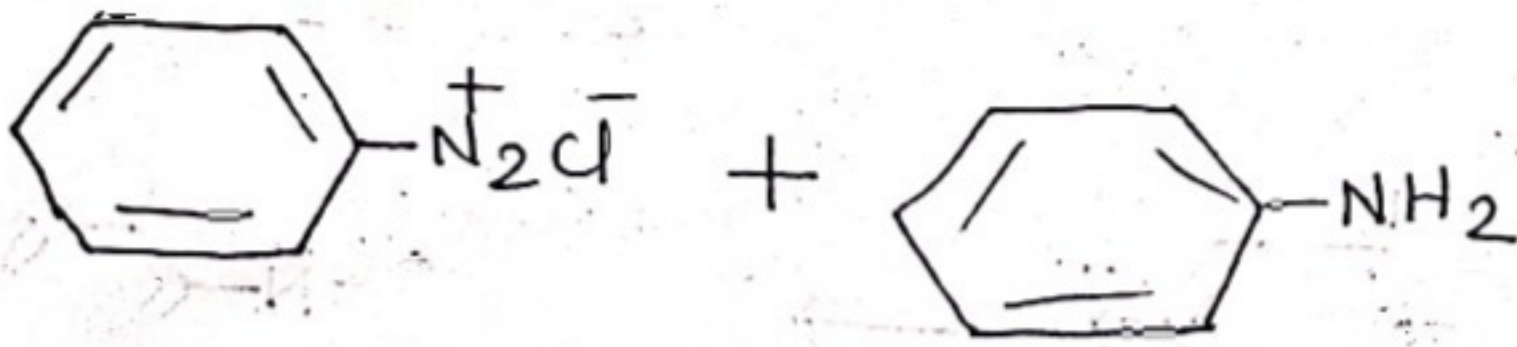
Because diazonium salt is weak electrophile so the coupling reaction occurs only when the benzene ring has a strong electron donor group 'Y'.

Where $Y = -\ddot{N}H_2$, $-\ddot{N}R_2$, or $-\ddot{O}H$

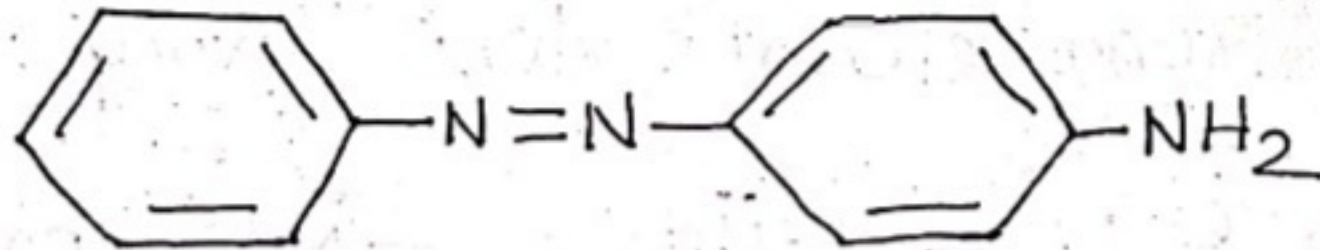
Although these groups activate both the ortho and para positions, substitution occurs unless the para position already has another substituent present.



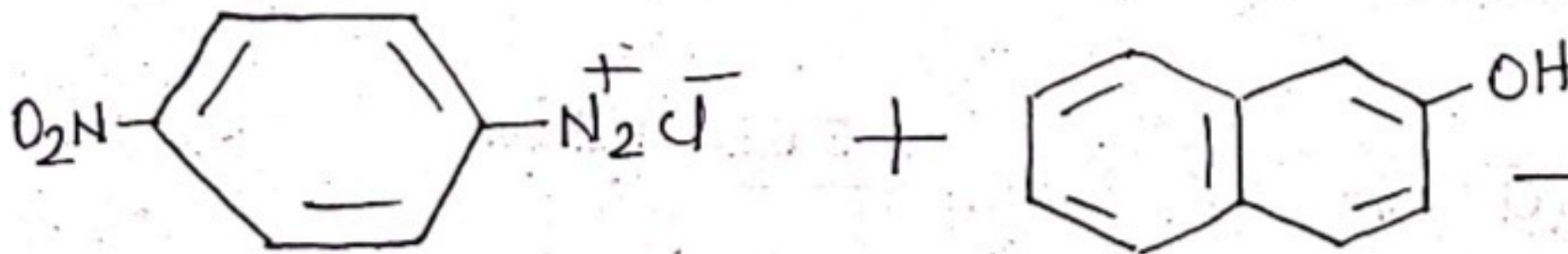
p-hydroxyazobenzene
(orange dye)



↓
Acidic Medium

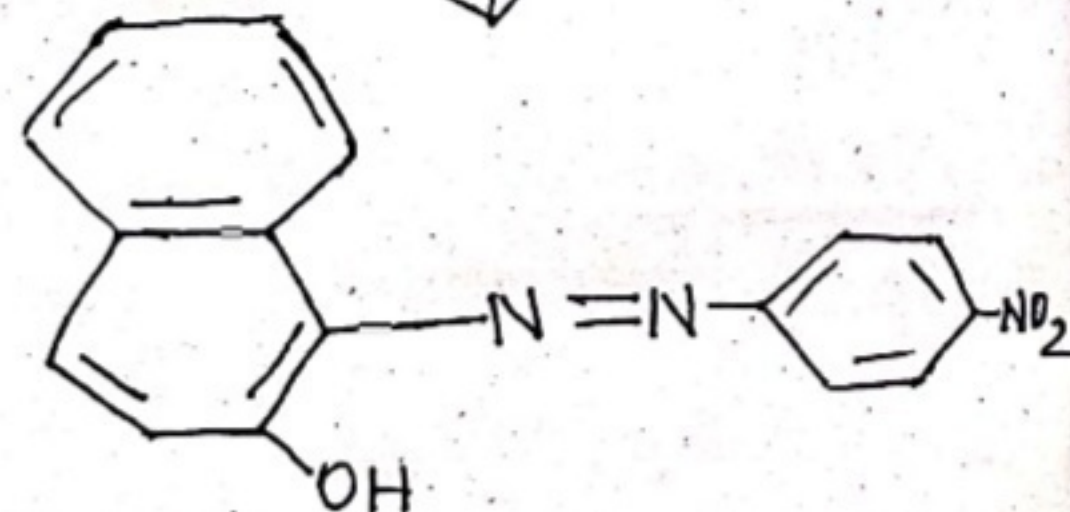


p-amino azo benzene
(Yellow dye)



p-nitro benzene diazonium chloride

β-naphthol



para-red / 24.04.2020