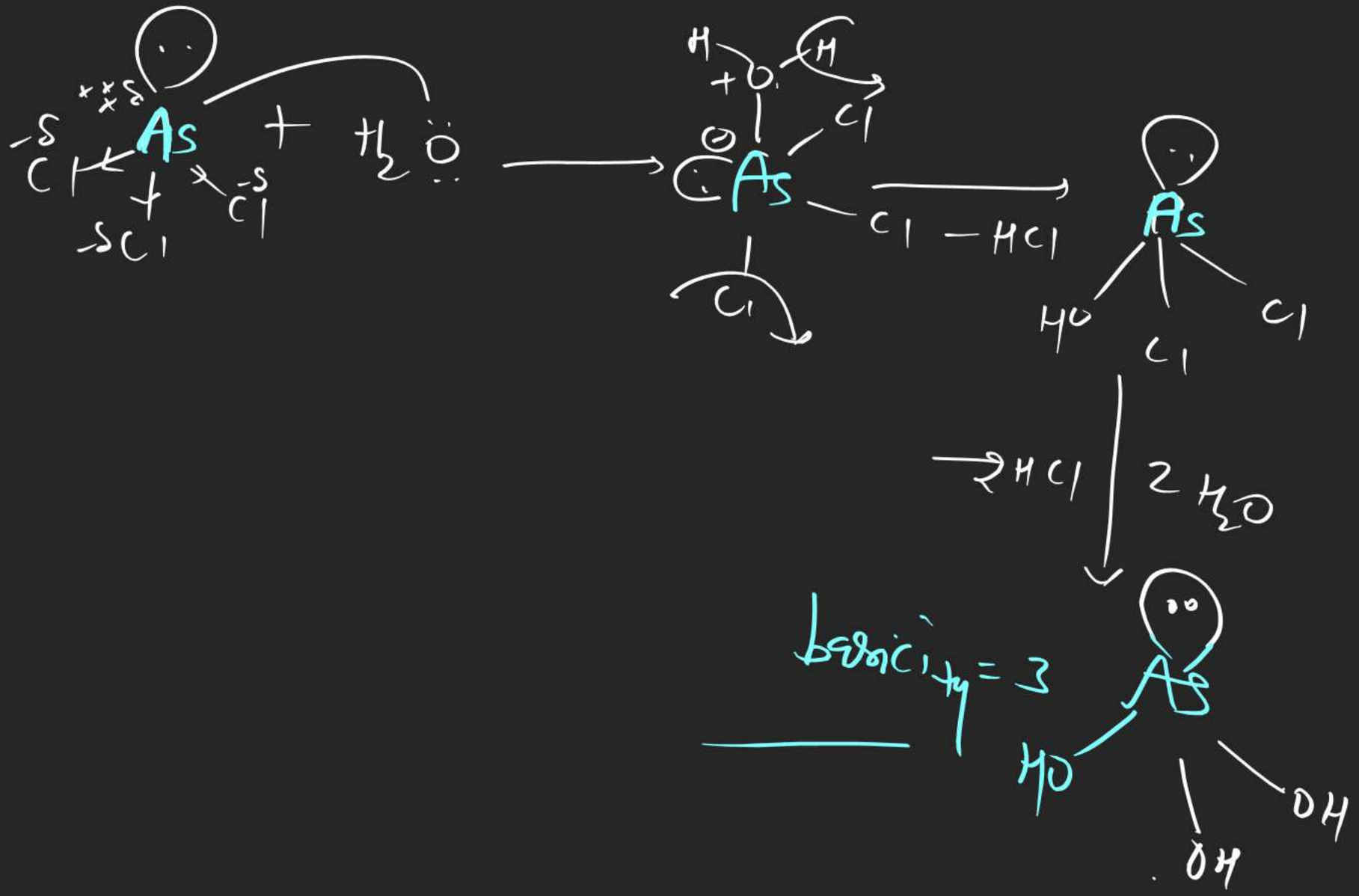
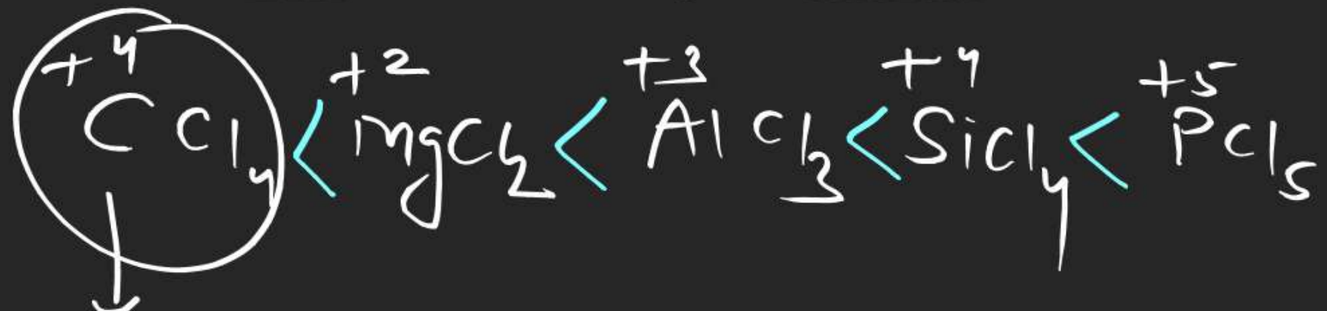
Nishant Jindal

CHEMICAL BONDING

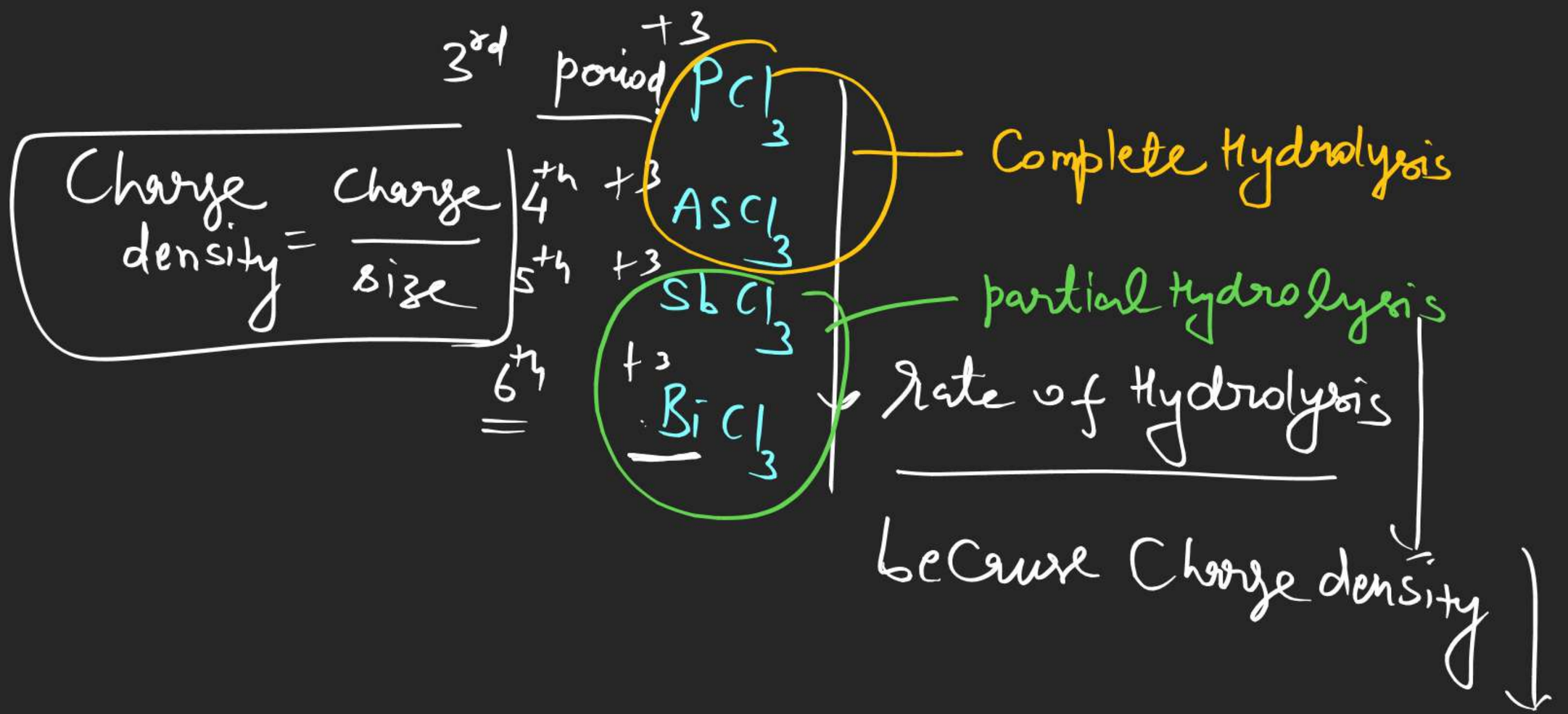


Rate of Hydrolysis

PYQ



no Hydrolysis due to absence of Vac. Orbital



$$BiCl_3 + H_2O \rightleftharpoons BiOCl + 2HCl$$

Bismuthyl Chloride

$$Bi^{+3} + H_2O \rightleftharpoons BiO^+ + 2H^+$$

Bismuthyl cation
(White turbidity)

$$SbCl_3 + H_2O \rightleftharpoons SbOCl + 2HCl$$

Antimonyl Chloride

$$Sb^{+3} + H_2O \rightleftharpoons SbO^+ + 2H^+$$

Antimonyl cation
White turbidity

Key point

N < +3 HNO_2 ; +5 HNO_3

P < +3 H_3PO_3 ; +5 H_3PO_4

As < +3 H_3AsO_3 ; +5 H_3AsO_4

Te = +6 H_6TeO_6

B = +3 H_3BO_3

Si = +4 H_4SiO_4

S < +4 H_2SO_3 ; +6 H_2SO_4

Se < +4 H_2SeO_3 ; +6 H_2SeO_4

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$\overset{+5}{P_4S_{10}} + H_2O \longrightarrow H_3PO_4 + H_2S$

$\overset{+4}{SiCl_4} + H_2O \longrightarrow H_4SiO_4$

$\overset{+3}{PCl_3} + H_2O \longrightarrow H_3PO_3$

$\overset{+5}{PCl_5} + H_2O \longrightarrow H_3PO_4$

$\overset{+5}{POCl_3} + H_2O \longrightarrow H_3PO_4$

$\overset{+4}{SOCl_2} + H_2O \longrightarrow H_2SO_3$

$\overset{+6}{SO_2Cl_2} + H_2O \longrightarrow H_2SO_4$

$\overset{+4}{SF_4} + H_2O \longrightarrow H_2SO_3$

$\overset{+6}{SOF_4} + H_2O \longrightarrow H_2SO_4$

$\overset{+3}{P_4O_6} + H_2O \longrightarrow H_3PO_3$

$\overset{+5}{P_4O_{10}} + H_2O \longrightarrow H_3PO_4$

Que find the number of water molecule for Complete hydrolysis of P_4O_{10}

+5

$$P_4O_{10} + 6H_2O \longrightarrow 4H_3PO_4$$

Ans find the number of water for complete Hydrolysis of P_4O_6

$SOF_4 + H_2O \longrightarrow$

$x + (-2) + 4(-1) = 0$

$x = +6$

$P_4O_6 + 6H_2O \longrightarrow 4H_3PO_3$

$4x + 6(-2) = 0$

$4x = 12$

$x = 3$

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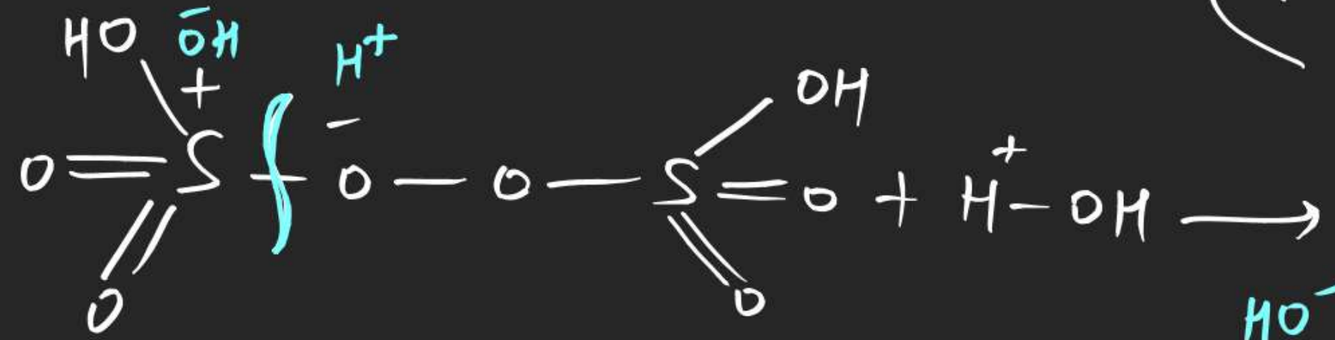
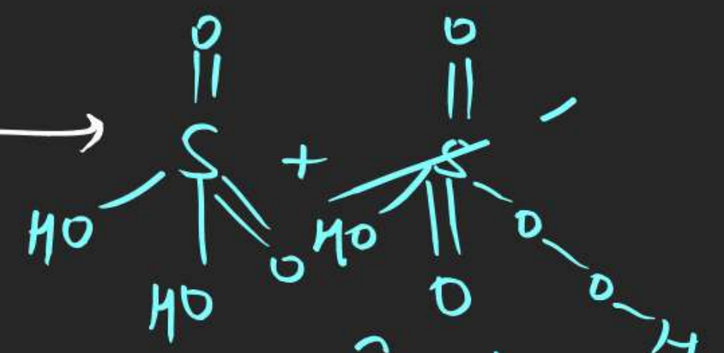
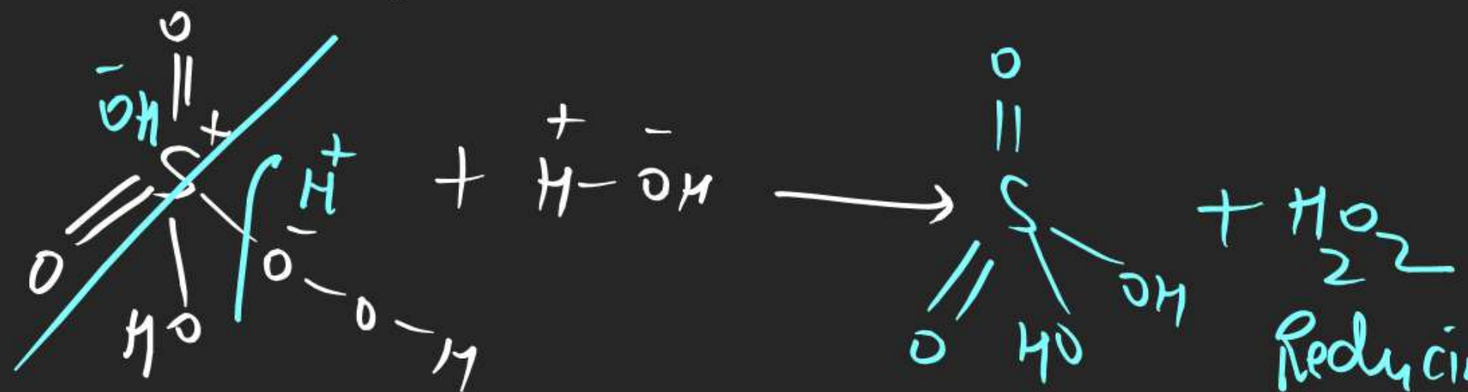
Hydrolysis of Marshall's acid ($H_2S_2O_8$)

(Peroxodisulphuric acid)





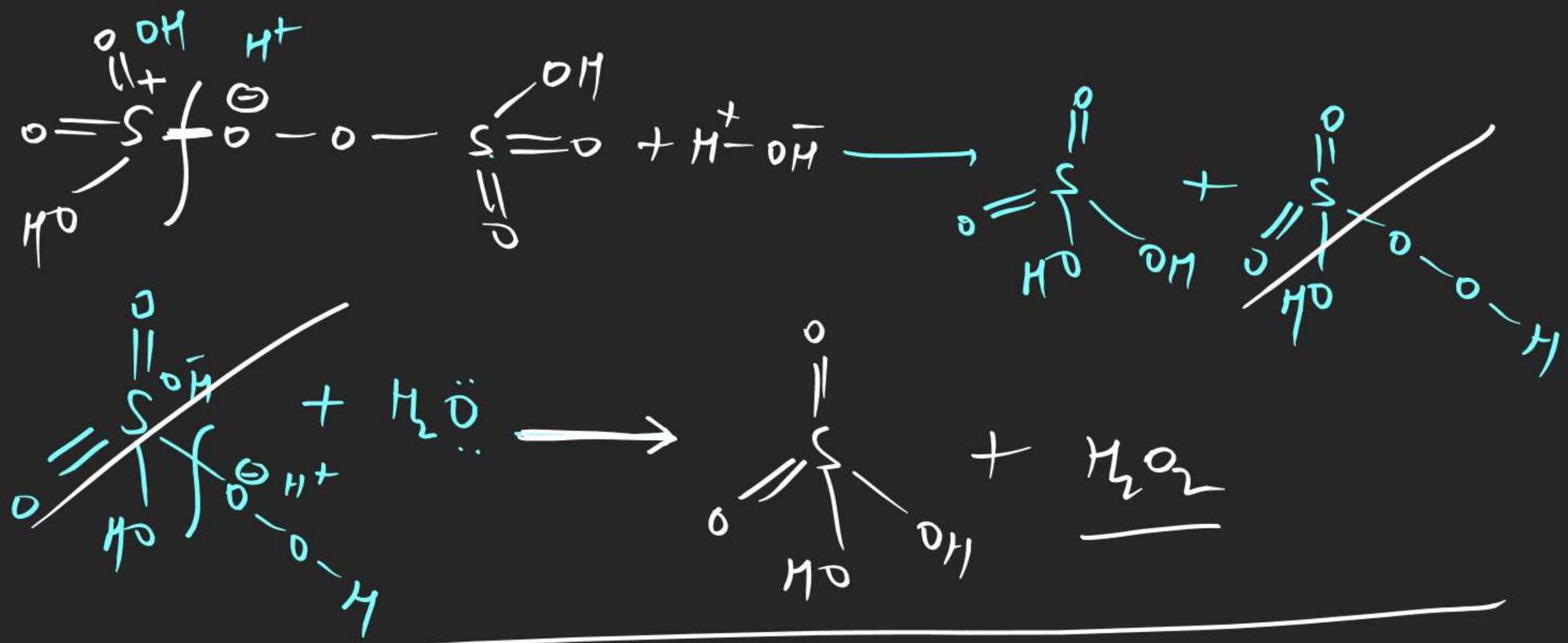
Caro's acid



Peroxomonosulphuric acid

Reducing agent as well as O-A

$$H_2S_2O_8 + 2H_2O \longrightarrow 2H_2SO_4 + H_2O_2$$



$$H_2S_2O_8 + H_2O \longrightarrow 2H_2SO_4 + H_2O_2$$

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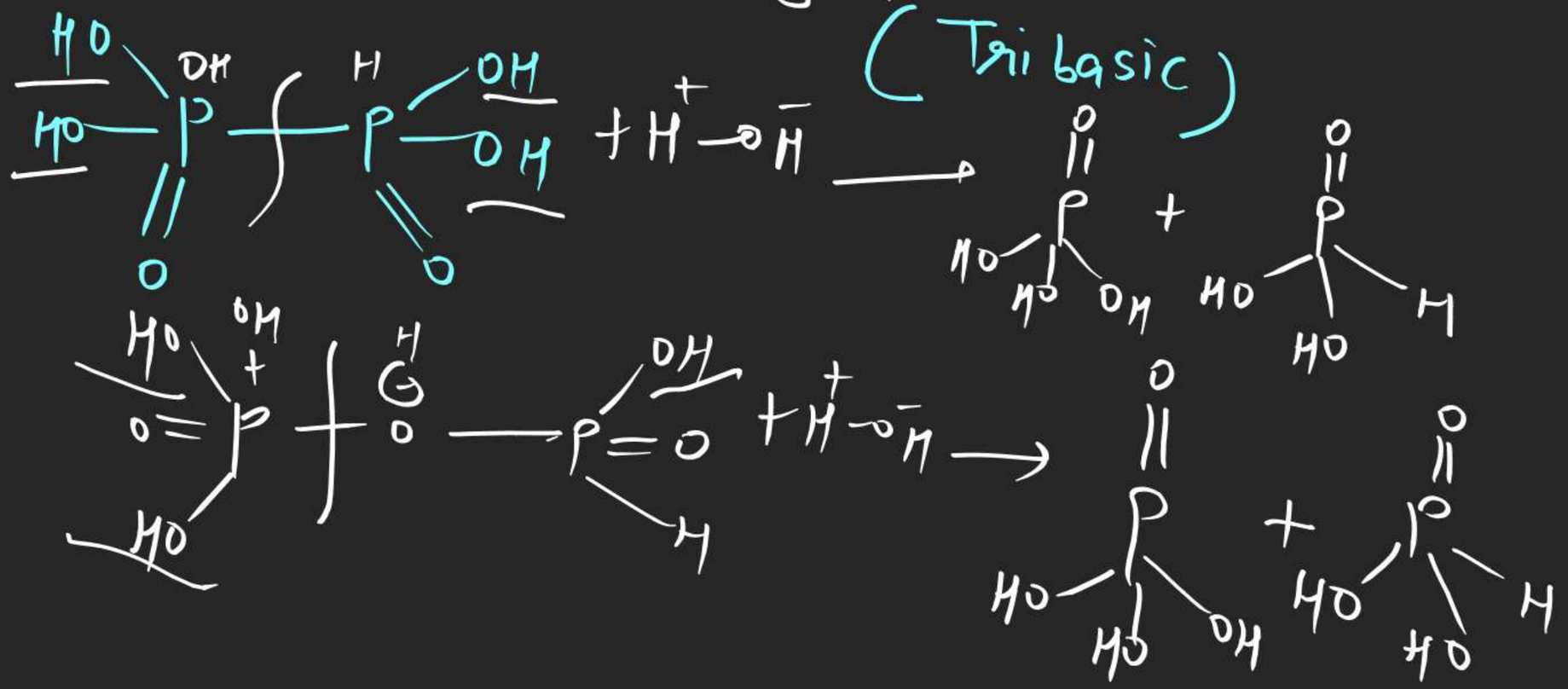
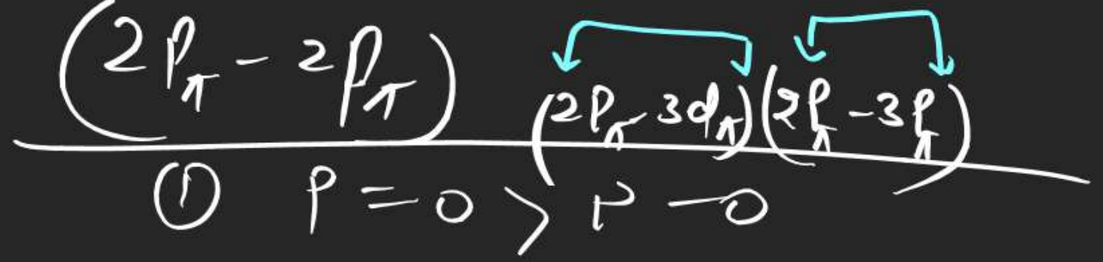
(tetrabasic)

$H_4P_2O_6$ — Hypophosphoric acid

isoHypophosphoric acid



Condition of proton transfer step.



(B·D·E)

② Central atom should have l·p

③ acidic hydrogen should be present

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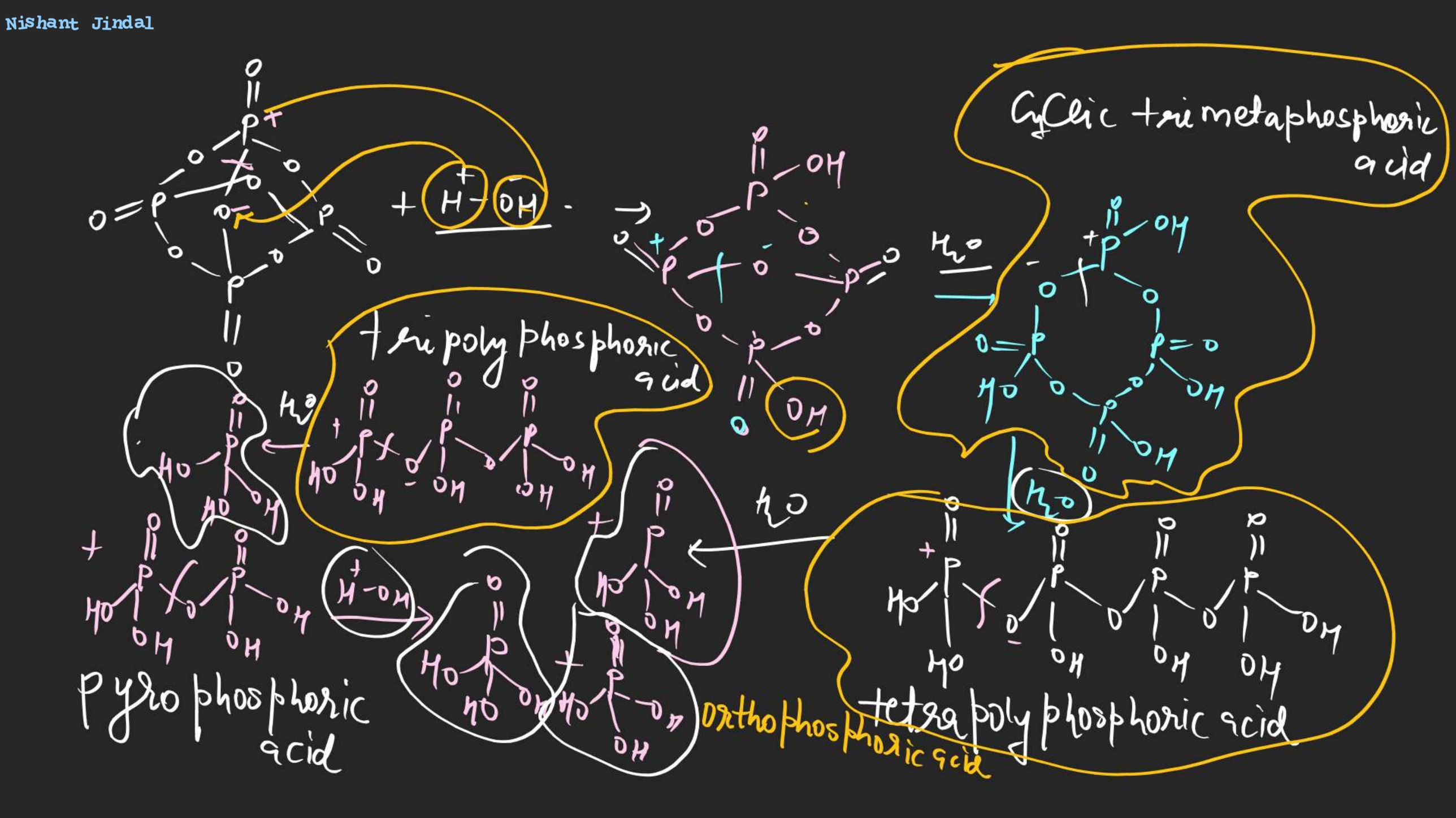

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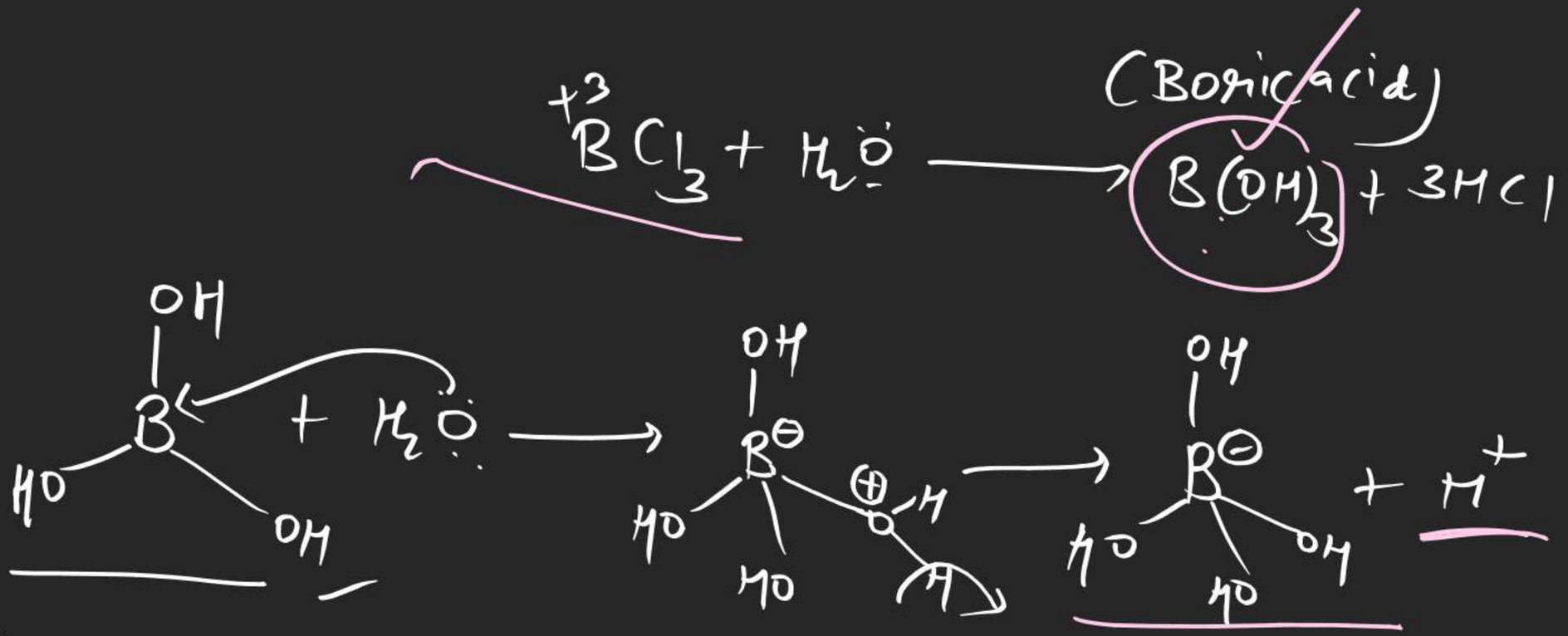

Note :→ Boric acid is a weak monobasic lewis acid.
it is not a proton acid because it accepts l·p