Nishant Jindal

$SnCl_3^{\ominus}$

$C = 1s^2\ 2s^2\ 2p^2$

2, 4

Total no of val. e^-

2	3	4	5	6	7	8
Be	B	C	N	O	F	Ne
		Si				
		Ge				
		Sn				

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Limition of Lewis structure

1. Lewis structure is not applicable on odd e^- molecule

   NO, ClO_2, ClO_3, NO_2 O_2^-

2. Lewis structure is not explain geometry of molecule

3. Lewis structure is not applicale on Hypo valent and Hyper valent

4. Lewis structure is not expline energy of molecule

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Hypo valent ⇒ When molecule Contain less than 8 e⁻

Cl—Be—Cl

BF_3 $AlCl_3$ $AlBr_3$ AlH_3 $BeCl_2$ BeH_2

(6e⁻) (6e⁻) (6e⁻) (6e⁻) 4e⁻ 4e⁻

(Super octet) **Hyper** ⇒ When Molecule Contain more than 8 e⁻

SF_4 SF_6 ClF_3 IF_5 IF_7

(10e⁻) (12e⁻) 12e⁻ 14e⁻

(10 e⁻)

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ans Which of the following molecule has Super octet

(1) $AlCl_3$

(2) AlH_3

(3) ClF_3 ✓

(4) all

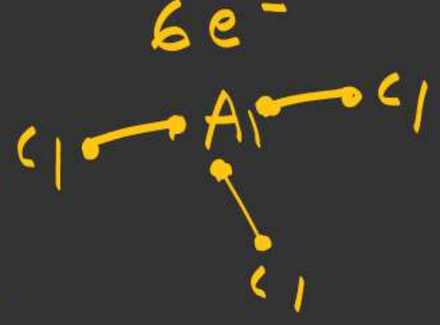
(5) none

Q Which of the following molecule is not typo valent

(a) AlF_3

(b) $AlCl_3$

(c) $AlBr_3$



(d) all are typo valent.

Note ⇒ AlF_3 is not typo valent because it is Ionic

Al^{+3} $1s^2 2s^2 2p^6$ $3F^{\ominus}$ $1s^2 2s^2 2p^6$

Lewis acid ⇒ e·p accepting species

type of Lewis acid

① typo valent

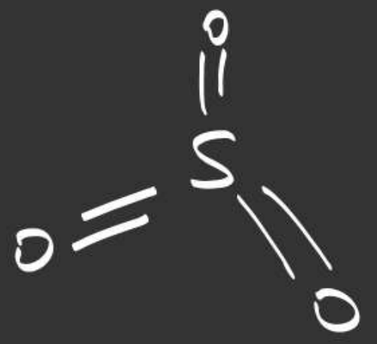
② S Block cation and H^+

$Li^+ = 1s^2 2s^0$

③ D- Block cation

Ag^+ Cu^{+2}

④ molecule which have vac. d-orbital



$$PCl_5 + Cl^{\ominus} \longrightarrow PCl_6^{\ominus}$$

$$SbF_5 + F^{\ominus} \longrightarrow SbF_6^{\ominus}$$

⑤ molecule in which more electronegative element attached with central atom through multiple bond.

Lewis base ⇒ Lone pair donating species L·B

Covalency ⇒ number of unpaired e⁻ in G.S or in E.S

G.S : Cl = $3s^2\ 3p^5\ 3d$

$(E.S)_I$ =

$(E.S)_{II}$

$(E.S)_{III}$

$$(G.S)^{1}\quad (E.S)_1^{3}\quad (E.S)_2^{5}\quad (E.S)_3^{7}$$

$N = 2s^2\ 2p^3$ (3s)

$N \rightarrow$ Covalency = 3

Que NCl_3 exists but NCl_5 does not exist. Why?

Ans → because N has only 3 covalency due to absence of vac. d-orbital.

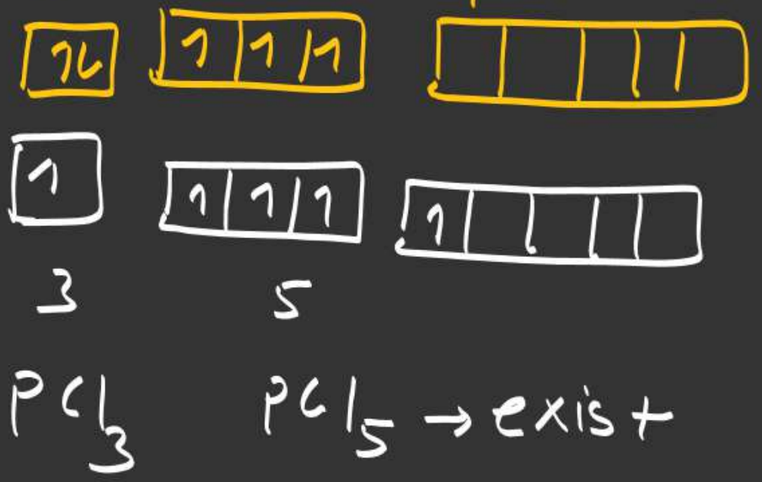
$O = 1s^2\ 2s^2\ 2p^4$ 3s

Maximum Covalency = 2

Que OF_2 exist but OF_4 and OF_6 donot exist

Ans ⇒ oxygen has two covalency why due to absence of vac. 2d orbital.

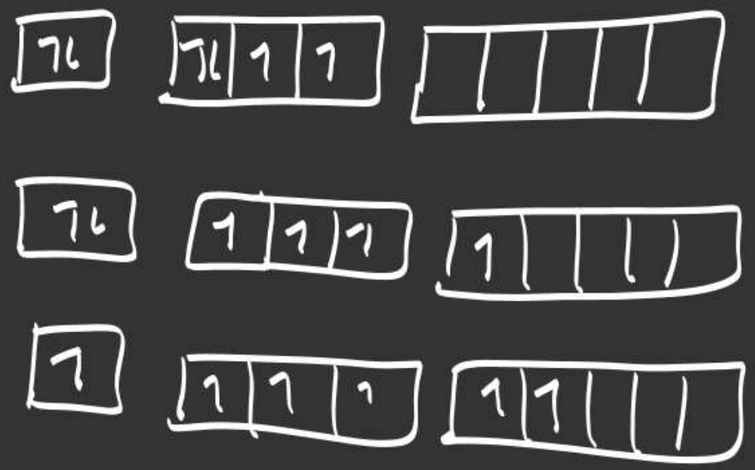
P = $3s^2 3p^3$ 3d



3 5

PCl_3 PCl_5 → exist

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



2 4 6

SF_2 SF_4 SF_6

$F = 2s^2\ 2p^5$

↑↓	↑	↑

F ⇒ one covalency

HOF $\quad HFO_2 \quad HFO_3 \quad HFO_4$ (✗ ✗ ✗)

HClO $\quad HClO_2 \quad HClO_3 \quad HClO_4$

1 $\quad$ 3 $\quad$ 5 $\quad$ 7

Valency sheel

for - s-Block = ns

$Li = 1s^2 \boxed{2s^1}$

Valence sheel / outer sheel

for - P-Block

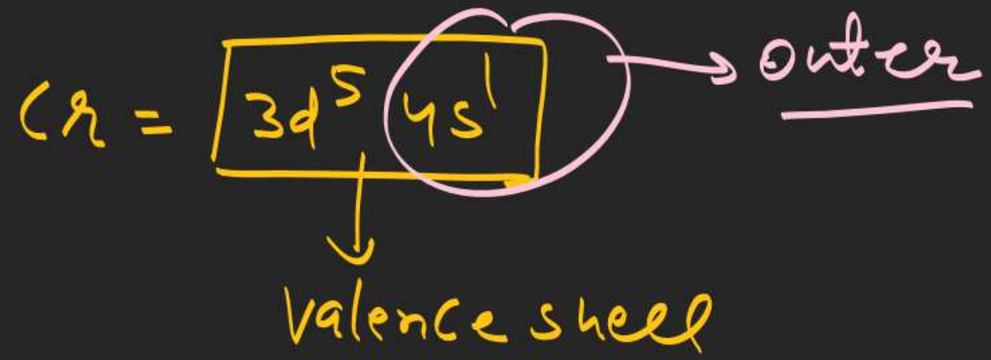
ns np

outer sheel / valence sheel

$C = 1s^2 \boxed{2s^2 2p^2}$

Valence sheel / outer sheel

D-Block



for d-Block = (n-1)d + ns

ns → outer shell

(n-1)d → valence shell

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Oxidation state

HNO_2

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

$x = +3$

H — [non metal = +1 ; metal = −1]

H_2SO_4

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

$x = +6$

H_2SO_3

$2 + x + 3(-2) = 0$

$x = +4$

O = −2