Structure of Covalent Molecule - I

Nurture: Course on Chemical Bonding for Class XI 2023

Vishal Joshi • Lesson 4 • Sept 25, 2021

Structure of Covalent molecule.

① Select the Ionic Compound

—— Sep. Ionic Compound

——→ Select the Covalent part

—— Select the Central atom

—— least E.N atom act as C.A but not H

—→ if E.N of two atoms are same then atom which has maximum covalency in Ground State can act as Central atom

Oxy acid :- acid which has Oxygen and hydrogen both are present.

Note → HF HCl HBr HI

these are hydra acid

Structure of oxyacid :- select the C.A

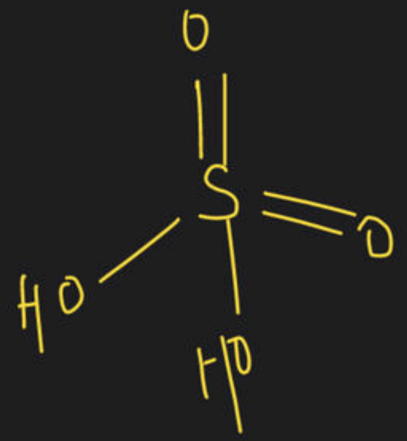
basicity of oxyacid expressed by number of OH groups which attached with C.A

basicity ∠ number hydrogen atoms

Note :-

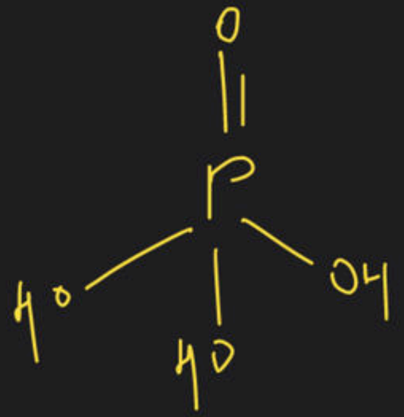
	basicity
H_3PO_3	2
H_3PO_2	1
H_3BO_3	1
$H_4P_2O_5$	2

H_2SO_4

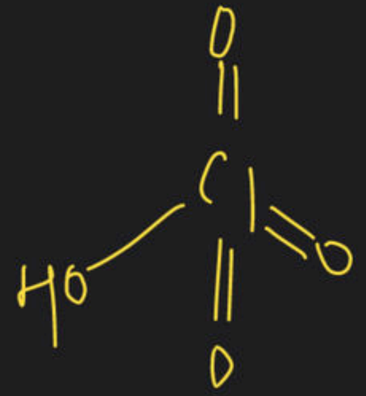


H_2SO_3

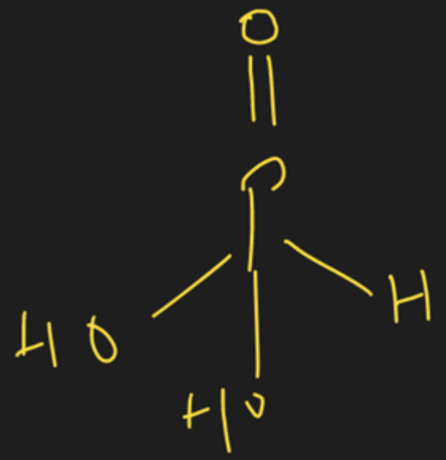
H_3PO_4



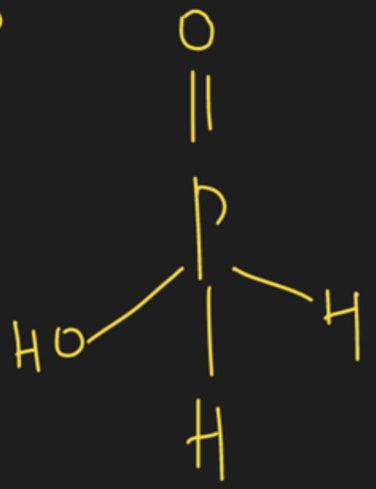
$HClO_4$



H_3PO_3



H_3PO_2



(Sodium Phosphate)

Na_3PO_4

$3Na^+$

PO_4^{3-}

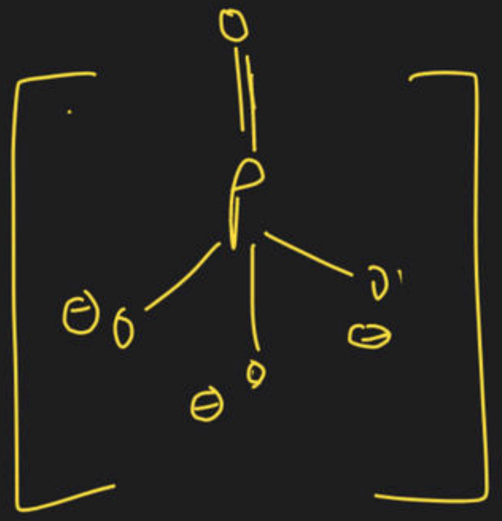
$3+4^+$

H_3PO_4

Note = S-Block and M^{n+} form Ionic Compound

Note = Tips are not applicable on oxyanion

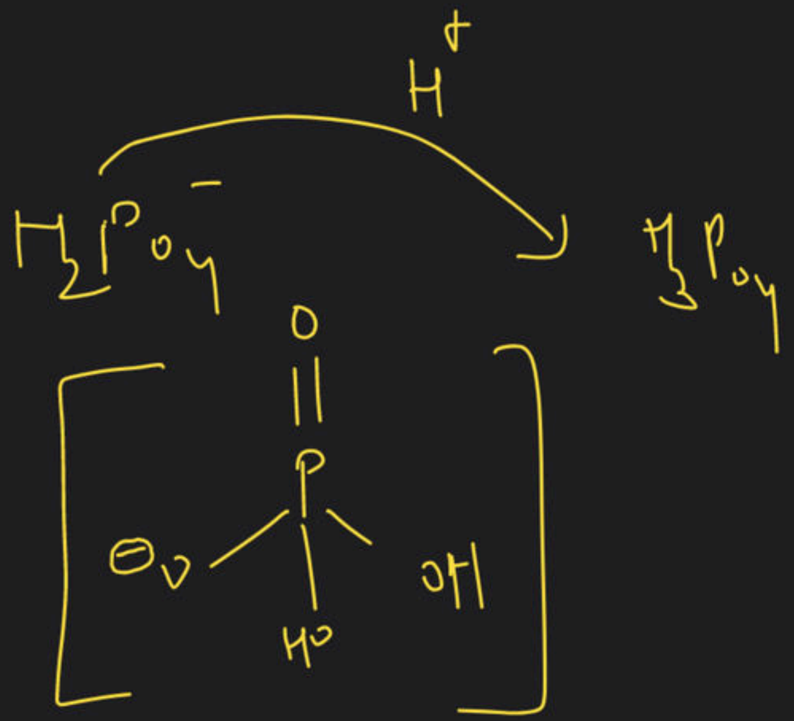
$3Na^+$

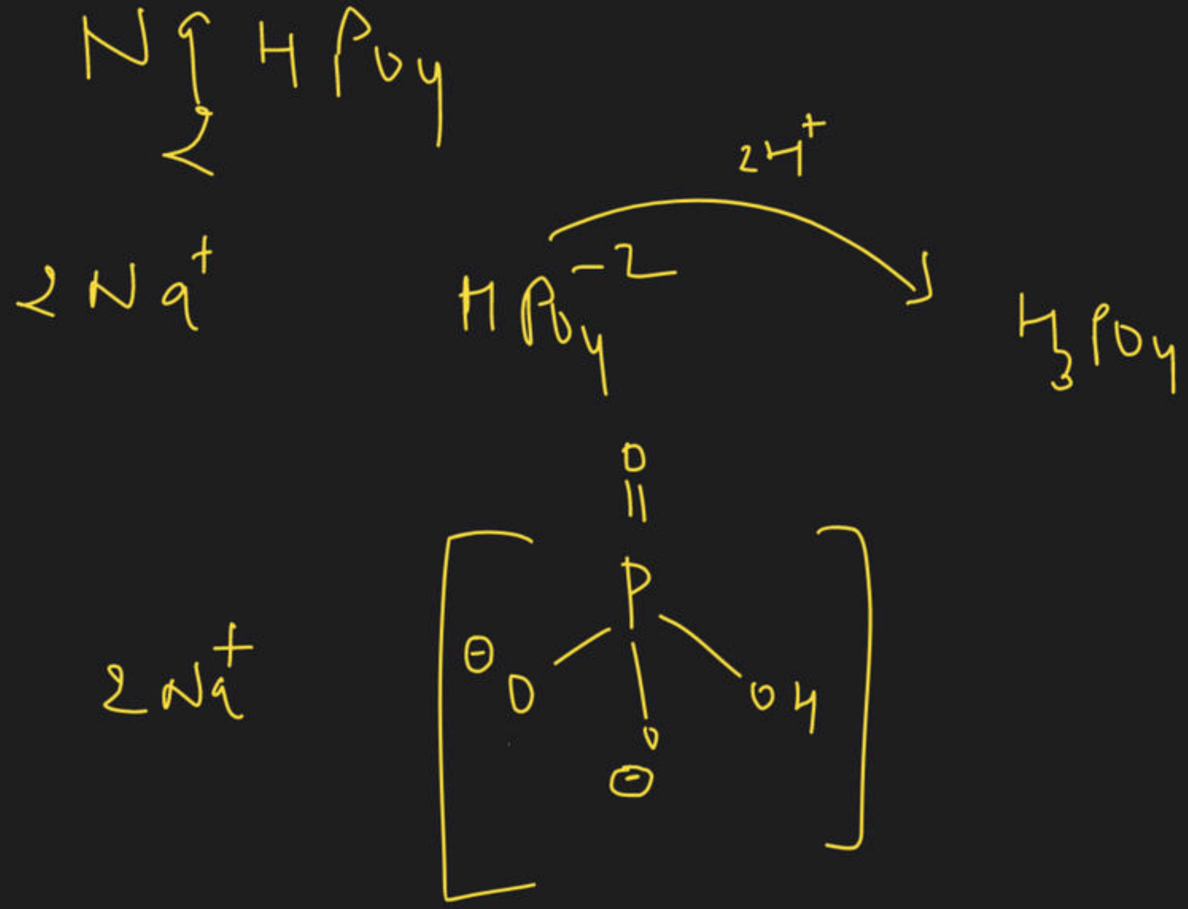


NaH_2PO_4

Na^+

Na^+



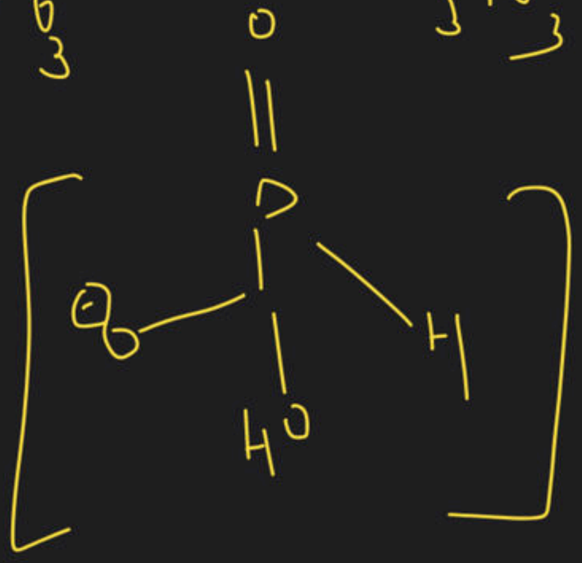

Na_2HPO_4
$2Na^+$
$2H^+$
HPO_4^{-2}
H_3PO_4
$2Na^+$
O
P
O
O
O
O

NaH_2PO_3

H^+

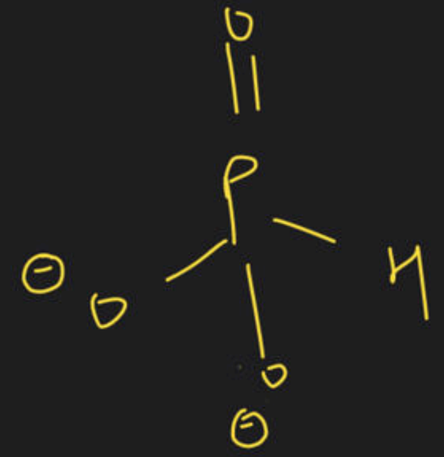
Na^+ $H_2PO_3^-$ H_3PO_3

Na^+



Na_2HPO_3

$2Na^+$ HPO_3^{-2} $2H^+$ H_3PO_3



$2\,Na^+$

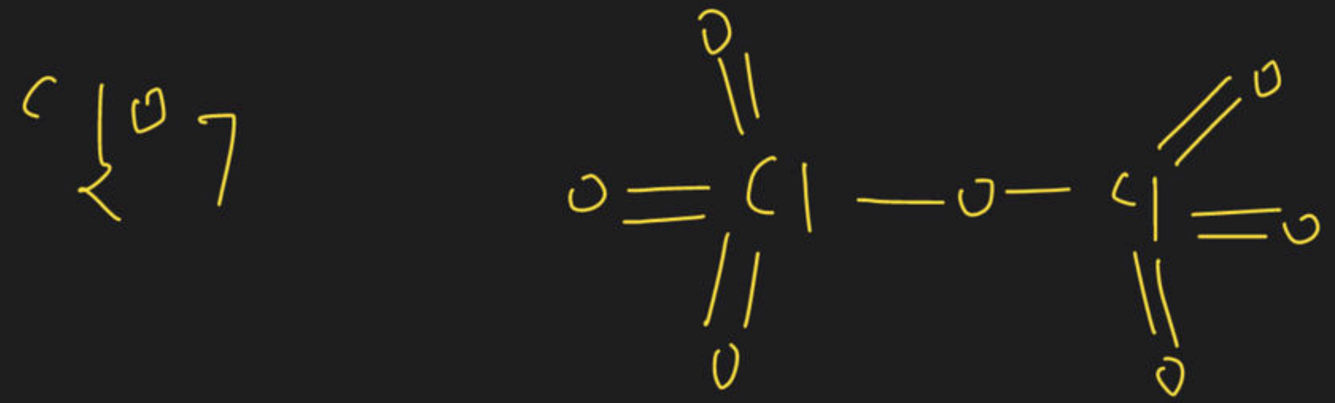
C.A = two

S.A = odd number then

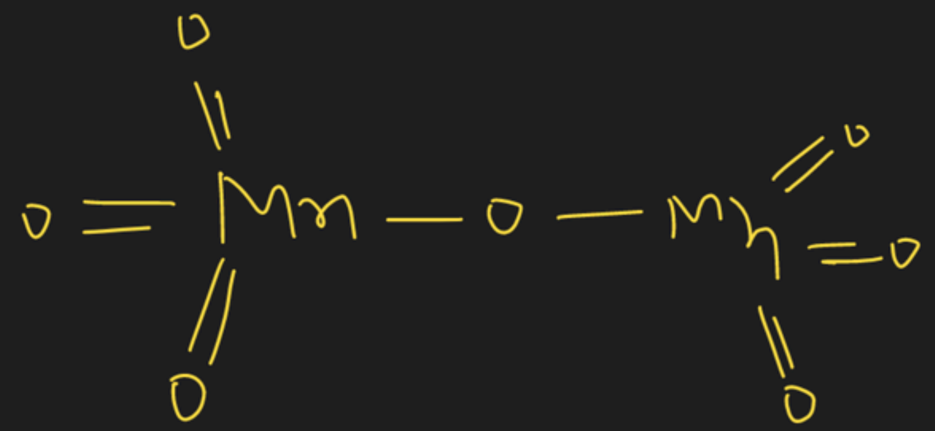
linkage will X — O — X

X = C.A

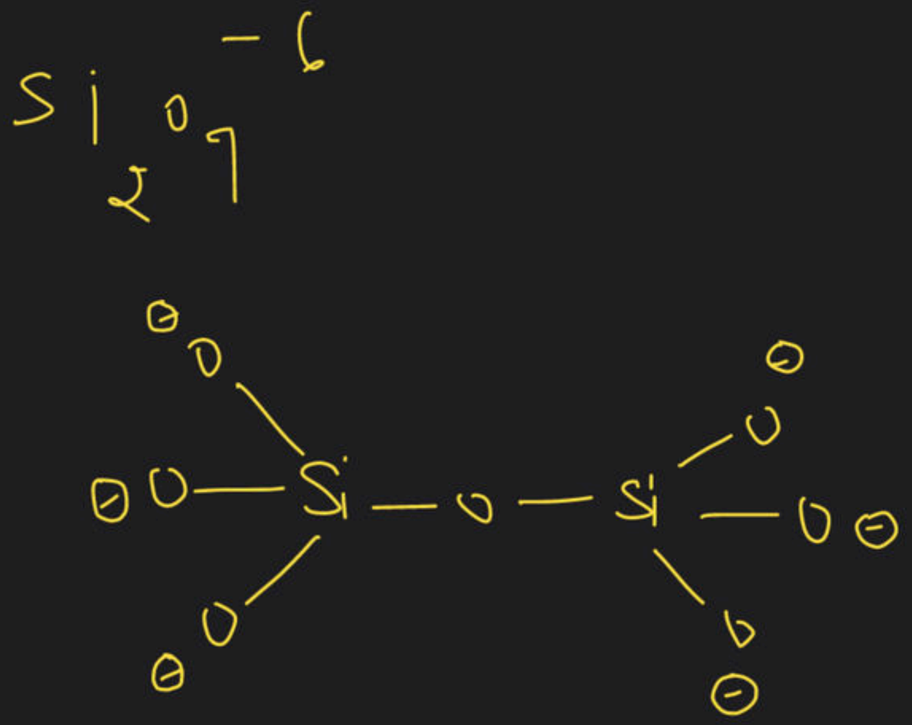
O = S.A



Mn_2O_7



$Mn = 3d^5 4s^2$



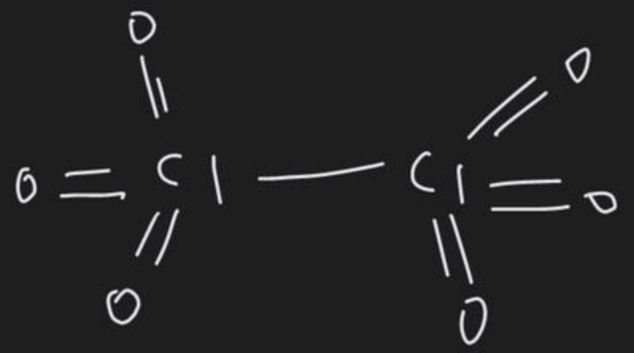
C.A = two

S.A = even number

then linkage X — X [When O is of C.A in Rang]

{ O.S Rang = (n-8) to n
n = val. e⁻
n = −1 to +7 } X — O — O — X [When O.S of C.A out of Rang]

Cl_2O_6



{ ClO_6
$2x + 6(-2) = 0$
$x = +6$

O.S Range $= n-8$ to n

$n =$ Val. e$^-$

$Cl = 3s^2 3p^5$

$= 7$

$= 7-8$ to 7

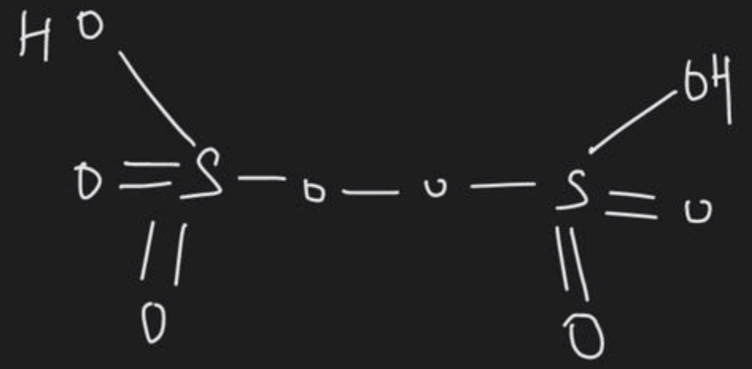
$= -1$ to $+7$

$H_2S_2O_8$ [Peroxy di sulphuric acid
Marshall's acid]

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

$2x=14$

$x=+7$



$S = 3s^2\ 3p^4$

$6-8$ to $+6$

-2 to $+6$

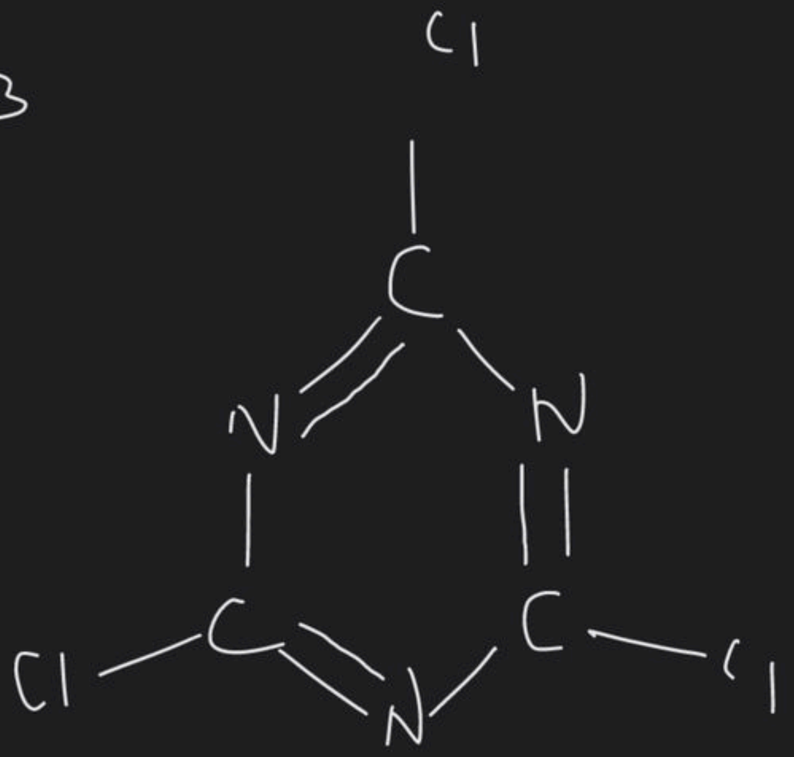
Structure of Cyclic Compound

Central atom More than two and S.A should be equal to or greater than C.A

$\underline{(NCl)_3}$ [cyanuric trichloride]

$C_3N_3Cl_3$

N , O , S



$C_3N_3Cl_3$