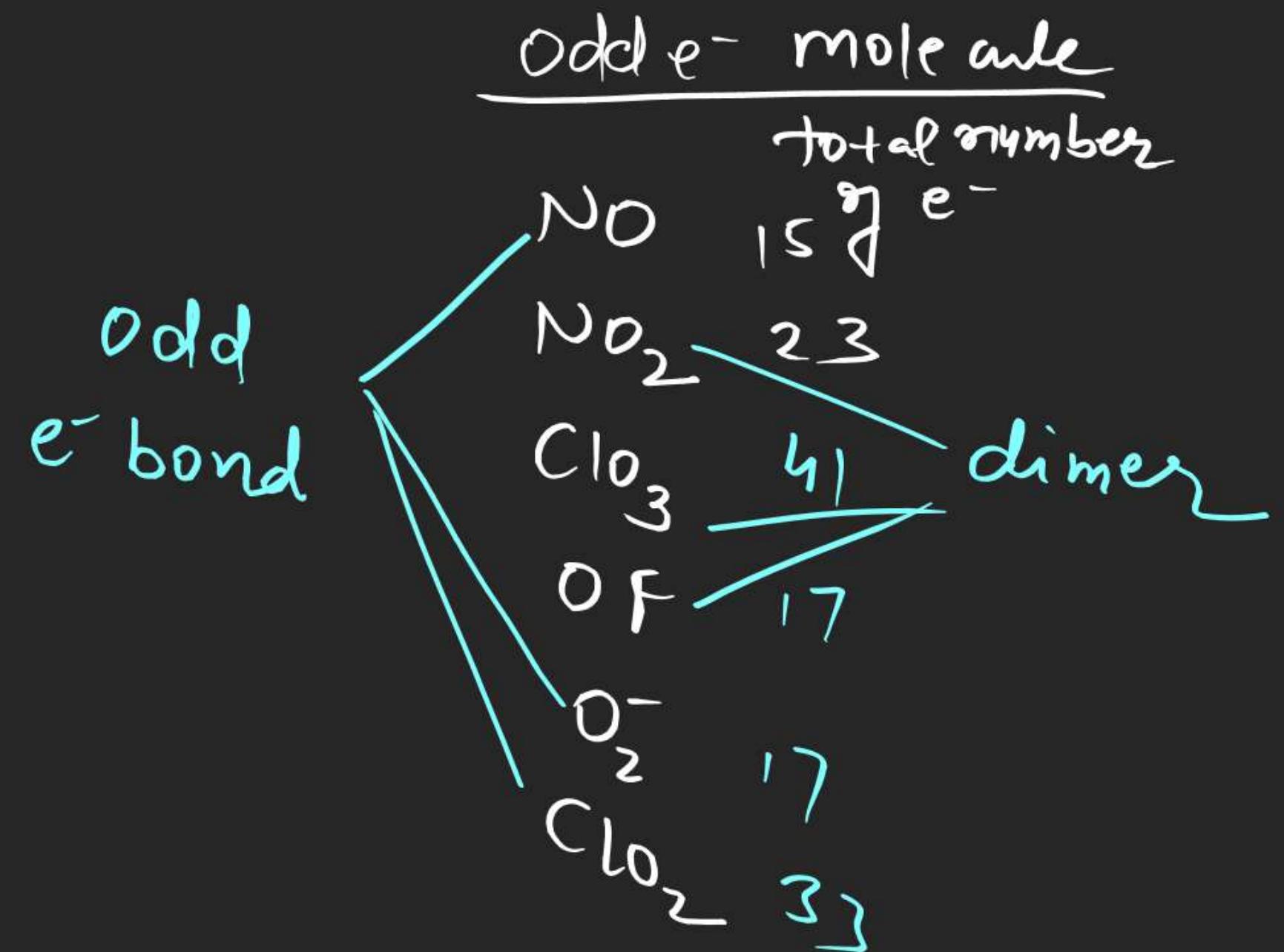


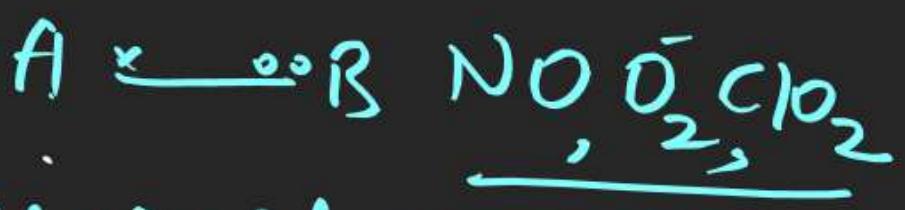
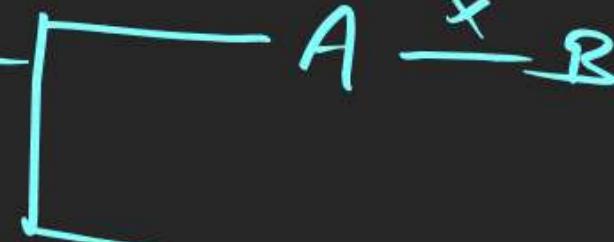
# CHEMICAL BONDING





type of odd e<sup>-</sup> bond

example  $\text{H}_2^+$   $\text{Na}^+$



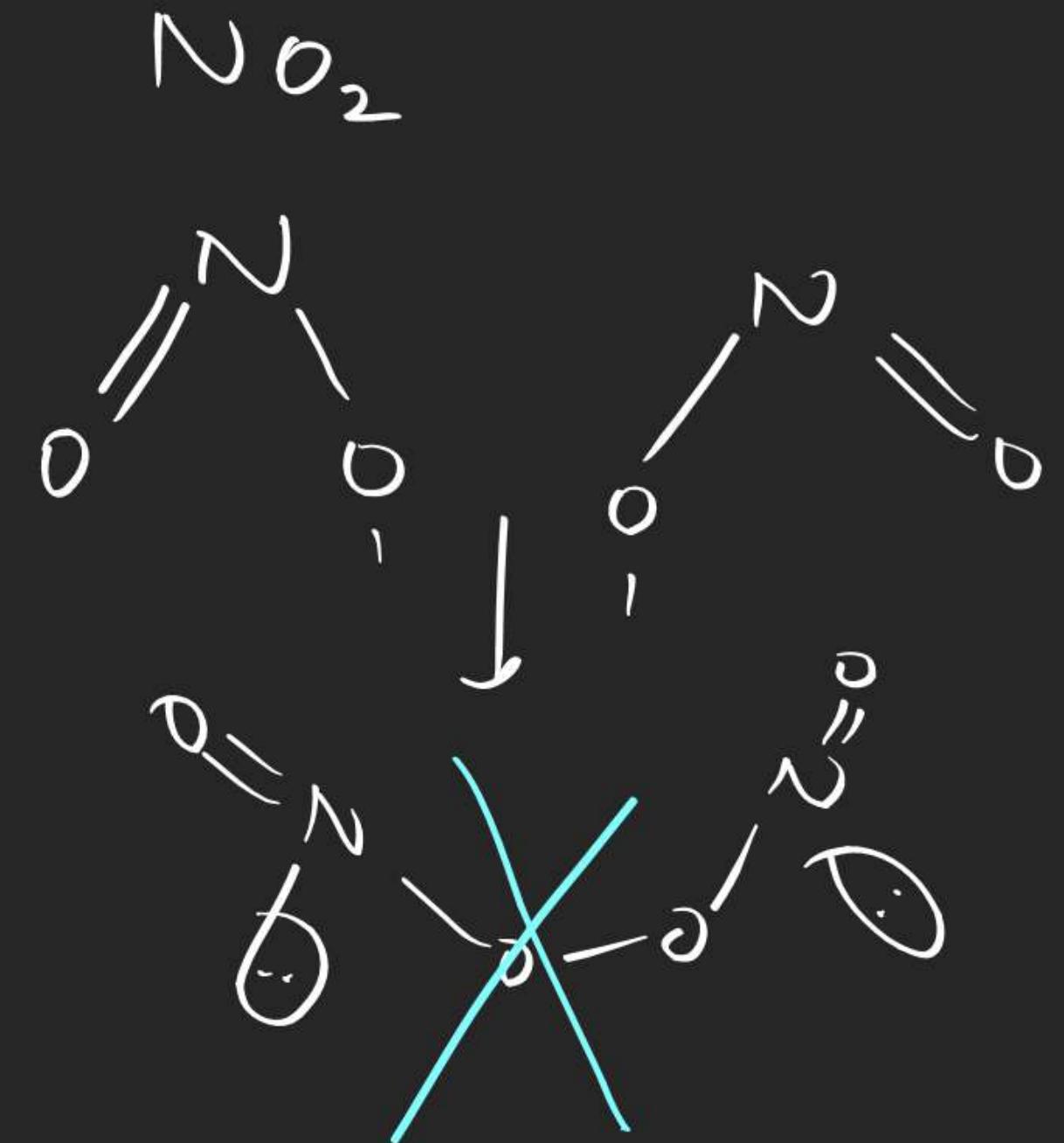
Bond order of simple covalent bond is one  
 bond order of odd e<sup>-</sup> bond is  $\frac{1}{2}$   
 all odd e<sup>-</sup> molecules are paramagnetic

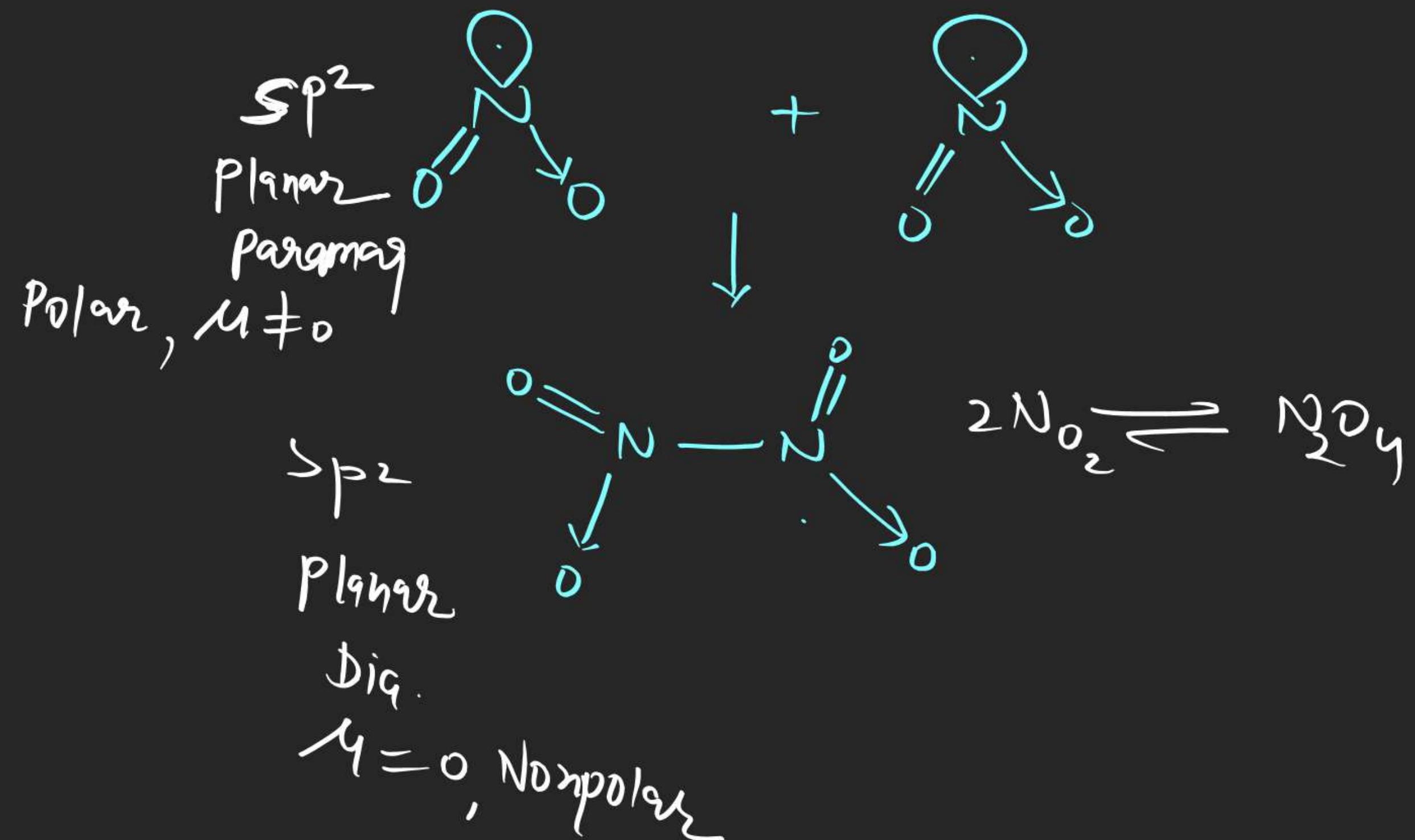


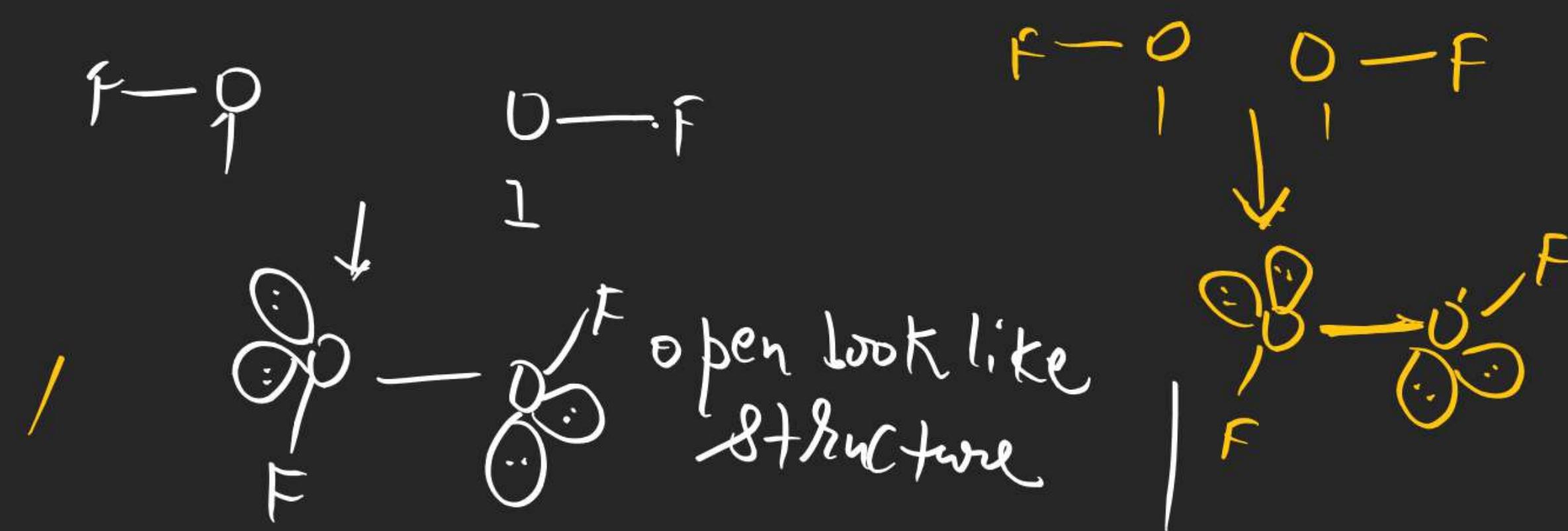
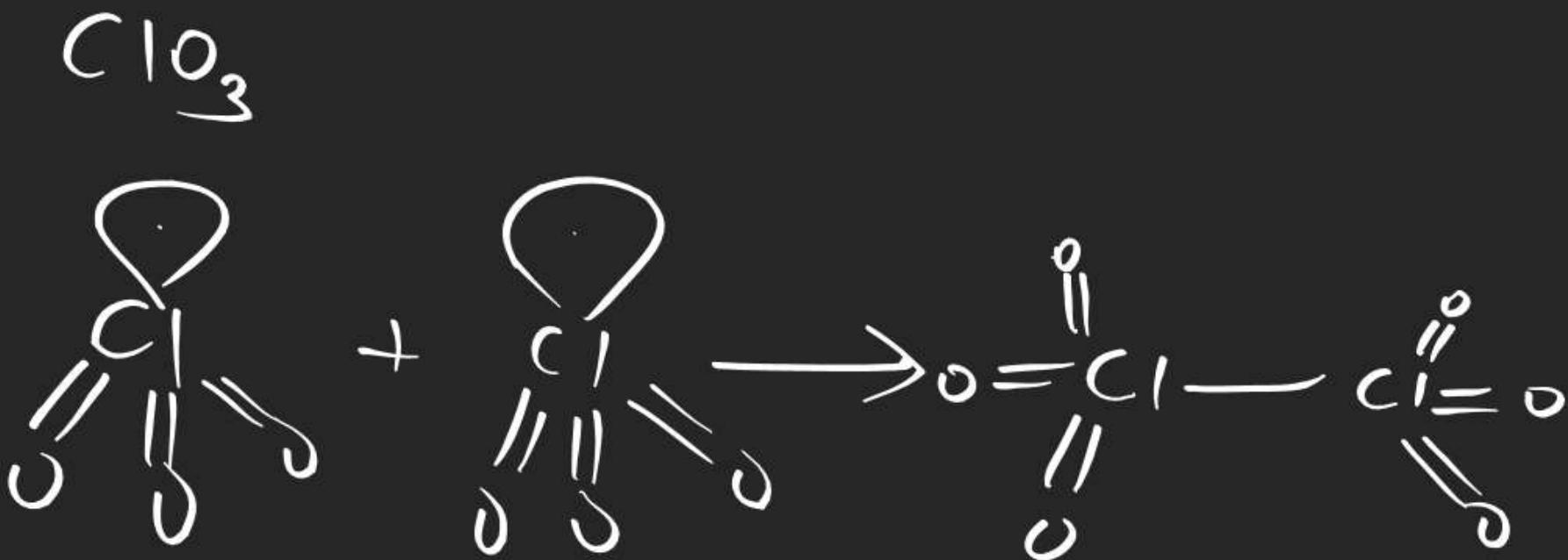
$$\begin{aligned}B.O &= 1 + 1 + 0.5 \\&= \underline{2.5}\end{aligned}$$

Paramagnetic.

One NO has loose dimer why?  
because of odd e<sup>-</sup> bond.



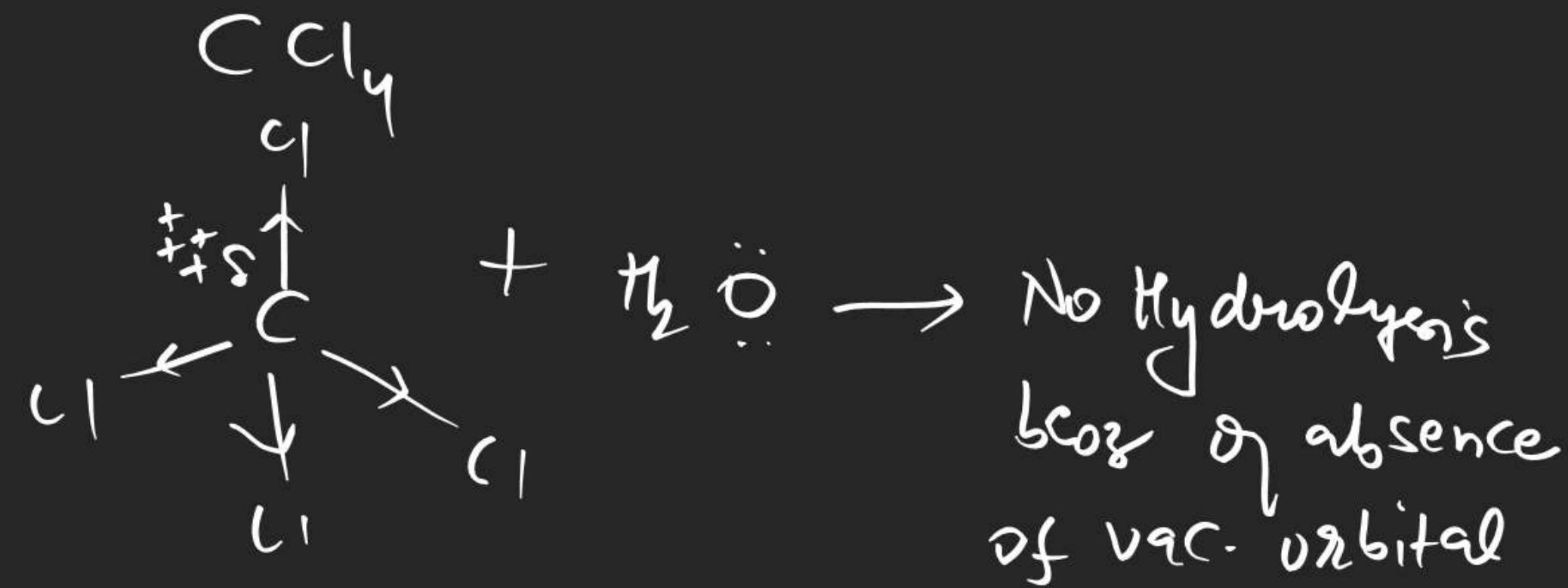


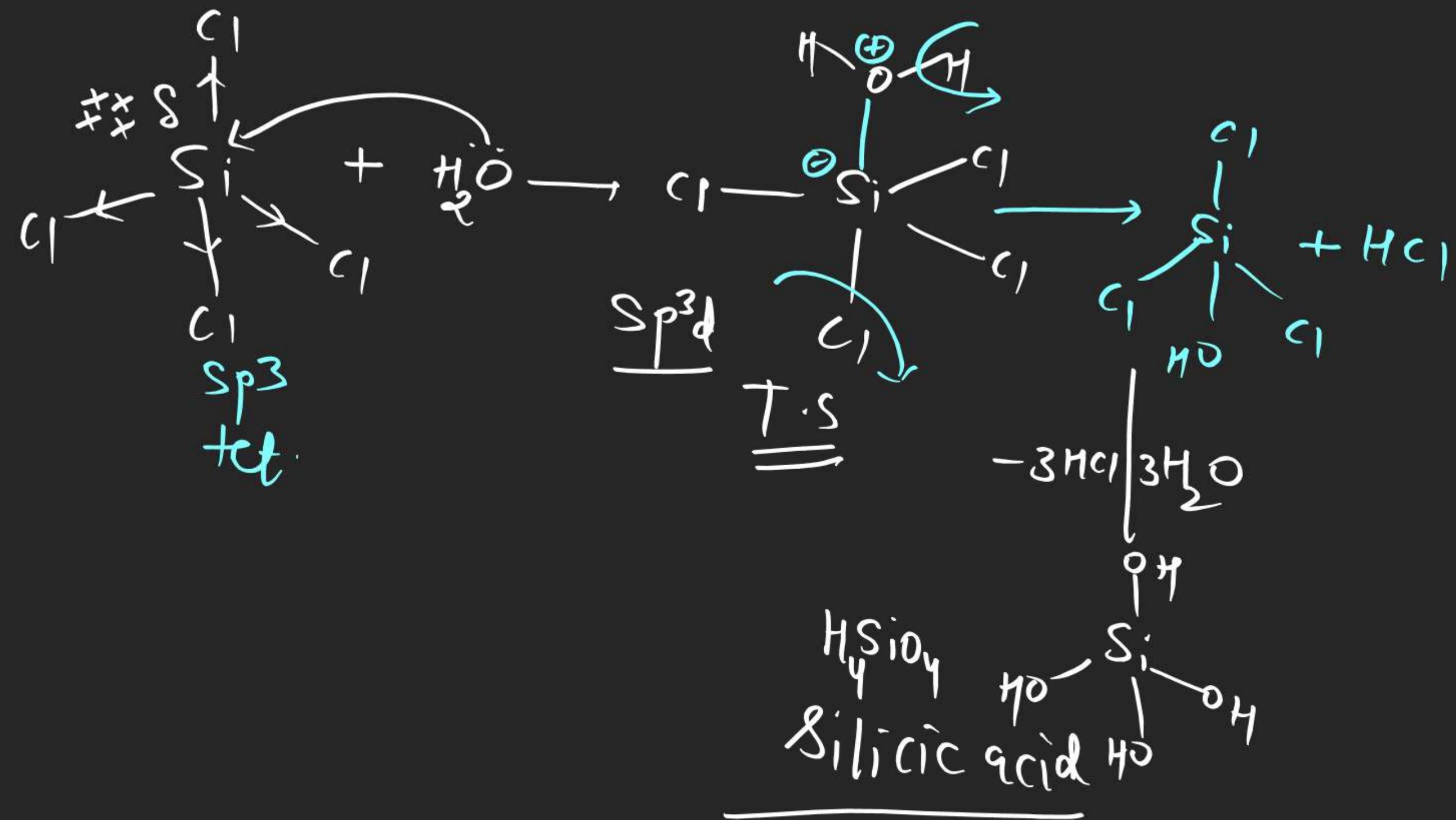


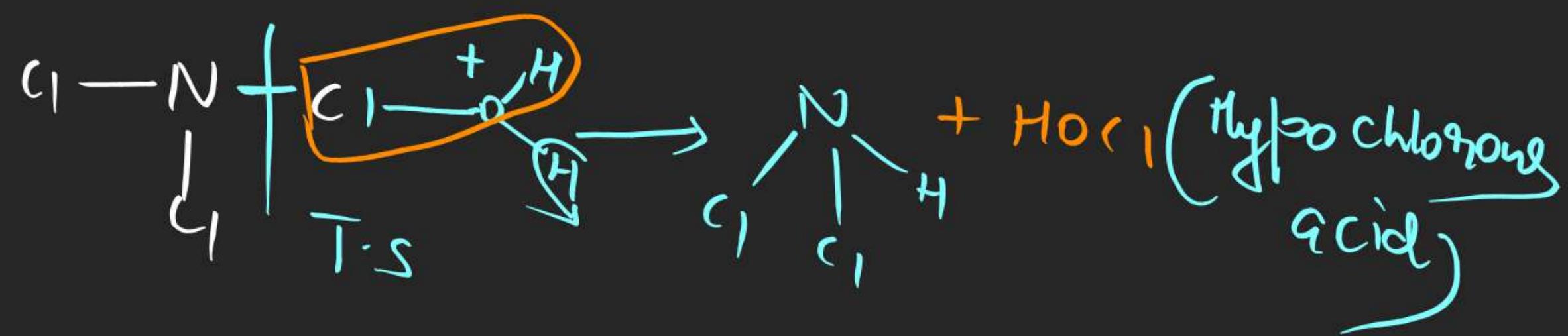
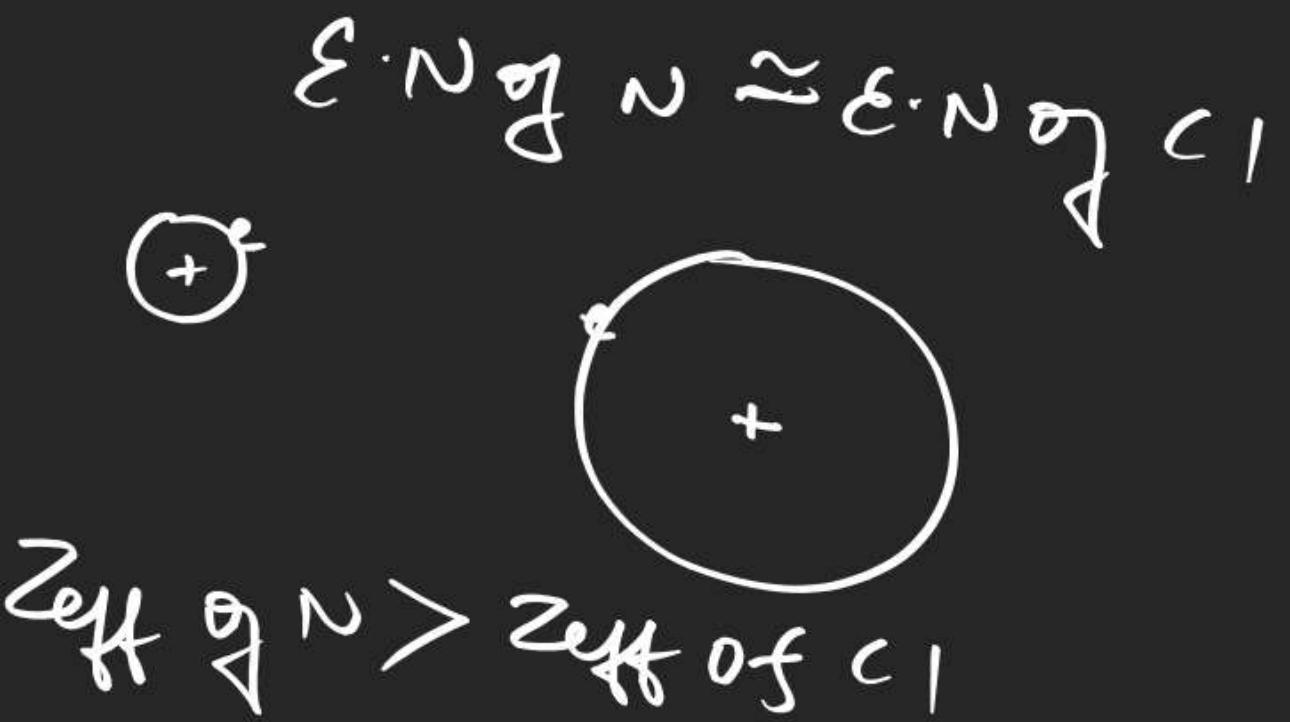
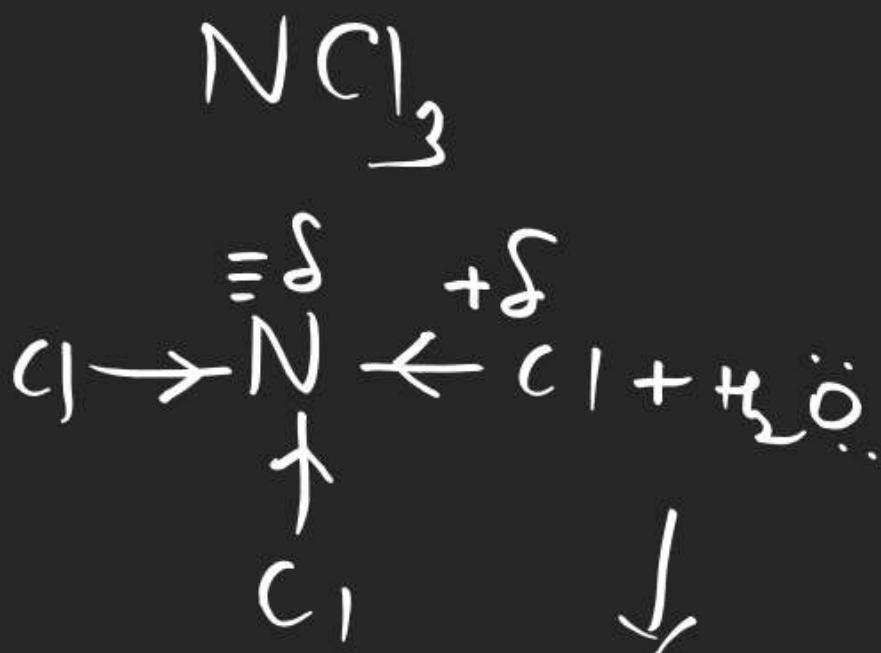
## Hydrolysis

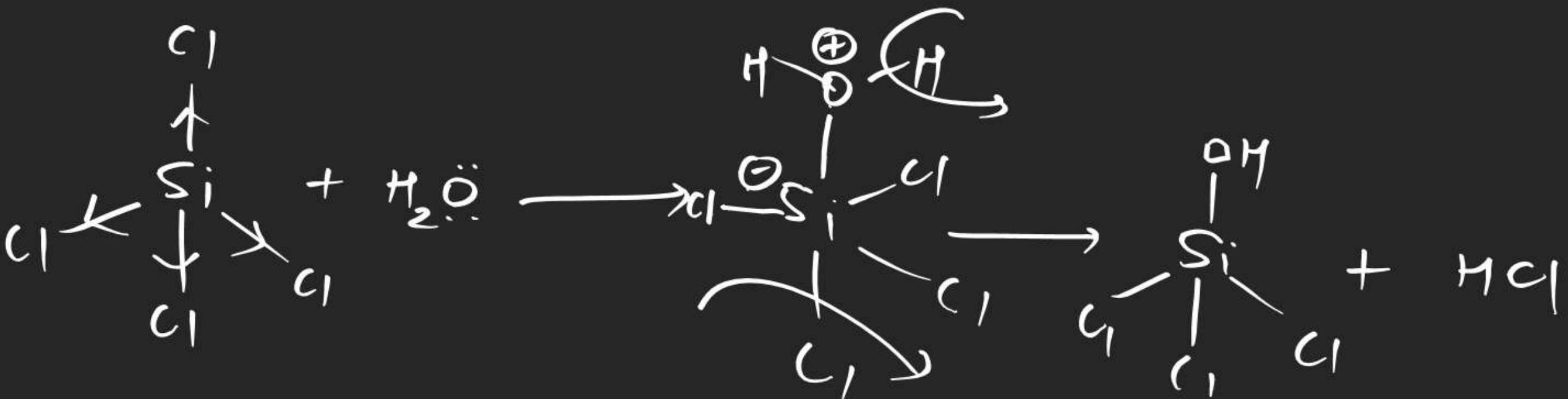
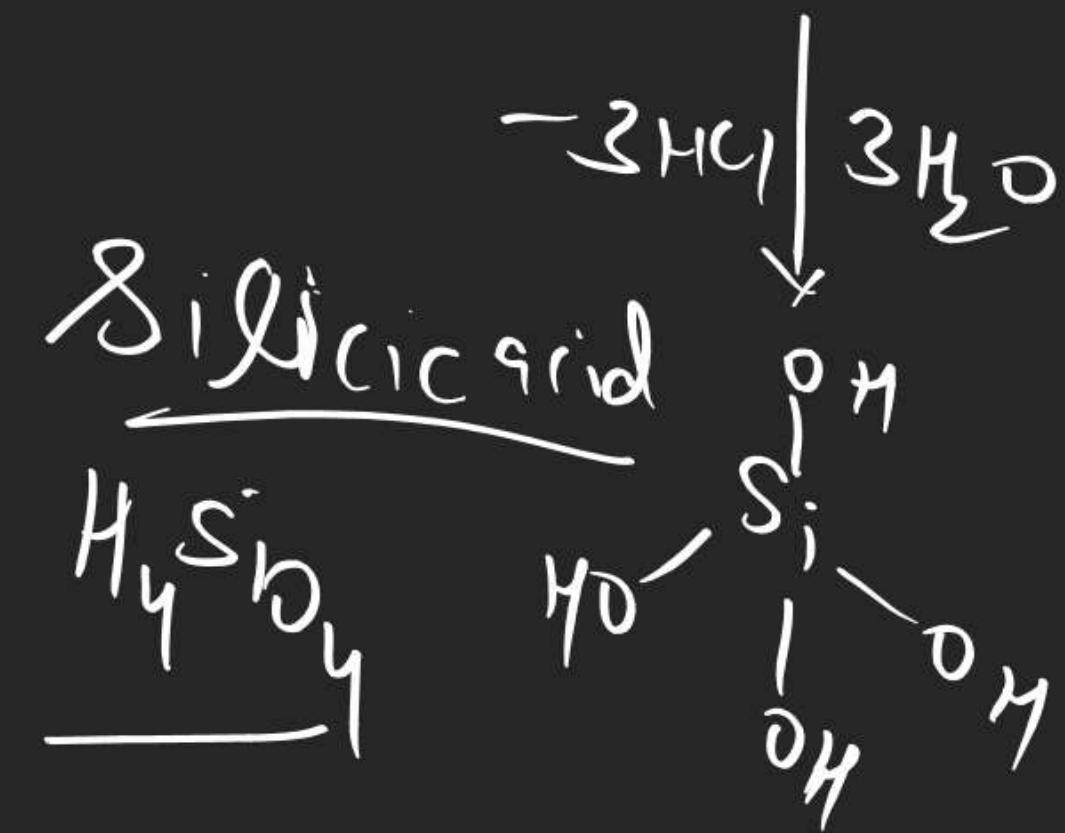
### Condition of Hydrolysis

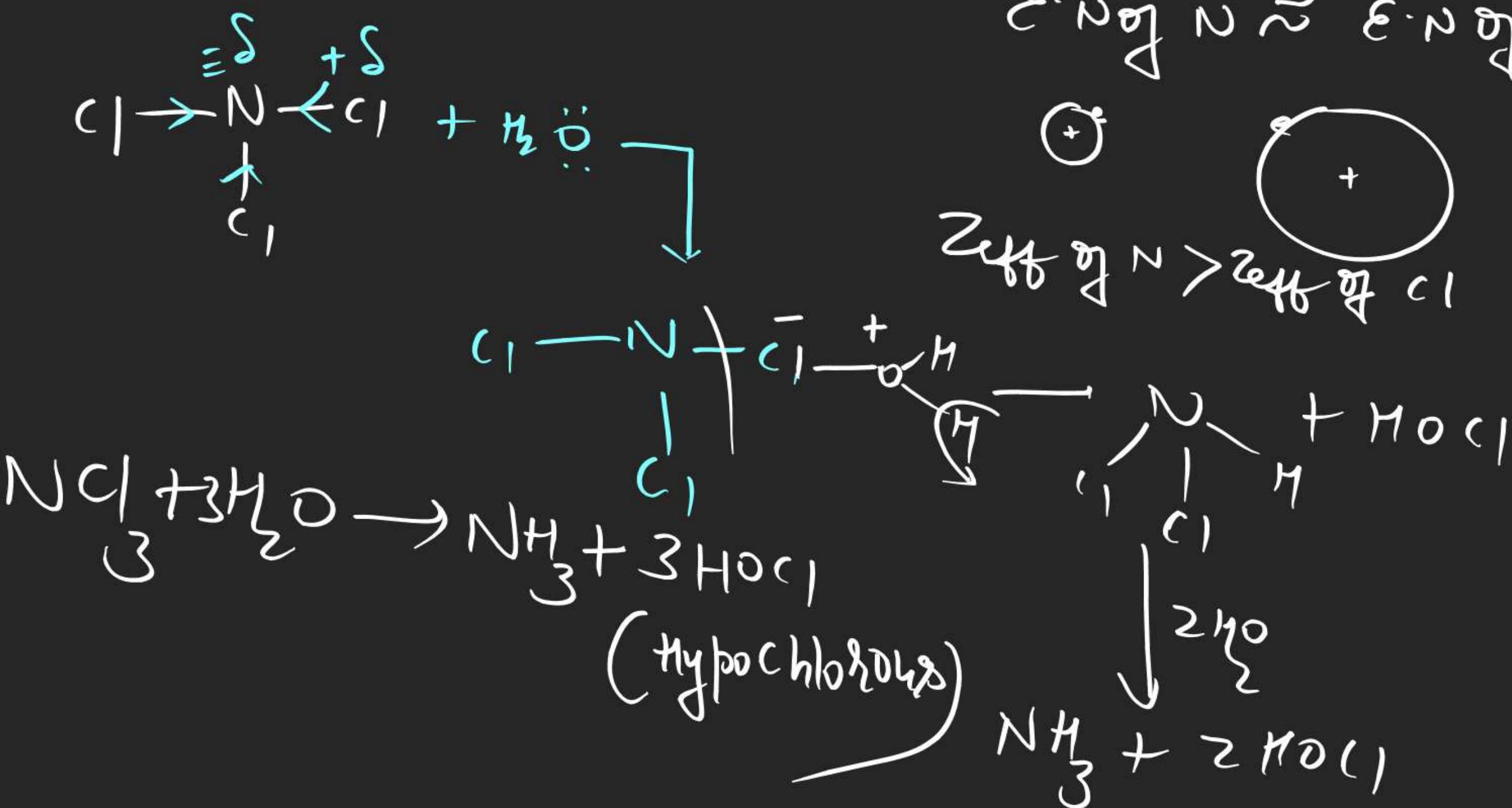
- ① Positive charge and v.a.c. orbital should be present on same atom
- ② Steric crowding min.







 $A \rightarrow B$ or  $A - B$ 

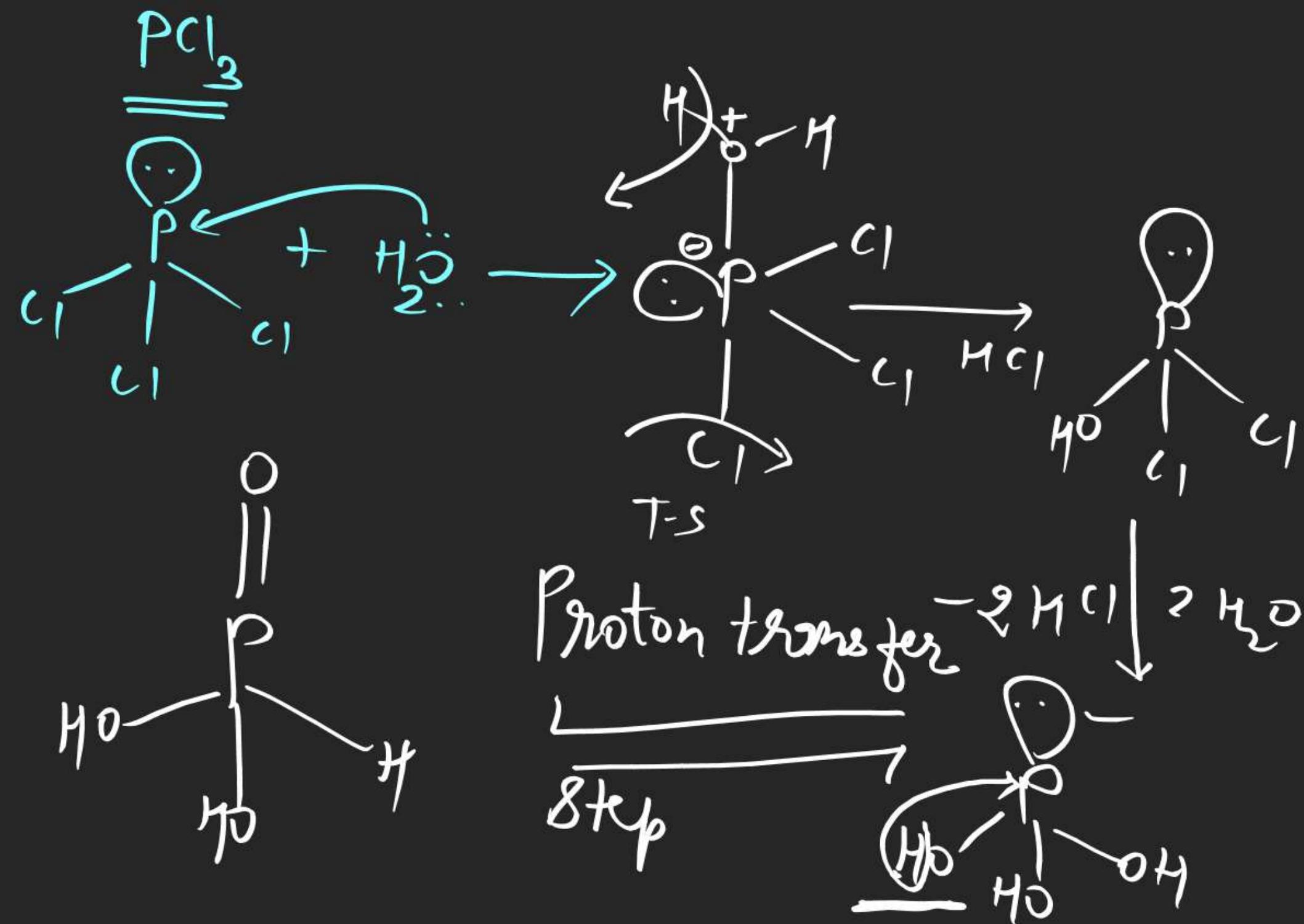


H<sub>3</sub>O<sup>+</sup>H<sub>3</sub>SiO<sub>4</sub>H<sub>3</sub>P<sub>2</sub>O<sub>7</sub>

basicity  $\Rightarrow$  number of ionisable Hydrogen

basicity  $\propto$  number of hydrogen

Hypophosphorous acid	$\text{H}_3\text{PO}_2$	1
Phosphorous acid	$\text{H}_3\text{PO}_3$	2
Pyrophosphorous acid	$\text{H}_4\text{P}_2\text{O}_7$	2
Boric acid	$\text{H}_3\text{BO}_3$	1



## Condition of Proton transfer step

$$(2P_{\pi} - 2P_{\pi})(2P_{\pi} - 3d_{\pi})(2P_{\pi} - 3P_{\sigma})$$

①  $P = O > P - O$

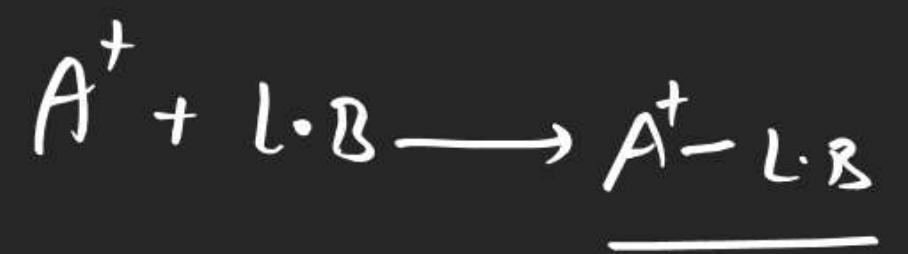
(B·D·E)

② atom should have 1. p

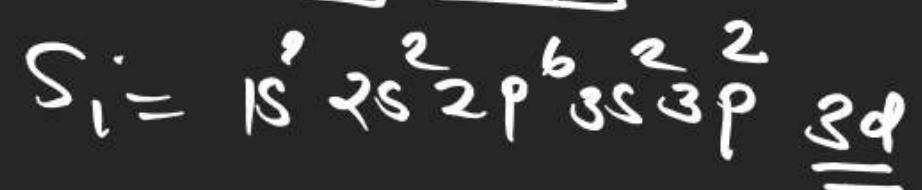
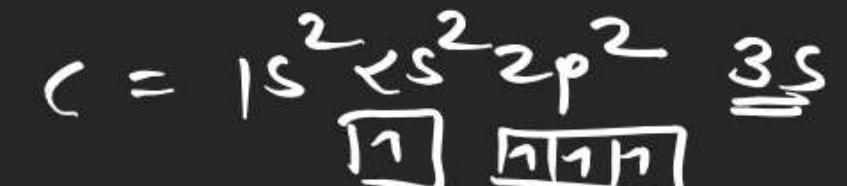
③ acidic Hydrogen should be present

$S_N^1$ 

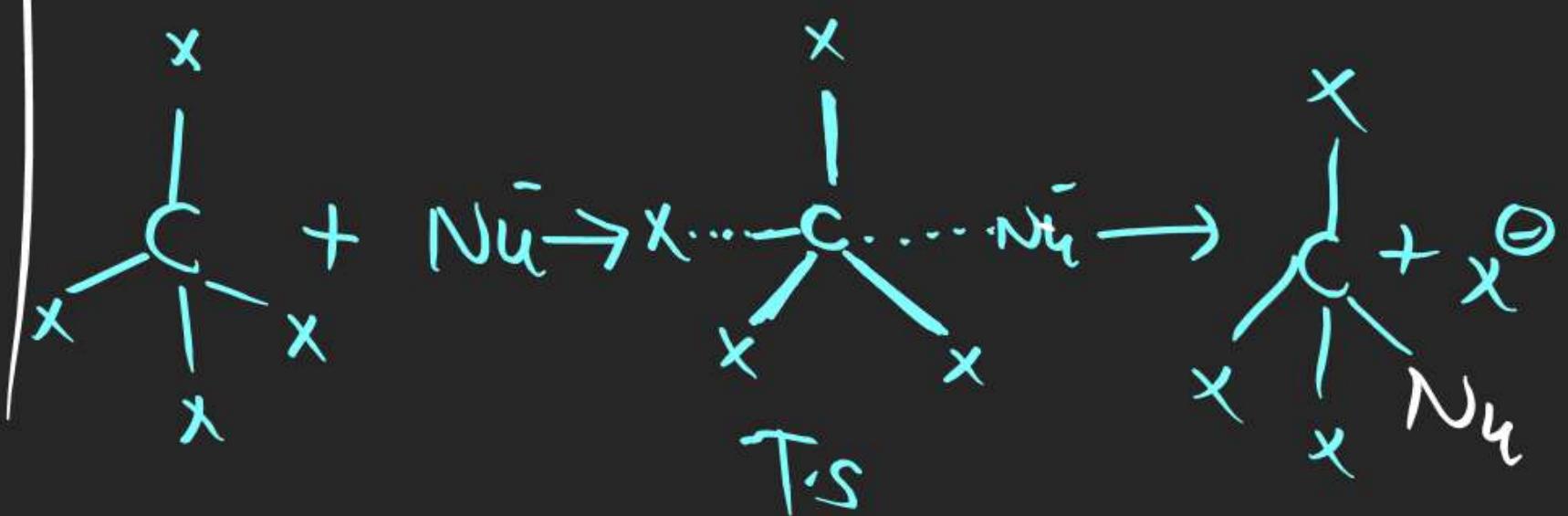
two step reaction  
cation and anion formed

 $S_N^2$ 

one step reaction



T.S



$O_2^-$  (Superoxide)



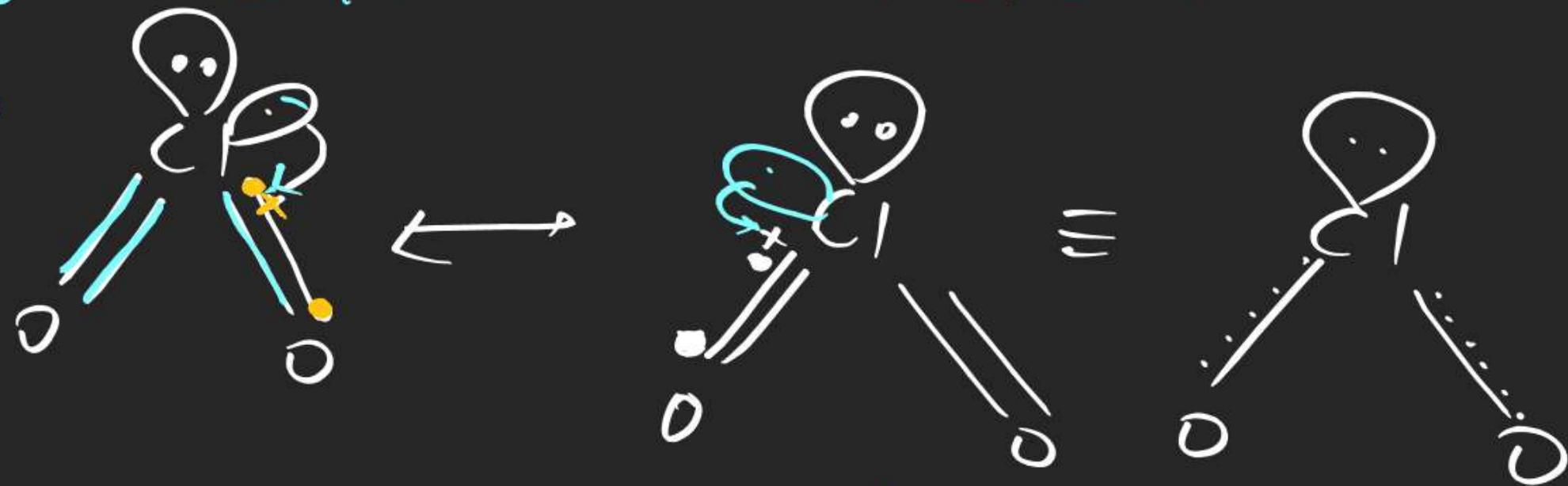
$$\begin{aligned}B.O &= 1 + 0.5 \\&= \underline{1.5}\end{aligned}$$

odd  $e^-$  of  $\text{ClO}_2$  present in 3d orbital

Planar,  $\text{SP}^2$

$$\mu \neq 0$$

Polar



$$\beta_{\text{O}} = \frac{3.5}{2} = 1.75$$

$$1.5 < \beta_{\text{O}} < 2$$

Note  $\Rightarrow$   $\text{Cl}-\text{O}$  bond length  
identical

