

D. B. College (Jaynagar) Lect-2

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Calculation of O.N. :-

Case - I : for Covalent Compound :-

(a) O.N. for an atom in free state = 0

eg: H, O, Fe, C, N

(b) O.N. for an atom in homoatomic molecule is zero.

eg: H_2 , Cl_2 , N_2 , O_2 , O_3 , S_8 , P_4

(c) O.N. of an atom in its allotropic form

eg: C graph. C diamond, C_{60} , S rhombic, S monoclinic

(d) O.N. of metal in metal Carbonyl is zero.

eg: $Ni(CO)_4 \rightarrow Ni = 0$

$Fe(CO)_5 \rightarrow Fe = 0$

(e) O.N. of an atom in alloy & amalgam (Na-Hg) is zero.

⊕ O.N. of a natural molecule is zero.

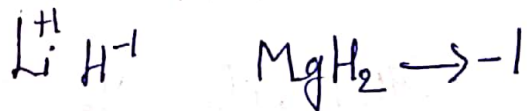
eg CO , NH_3 , H_2O

⊖ O.N. of is always -1

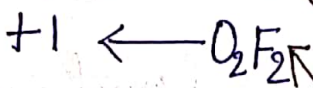
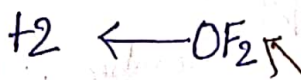
Ⓜ Hydrogen

- ⊕ when attached to more E.N.
eg HF , HCl , NH_3 , H_2O
- free state $\text{H} = 0$
- molecule $\text{H}_2 = 0$
- ⊖ attached to more electronegative

Hydrides



Ⓜ Oxygen :-



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

$$x = +1$$

Oxygen

→ Oxides (O^{2-}) O.N. = -2

eg H_2O , NO , CO_2

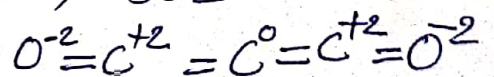
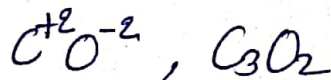
→ Peroxide (O_2^{2-}) O.N. = -1

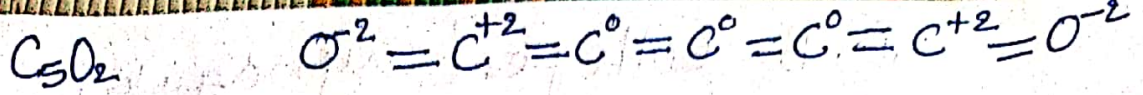
eg H_2O_2 , Na_2O_2 , BaO_2

→ Superoxide (O_2) O.N. = $\frac{1}{2}$

eg KO_2

→ Suboxide:

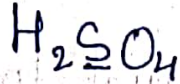




① O.N. of IA = +1 O.N. of IIA = +2

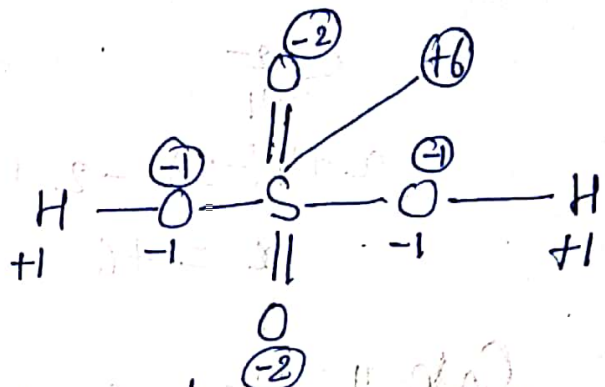
(d-block & p-block) → Variable Valency

→ The algebraic sum of O.N. of all atoms in a neutral molecule is zero,



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

$x = +6$

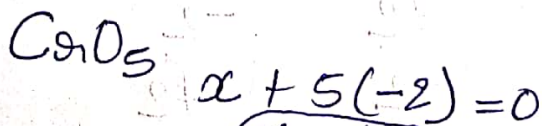


$2(+1) + 2x + 8(-2) = 0$

$x = +7$ X

कभी भी O.N. Max.^m को exceed करे जाये तो उसका Max. O.N. ही Consider किया जाएगा

$x = +6$



$x = +10$ X

