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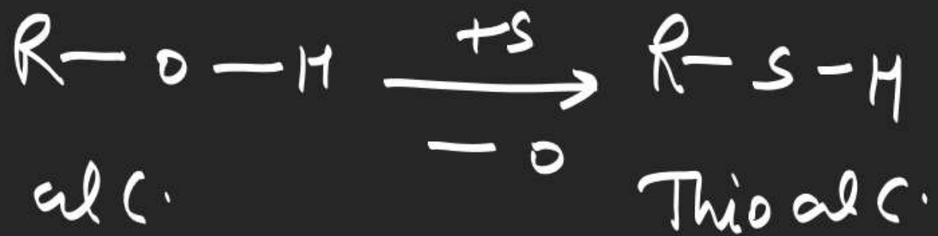
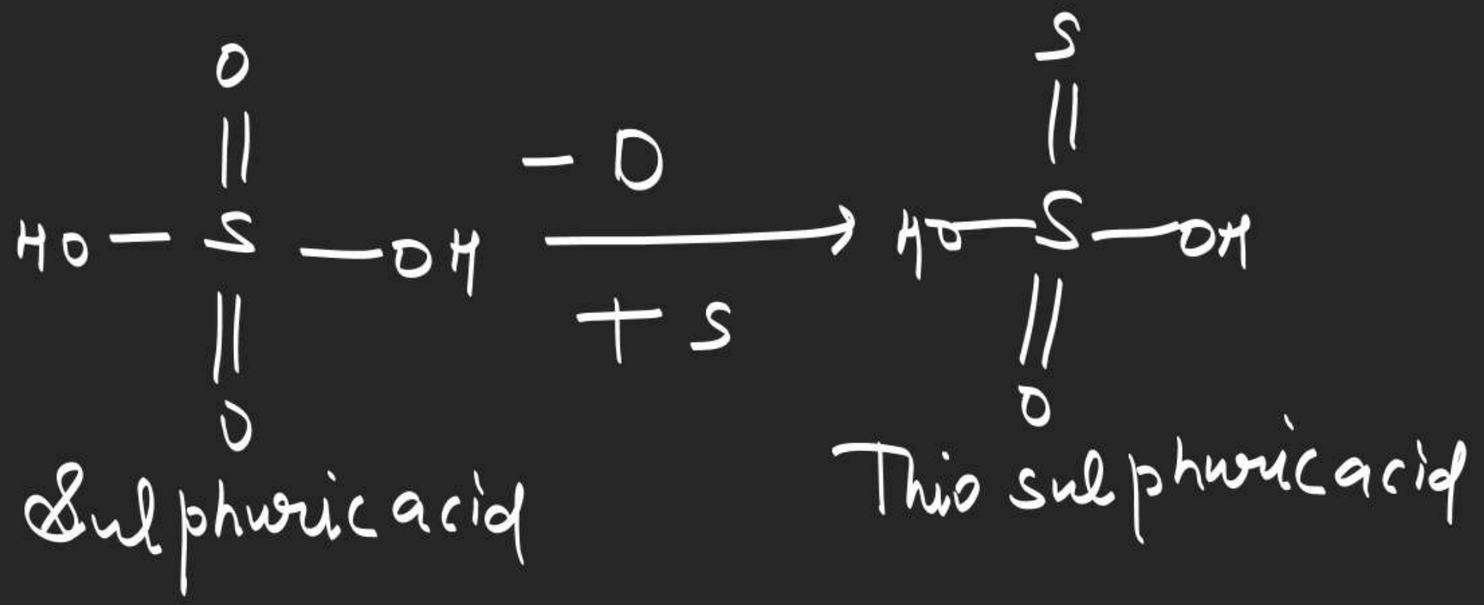
Thio ⇒





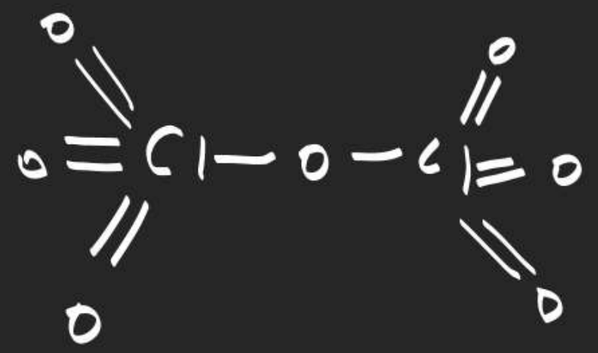
Structure of molecule

if C.A = 2

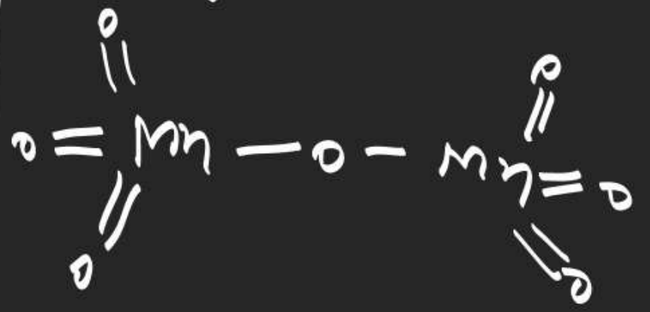
S.A odd number

then linkage = X–O–X

Cl_2O_7



Mn_2O_7



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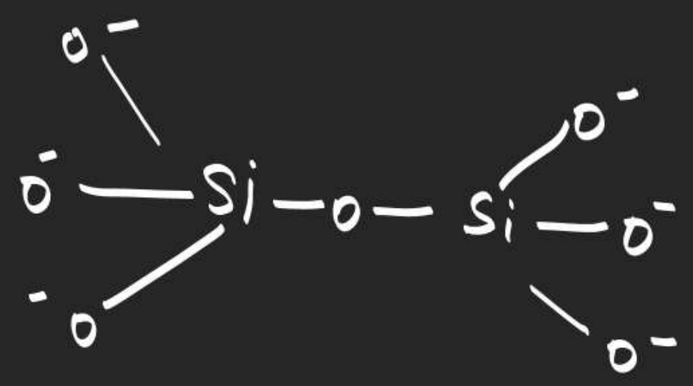
$Si_2O_7^{-6}$



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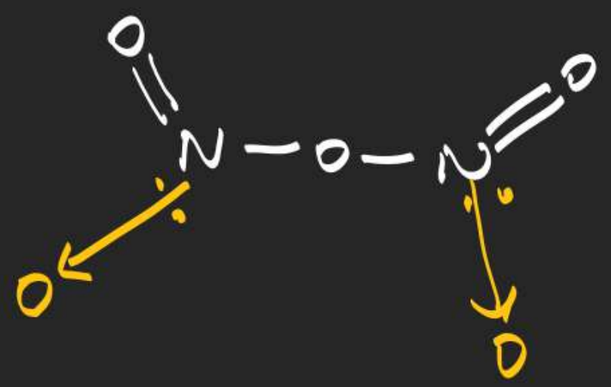
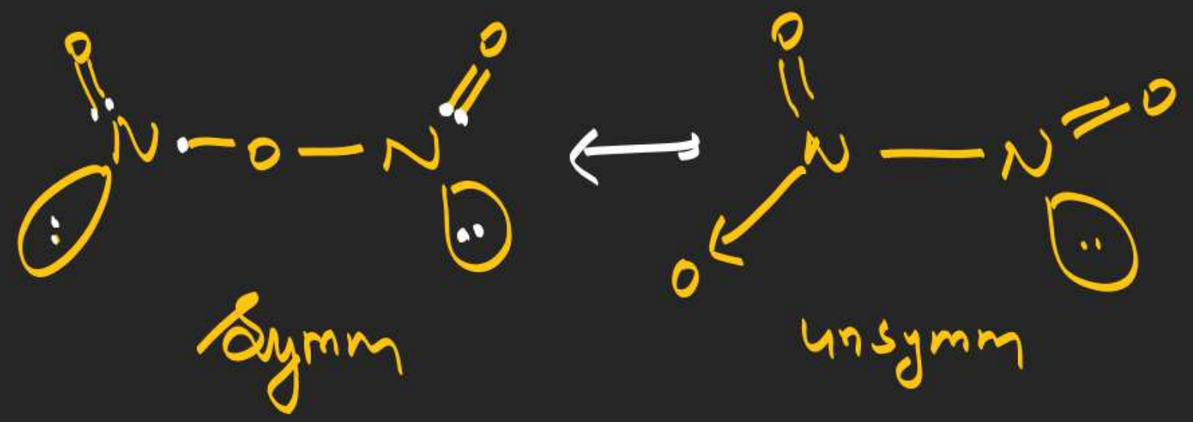
N_2O_5



$N = 1s^2 2s^2 2p3$ 3s

↑↓ ↑ ↑ ↑

N_2O_3



symm

unsymm

if C.A two

and S.A even number

then linkage = X — X [When oxidation state of C.A in Range]

X—o—o—X [When oxidation state of C.A is out of Range]

Oxidation state Range = $(n-8)$ to n

n = no of val. e⁻

Cl = −1 to +7

P = −3 to +5

S = −2 to +6

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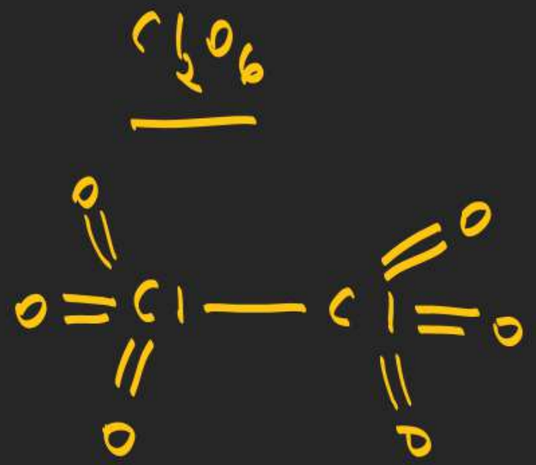


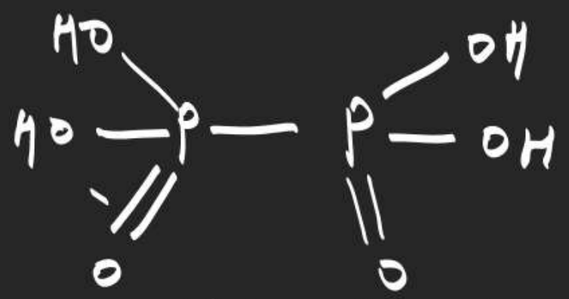
$H_4P_2O_6$ — Hypo phosphoric acid (tetra basic)

$H_4P_2O_6$ — iso Hypo phosphoric acid (tri basic)

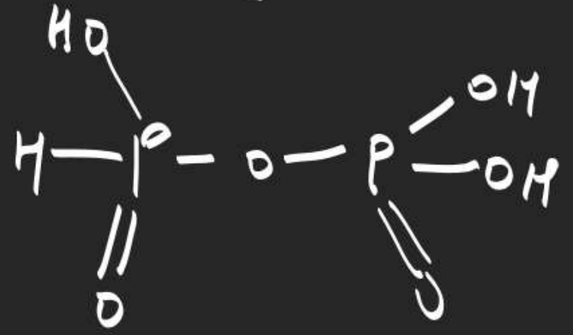
$2H_3PO_4 \xrightarrow{-H_2O} H_4P_2O_7 \xrightarrow{-O} H_4P_2O_6$ (Hypophosphoric)

$2H_2SO_4 \xrightarrow{-H_2O} H_2S_2O_7 \xrightarrow{-O} H_2S_2O_6$ (Hypo sulphuric acid)

$H_4P_2O_6$

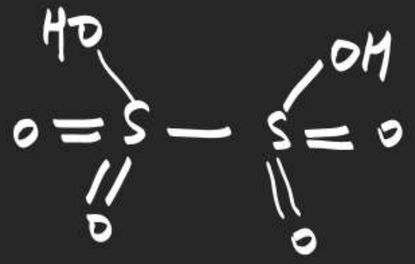


Hypophosphoric acid



isoHypophosphoric acid

$H_2S_2O_6$



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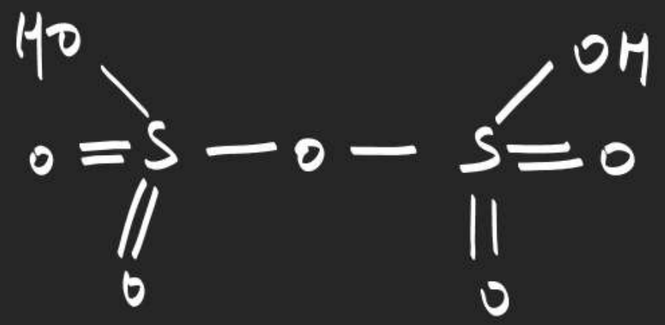
$H_2S_2O_7$ [pyrosulphuric acid]
(Oleum)



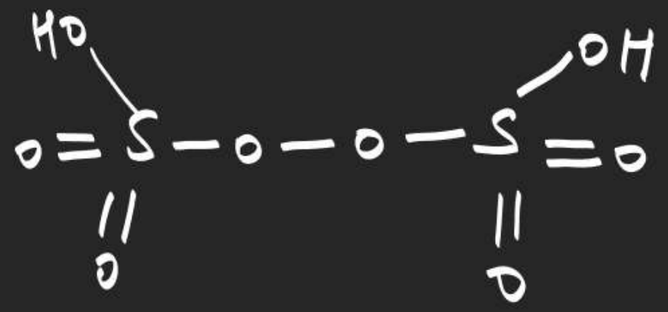
$H_2S_2O_8$ (Peroxy disulphuric acid)

Marshall's acid

$2 + 2x + 8(-2) = 0$

$x = +7$

out of Range



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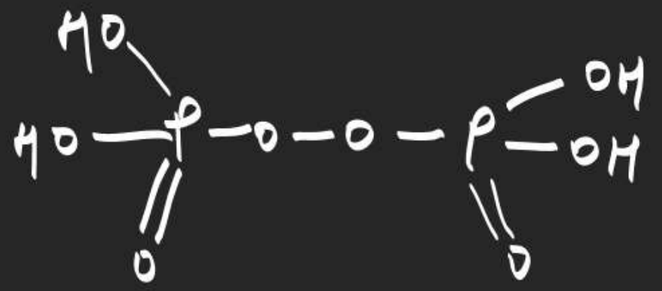
$H_4P_2O_8$ (peroxo di phosphonic acid)



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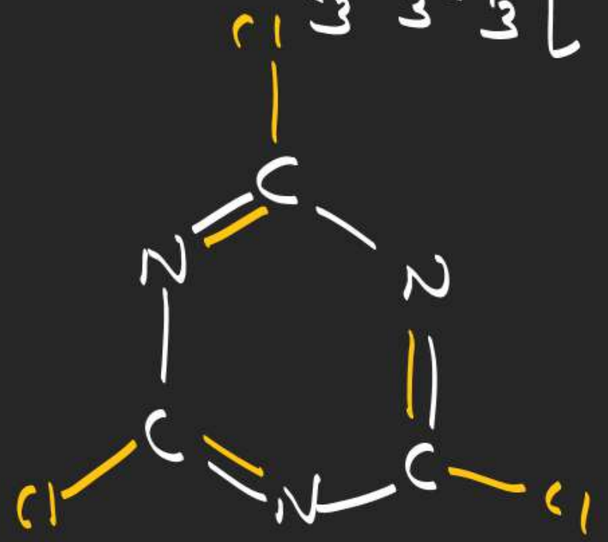
Cyclic Structure :-

C.A more than two and S.A should be equal or greater than the C.A

$C_3N_3Cl_3$ [Cyanuric trichloride]



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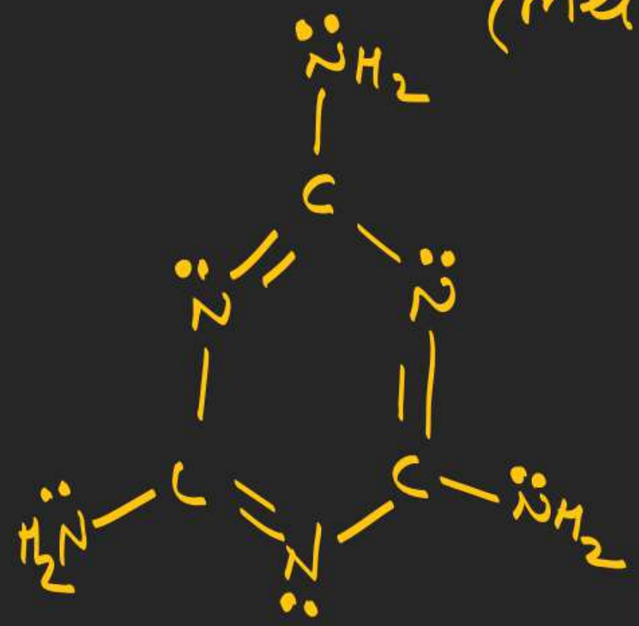
$C_3N_3(NH_2)_3$ Cyanuric tri amine (Melamine)



Find the number of l.p in melamine

Ans = 6

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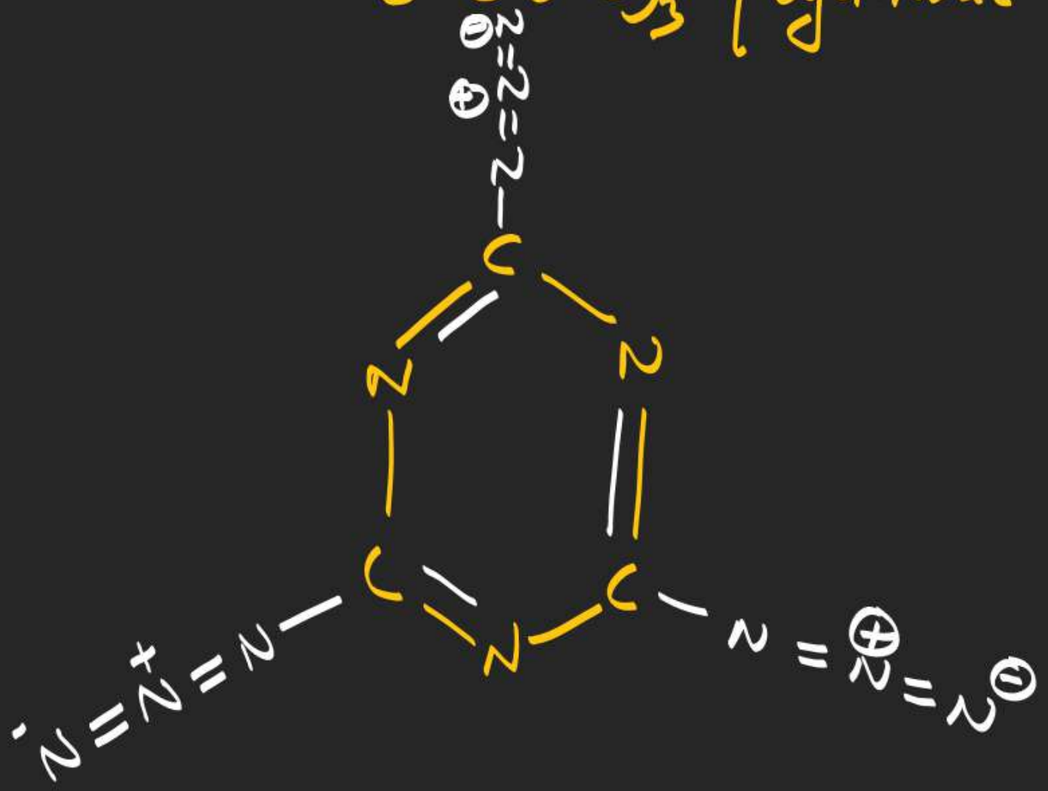
$C_3N_3(N_3)_3$ (Cyanuric tri Azide)



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$B_3N_3H_6$ [Inorganic benzene]

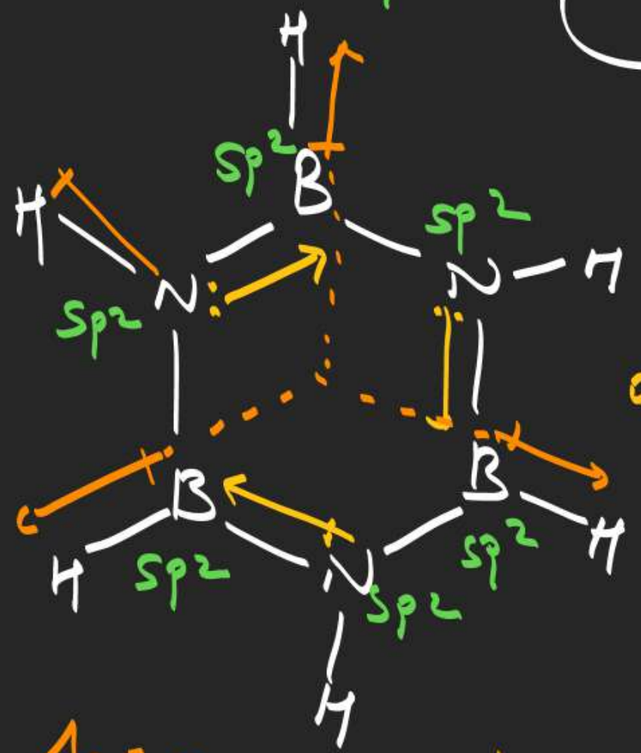
(Borazine / Borazole)

sp^2

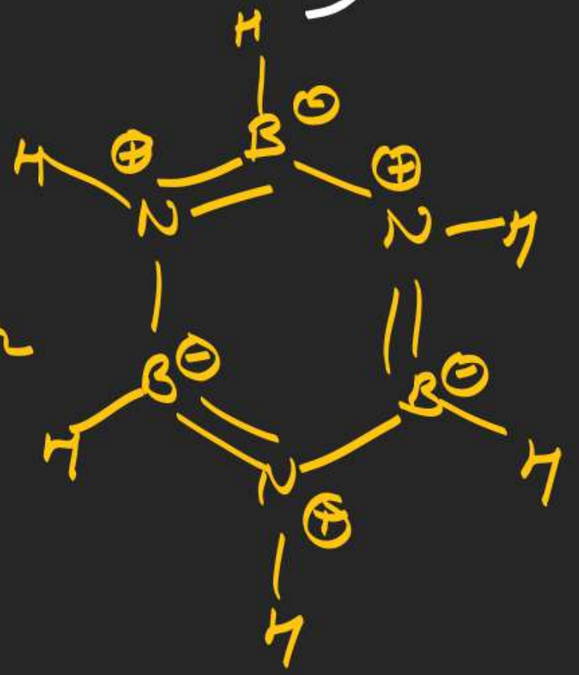
planar

all atoms are in same plane

$\mu = 0$



or



$\mu = 0$, nonpolar

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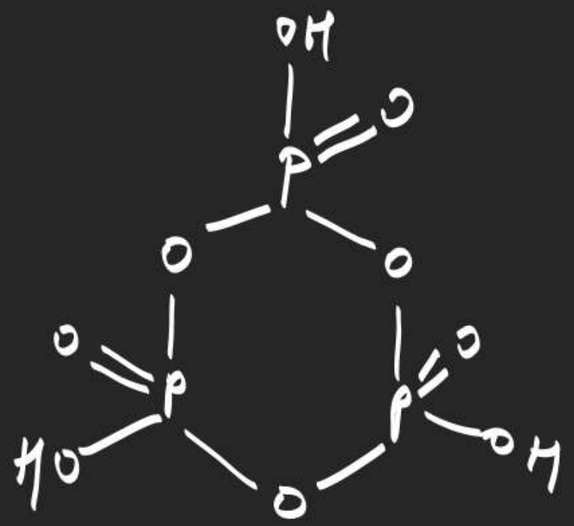
$H_3P_3O_9$

Cyclic trimetaphosphonic acid

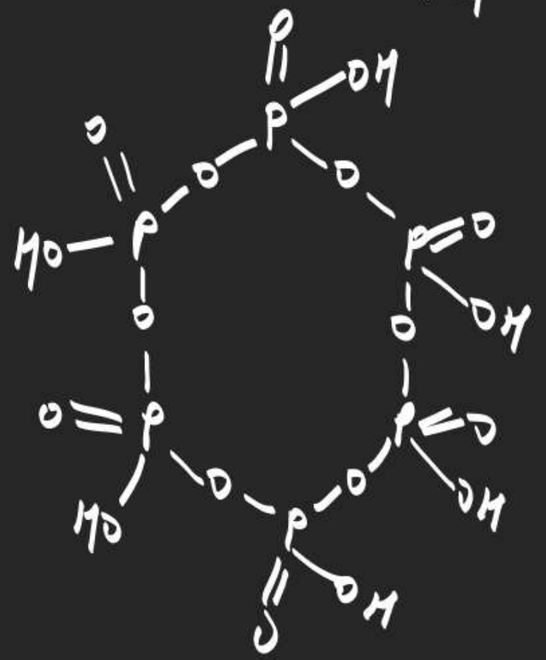


$H_4P_4O_{12}$

Cyclic tetrameta Phosphonic acid

$H_5P_5O_{15}$

Cyclic Penta meta Phosphonic acid



$H_6P_6O_{18}$

Cyclic Hexameta Phosphonic acid

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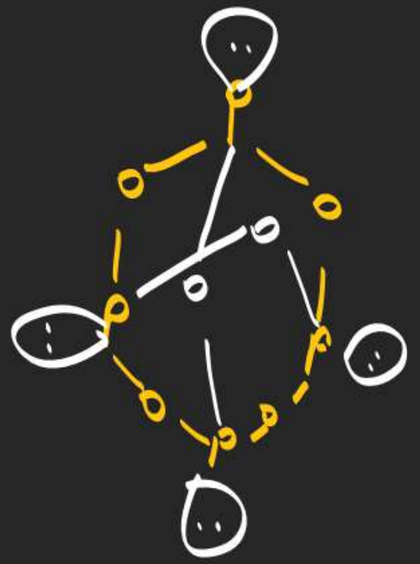
P_4O_{10}

P_4O_6



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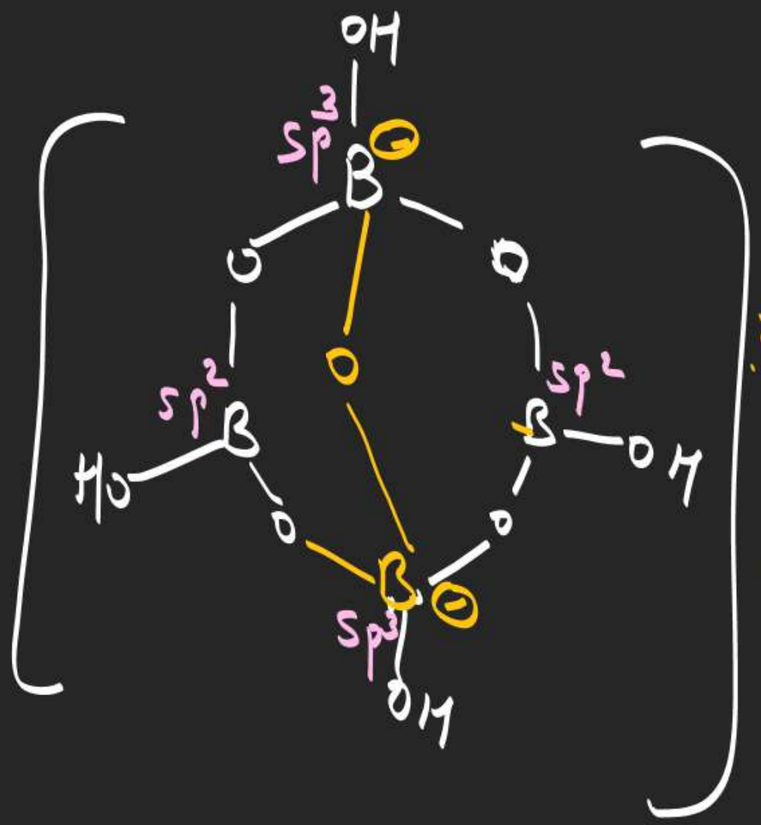
$Na_2B_4O_7 \cdot 10H_2O$ (Borax)

$Na_2[B_4O_5(OH)_4] \cdot 8H_2O$

B-O-B linkage = 5



two tetrahedral unit

two trigonal planar unit

all boron atoms are not in same plane.

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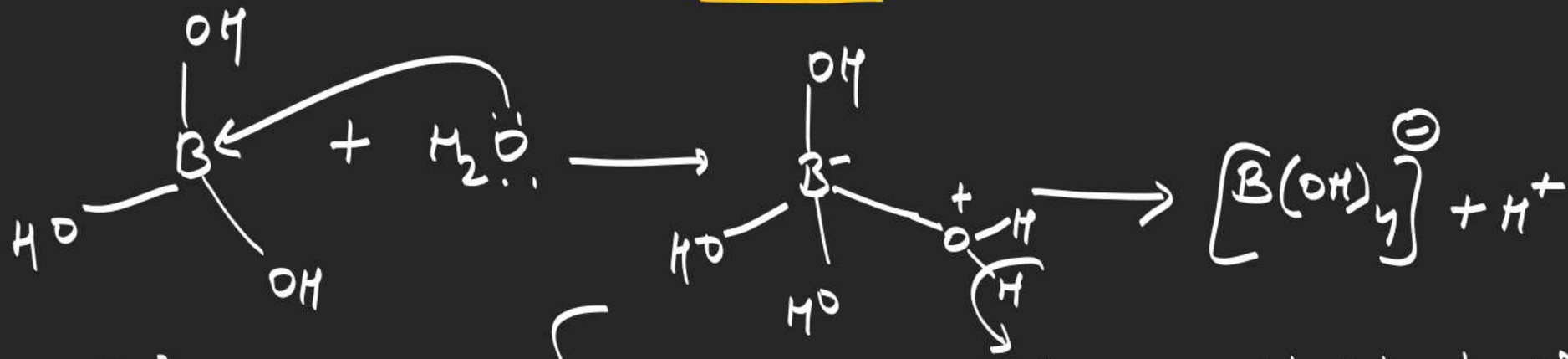
H_3BO_3



sp^2

$B = 1s^2 2s^2 2p^1$

H_3BO_3 is a weak monobasic lewis acid
it is not a proton donor acid
because it accepts $l.p/OH^-$

H_2SO_5

Peroxo monosulphuric acid

Caro's acid