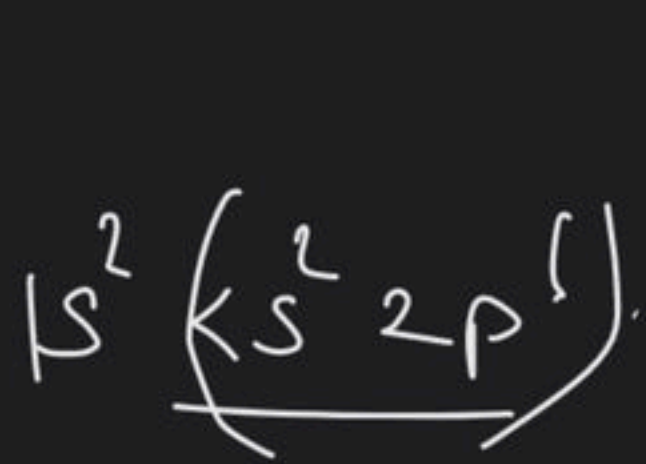# Introduction of Chemical Bonding

Course on Chemical Bonding for Class XI 2023

Vishal joshi • Lesson 1 • Aug 12, 2021

Chemical bonding :→ att b/w two atoms in a molecule is called chemical bonding

→ to gain Stability.

→ octet complete

Na^+ $Cl^{\ominus}$

$1s^2 \left(2s^2 \, 2p^1 \right)$ $1s^2 2s^2 2p^6 \left(3s^2 \, 3p^6 \right)$

$He = 1s^2$

$\left.\begin{array}{l} Ne \\ Ar \\ Kr \\ Xe \end{array}\right\} \{ ns^2 \, np^6 \}$

XeF_2

XeF_4

XeF_6

XeO_2F_2

XeO_3F_2

$$F - Xe - F$$

10

Bartlett (1962)

$$O_2 + [PtF_6] \longrightarrow \overset{+}{O_2}[PtF_6]^{\ominus}$$
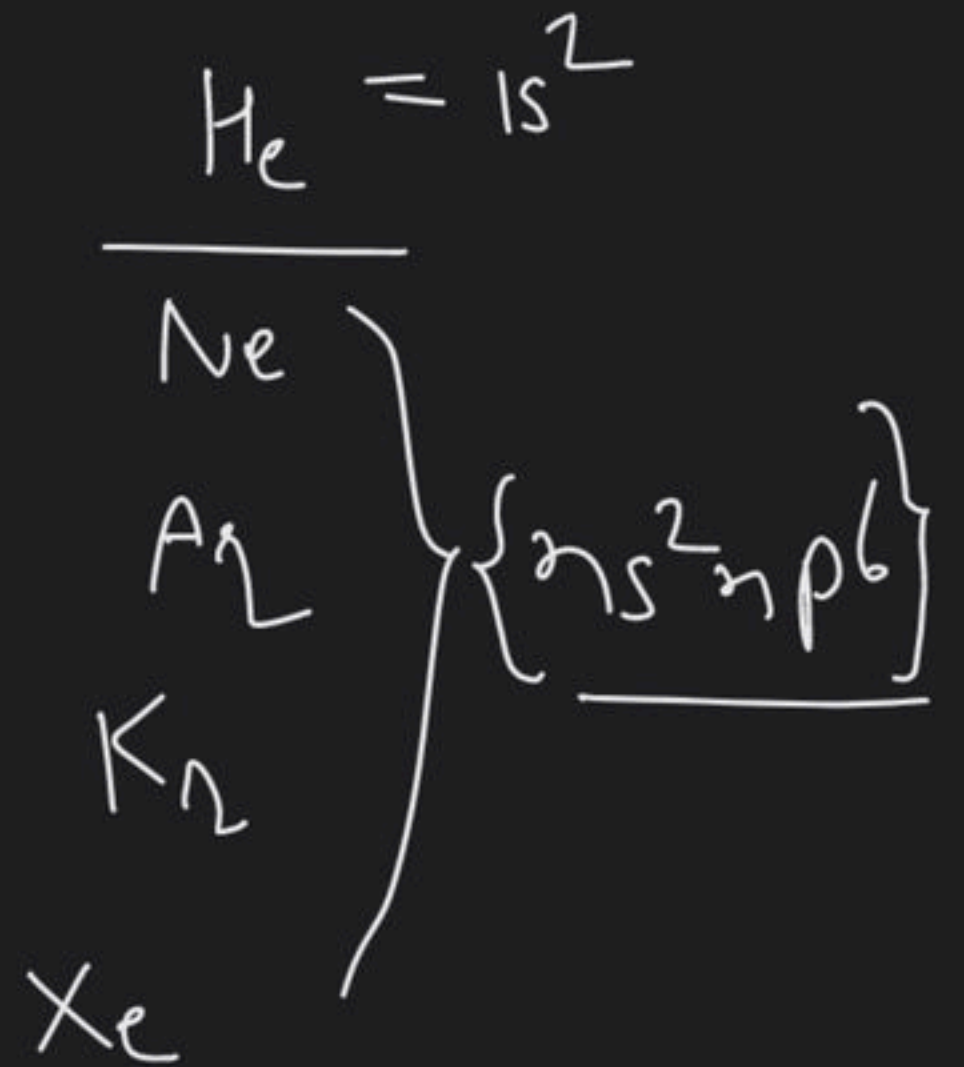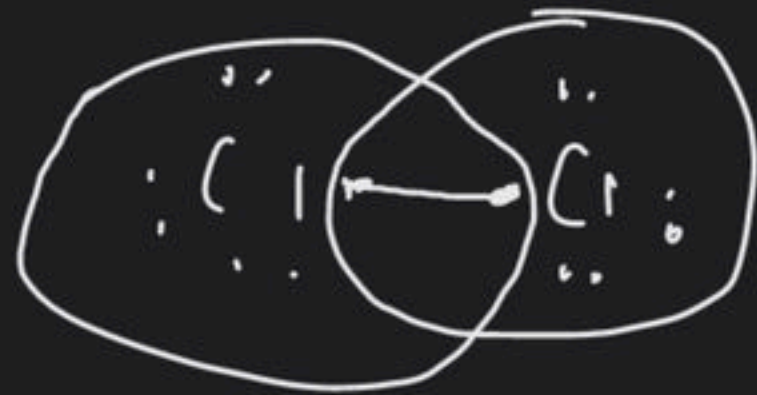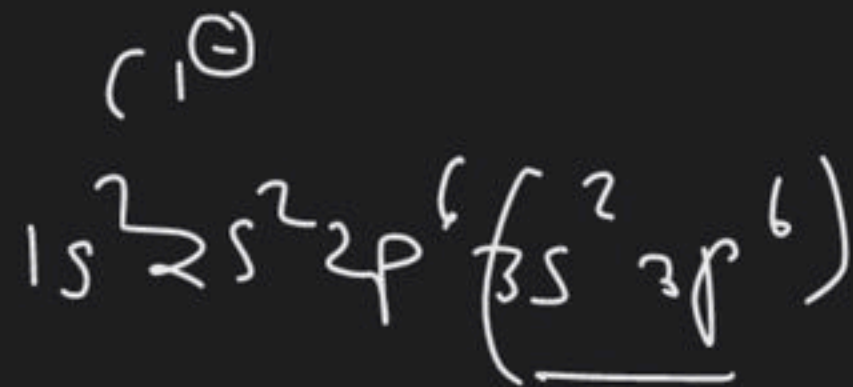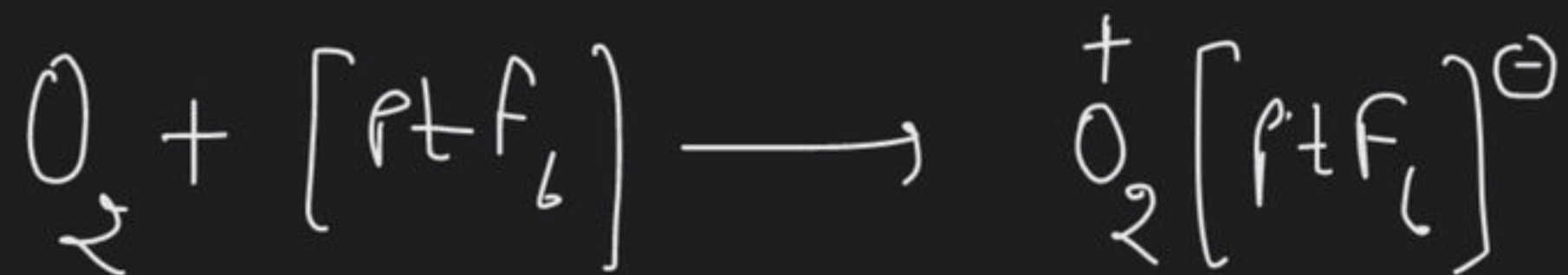
Red Colour Ionic Compound

I.E

$$O_2 \approx Xe$$

$$1175 \, KJ/mole \qquad 1170 \, KJ/mole$$

$$Xe + [PtF_6] \longrightarrow \overset{+}{Xe}[PtF_6]^{\ominus}$$

Red Colour Ionic Compound

First discovered Compound of Noble

$$He$$

$$Ne$$

$$Ar_2$$

$$Kr_2$$

$$Xe$$

$$\{ Kr\ F_2 \}$$

A   B
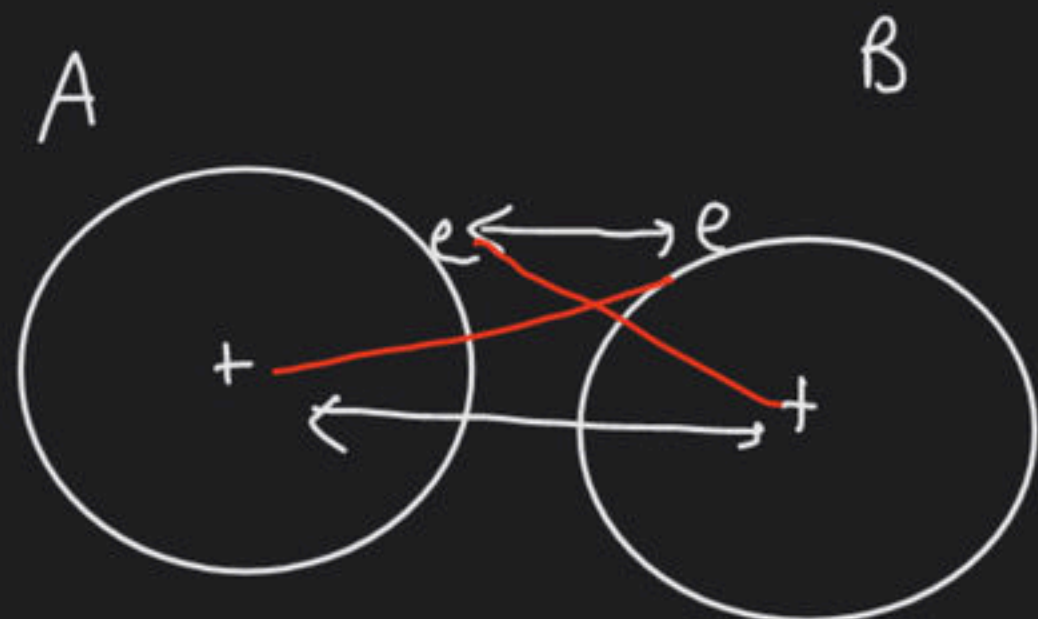
e_A e_B $\longrightarrow$ Rep.

N_A N_B $\longrightarrow$ Repulsion

e_A N_A $\longrightarrow$ Attraction

e_A N_B $\longrightarrow$ att.

e_B N_A $\longrightarrow$ att.

e_B $N_B \longrightarrow$ att.

tive

P.E

0

−ive

B.E

att > rep. $r = \infty$
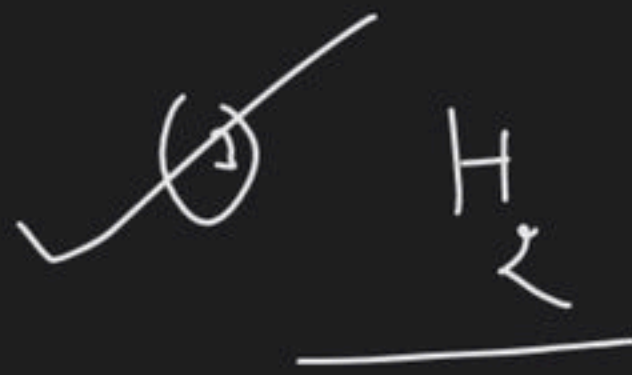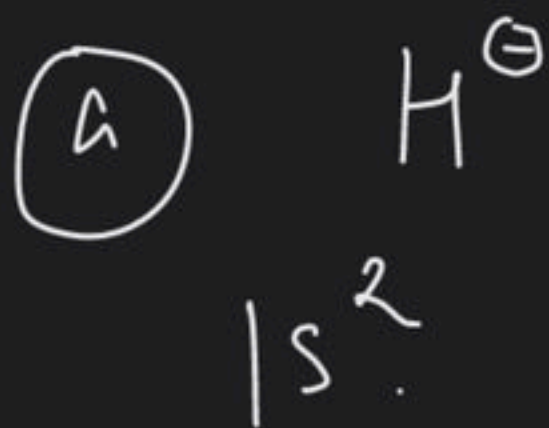
B.L

dist.

Bond formation point
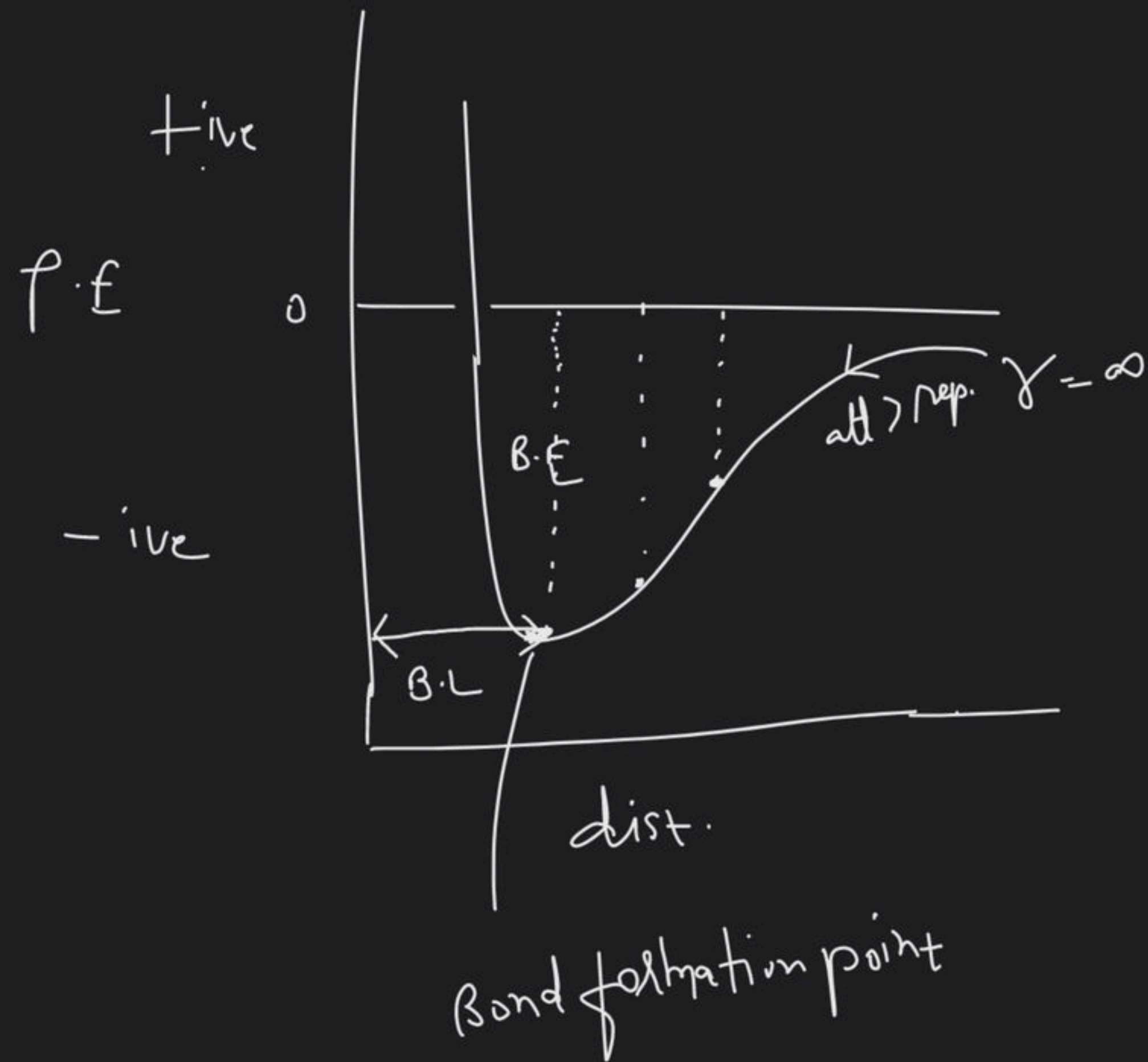
Que. which Of the following graph is correct about formation of H_2 molecule.

(a)

(b)

(3)
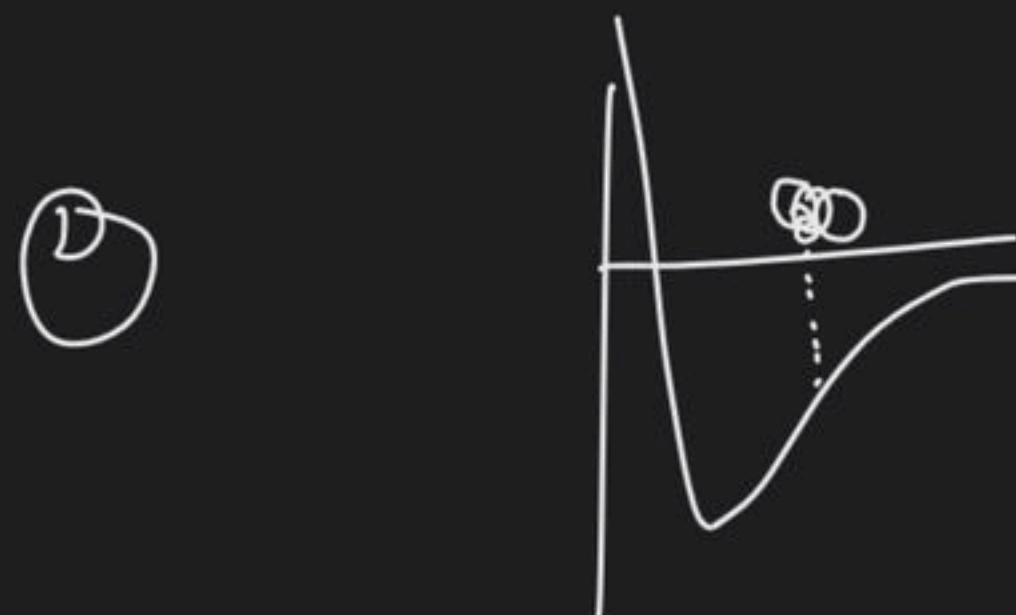
(4) **all**

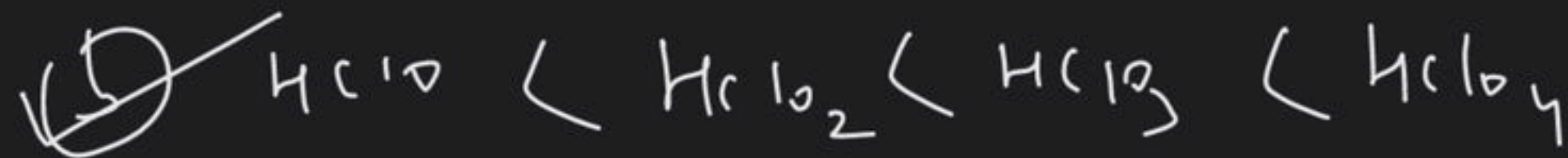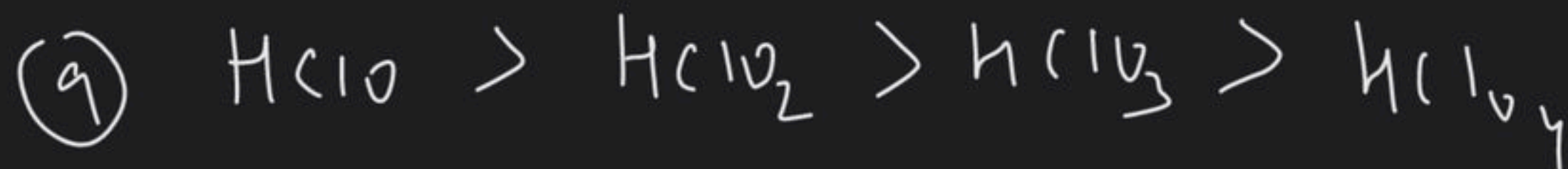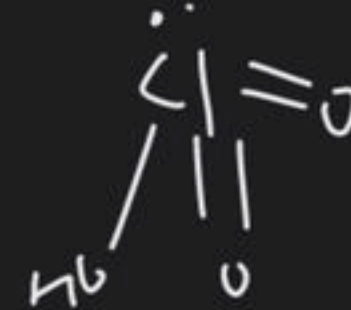**que** Which of the following species is more stable

(a) $H^{\ominus}$ ② H^{+} ~~③~~ H_2 (d) H

$1s^2$

que Order of thermal stability $\Bigg\{$

$$4o-\overset{..}{\underset{..}{Cl}}: \qquad 4o-\overset{..}{\underset{\underset{O}{||}}{Cl}}: \qquad 4o-\overset{..}{\underset{\underset{O}{|||}}{Cl}}=o \qquad 4o-\overset{\overset{O}{||}}{\underset{\underset{O}{||}}{Cl}}=o$$

(a) $HClO > HClO_2 > HClO_3 > HClO_4$

~~(b)~~ $HClO < HClO_2 < HClO_3 < HClO_4$

$=$ $=$ $=$

(c) $=$

(u) more
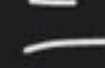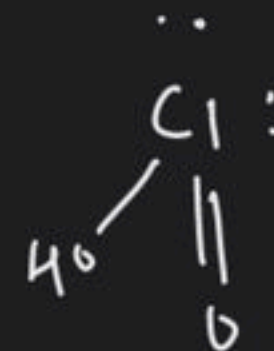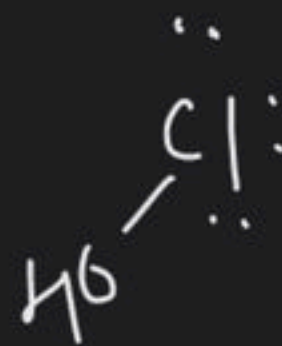
Classification of Chemical bond

Strong

Ionic

Covalent

- Simple Covalent
- Co-ordinate (it Is formed by unequal sharing)

Metallic

Weak

H Bonding (formed by F, O, N) ≡ C and sometimes Cl

dipole – dipole

dipole – Induced dipole

Instantaneous dipole – Induced dipole

Ion – dipole

Ion – Induced dipole
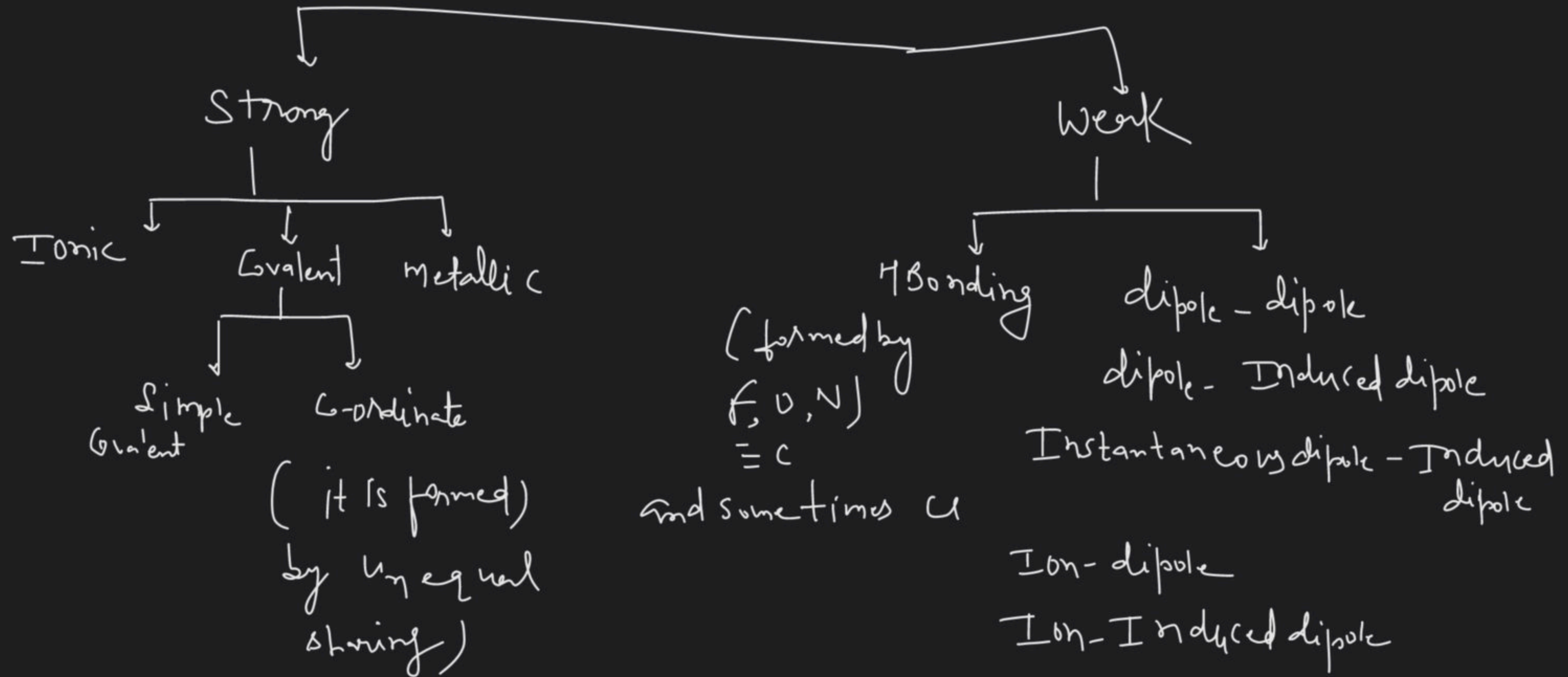
Covalency $\Rightarrow$ number of u.p.e [unpaired e^-] in G.S or in excitation state

$1s^2 \; 2s^2 \; 2p^1$

$3s \quad 3p \qquad\qquad 3d$

$Cl = \cdot$

G.S

3s	3p			3d				
⇅	⇅	⇅	↑					

$Cl = 1 \qquad 3 \quad 5 \quad 7$

$(E.S)_{I}$

3s	3p			3d				
⇅	⇅	↑	↑	↑				

$(E.S)_{II}$

3s	3p			3d				
⇅	↑	↑	↑	↑	↑			

$(E.S)_{III}$

3s	3p			3d				
↑	↑	↑	↑	↑	↑	↑	↑	

$$N = 1s^2 \ 2s^2 \ 2p^3 \ 3s$$

| ↑↓ | | ↑ | ↑ | ↑ | | |

NCl_3

$NCl_5 \quad \cancel{X}$

Bond formation = Exothermic process

Bond breaking = endothermic