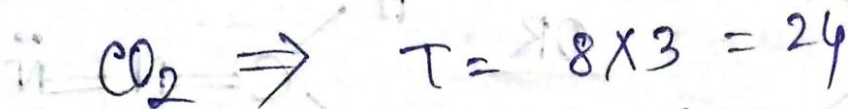




Example - 4



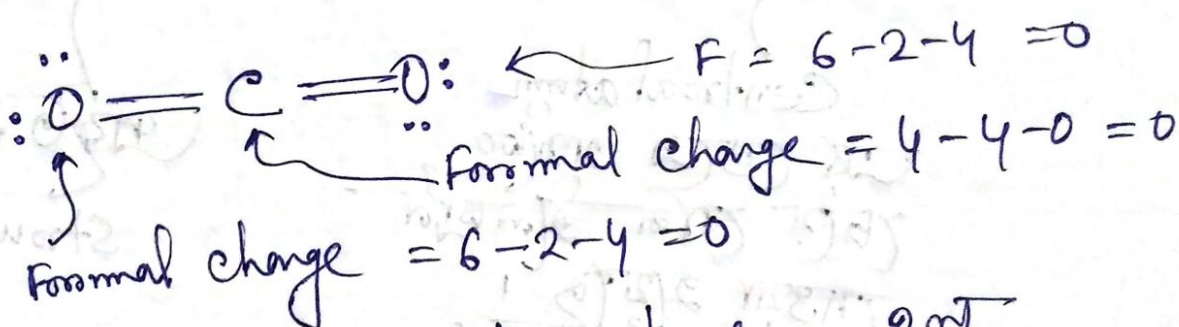
$$V = 4 + 6 \times 2 = 16$$

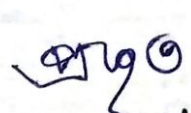
$$\therefore S = T - V = 24 - 16 = 8$$

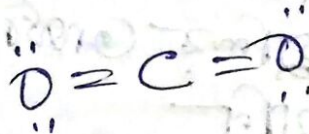
$$\therefore \frac{S}{2} = \frac{8}{2} = 4$$

$$L = V - S = 16 - 8 = 8$$

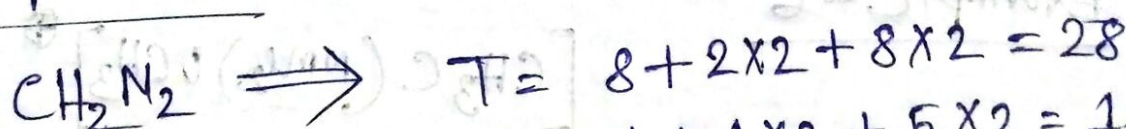
$$\therefore \frac{L}{2} = \frac{8}{2} = 4$$



$\therefore$  Lewis structure 2nt



Example - 5



$$V = 4 + 1 \times 2 + 5 \times 2 = 16$$

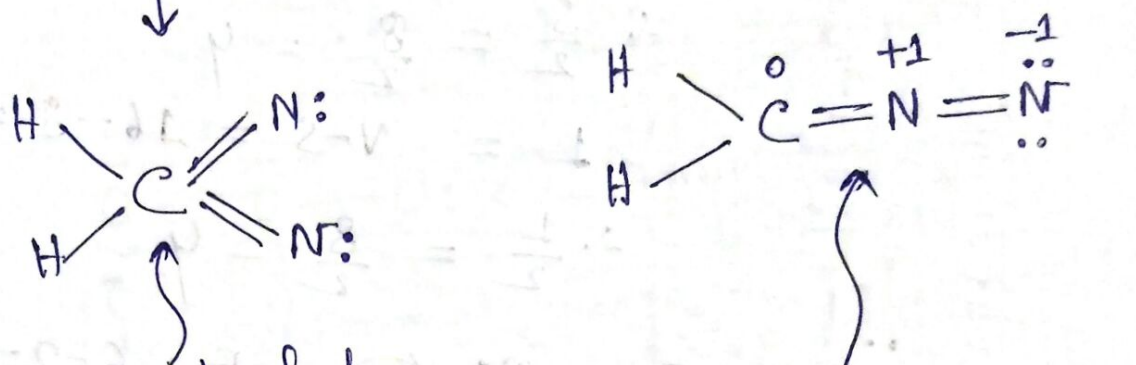
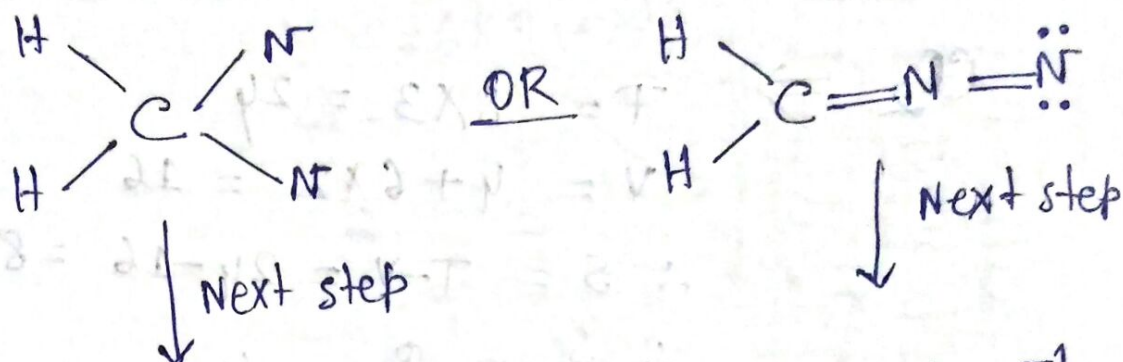
$$\therefore S = T - V = 28 - 16 = 12$$

$$\therefore \frac{S}{2} = \frac{12}{2} = 6$$

$$\therefore L = V - S = 16 - 12 = 4$$

$$\therefore \frac{L}{2} = \frac{4}{2} = 2$$

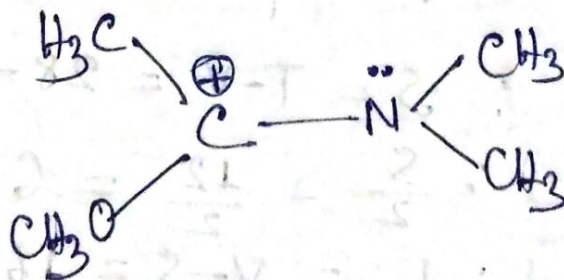
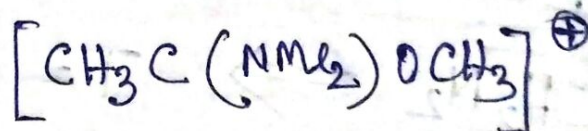
Identify the central atom - 2nd C.



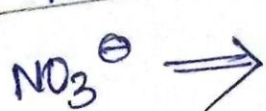
Central atom
 ଏହା କେଉଁ କେଉଁ ପରମାଣୁ
 ସହିତ ଯୋଗ ଦେଇଛି
 ସମସ୍ତ ଅଣୁକୁ
 ଗଣନା କରି
 ଗୋଟିଏ ଟାର୍ମିନାଲ
 ଅଟମ୍ ସହିତ ଯୋଗ
 ଦେଇଛି

ଏହା Lewis
 structure

Example - 6



Example - 7



$$T = 8 \times 4 = 32$$

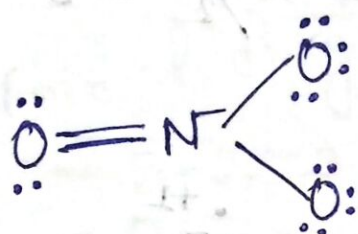
$$V = 5 + 6 \times 3 + 1 = 24$$

$$S = T - V = 32 - 24 = 8$$

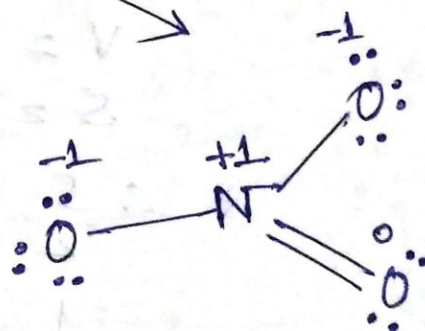
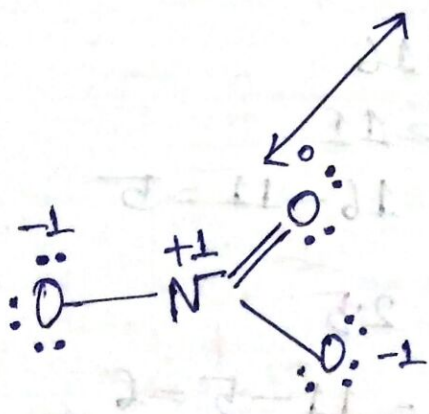
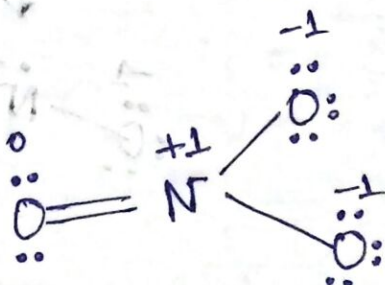
$$\therefore \frac{S}{2} = \frac{8}{2} = 4$$

$$L = V - S = 24 - 8 = 16$$

$$\therefore \frac{L}{2} = \frac{16}{2} = 8$$



Next step

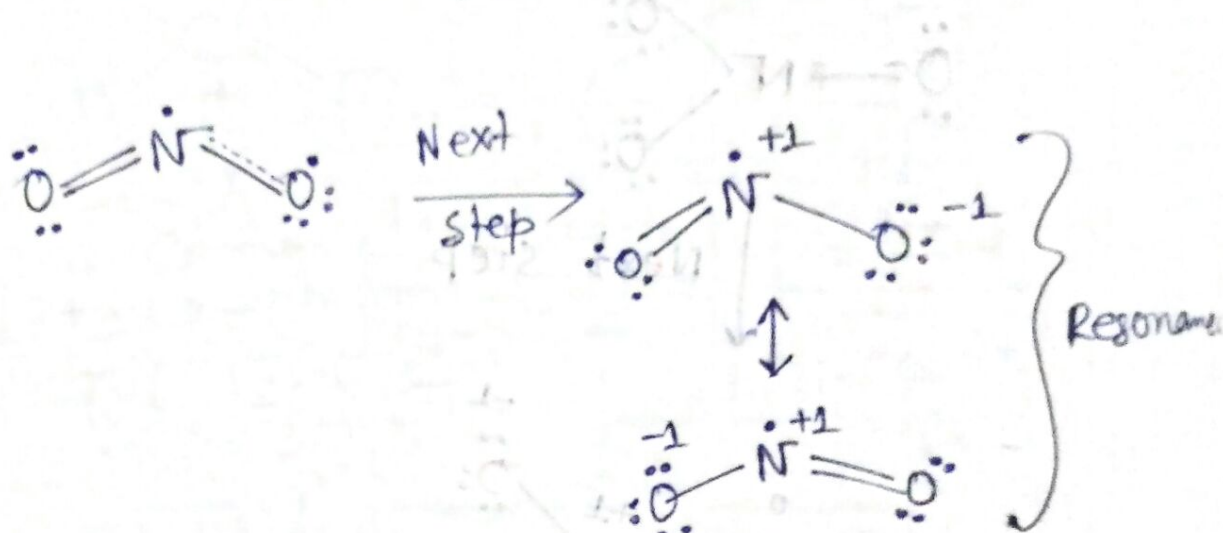


Resonating structures
structure - 2 structures.

14

Example - 8

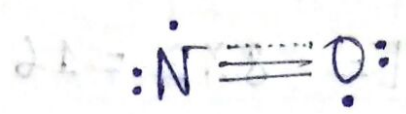
$$\begin{aligned}
 \text{NO}_2 &\Rightarrow T = 8 \times 3 = 24 \\
 &V = 5 + 6 \times 2 = 17 \\
 &S = T - V = 24 - 17 = 7 \\
 &\therefore \frac{S}{2} = \frac{7}{2} = 3.5 \\
 &L = V - S = 17 - 7 = 10 \\
 &\therefore \frac{L}{2} = \frac{10}{2} = 5
 \end{aligned}$$



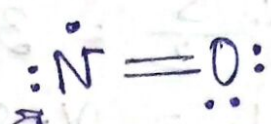
Example - 9

$$\begin{aligned}
 \text{NO} &\Rightarrow T = 8 \times 2 = 16 \\
 &V = 5 + 6 = 11 \\
 &S = T - V = 16 - 11 = 5 \\
 &\therefore \frac{S}{2} = \frac{5}{2} = 2.5 \\
 &L = V - S = 11 - 5 = 6 \\
 &\therefore \frac{L}{2} = \frac{6}{2} = 3
 \end{aligned}$$

Lewis structure 2nd



Next step



Formal charge
 $= 5 - 2 - 3$
 $= 0$

Formal charge $= 6 - 2 - 4 = 0$

Example - 10

$\text{ClO}_4^- \Rightarrow$

$T = 8 \times 5 = 40$

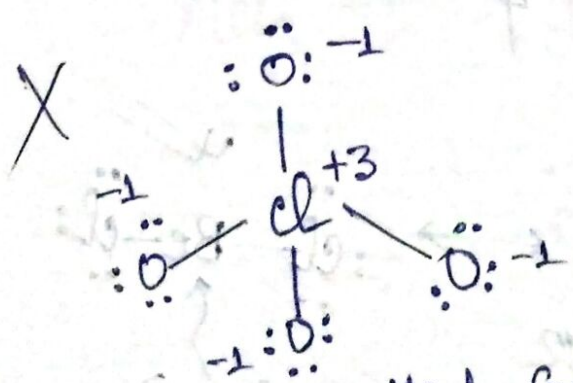
$V = 7 + 6 \times 4 + 1 = 32$

$S = T - V = 40 - 32 = 8$

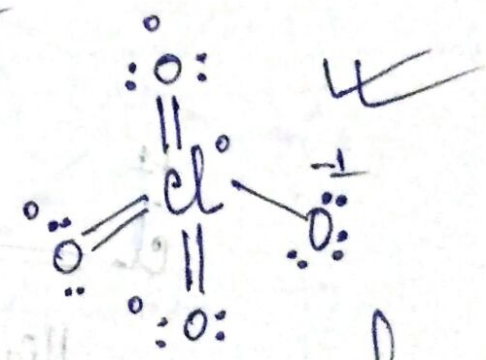
$\therefore \frac{S}{2} = \frac{8}{2} = 4$

$L = V - S = 32 - 8 = 24$

$\therefore \frac{L}{2} = \frac{24}{2} = 12$

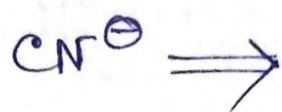


High formal charge



Low formal charge

(46)

Example - 11

$$T = 8 \times 2 = 16$$

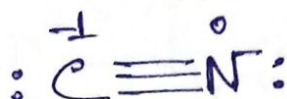
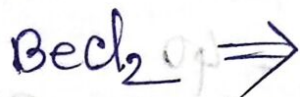
$$V = 4 + 5 + 1 = 10$$

$$S = T - V = 16 - 10 = 6$$

$$\therefore \frac{S}{2} = 3$$

$$L = V - S = 10 - 6 = 4$$

$$\therefore \frac{L}{2} = 2$$

Example - 12 (Incomplete octate)

$$T = 8 \times 3 = 24$$

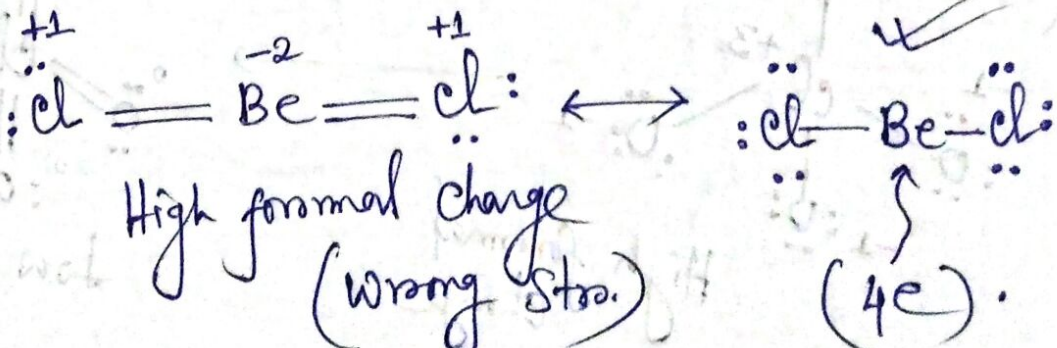
$$V = 2 + 7 \times 2 = 16$$

$$S = T - V = 24 - 16 = 8$$

$$\therefore \frac{S}{2} = \frac{8}{2} = 4$$

$$L = V - S = 16 - 8 = 8$$

$$\therefore \frac{L}{2} = 4$$



18

Example of octate Expansion (কৃতিত্ব)

① $PCl_5 \Rightarrow T = 8 \times 6 = 48$
 $V = 5 + 7 \times 5 = 40$
 $S = T - V = 48 - 40 = 8$
 $\therefore \frac{S}{2} = 4$
 $L = V - S = 40 - 8 = 32$
 $\therefore \frac{L}{2} = 16$

No. of bonds = 4, তাই 4 টি Bond
 দিবে 5 টি Cl atom Connect
 করা অসম্ভব নয়। অর্থাৎ 5 টি Bond
 দ্বারা। এছাড়া Central atom
 এর octate expansion হওয়া।

Minimum 2 টি d-electron হওয়া।

New calculation $\rightarrow$

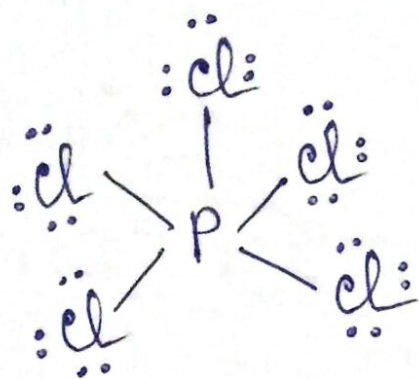
$$T = 8 \times 6 + 2 = 50$$

added electrons

$$V = 40$$

$$\therefore S = T - V = 10 \quad \therefore \frac{S}{2} = 5$$

$$L = V - S = 30 \quad \therefore \frac{L}{2} = 15$$



trigonal bipyramidal Lewis structure

Example -2

$$\text{SF}_6 \Rightarrow \begin{aligned} T &= 7 \times 8 = 56 \\ V &= 6 + 7 \times 6 = 48 \\ S &= T - V = 56 - 48 = 8 \end{aligned}$$

$$\therefore \frac{S}{2} = \frac{8}{2} = 4$$

insufficient to form
at least six bonds.

$\therefore$ At least, 4 d-electrons need to
be added for the central atom.

$\therefore$ octate expansion of central atom.

$$\text{New calculation} \rightarrow T = 56 + 4 = 60$$

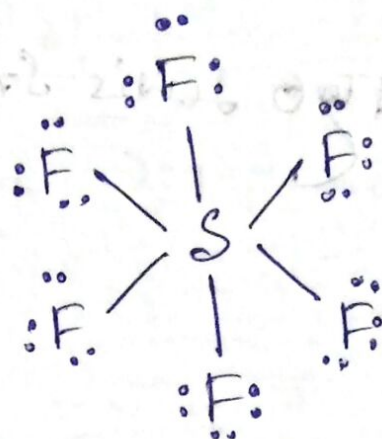
$$V = 48$$

$$S = 60 - 48 = 12$$

$$\therefore \frac{S}{2} = 6$$

$$L = V - S = 48 - 12 = 36$$

$$\therefore \frac{L}{2} = 18$$



Example - 3

$$\text{IO}_2\text{F}_2^- \Rightarrow S = T - V = 40 - 34 = 6$$

$$\therefore \frac{S}{2} = 3$$

$\therefore$ 2 electrons need to be added.

New calculation $\rightarrow T = 40 + 2 = 42$

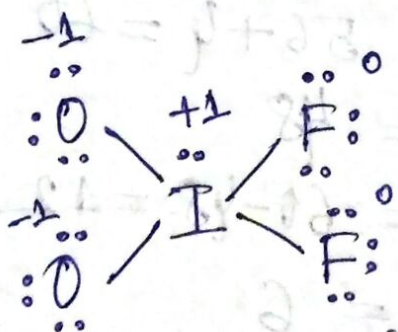
$$V = 34$$

$$S = 42 - 34 = 8$$

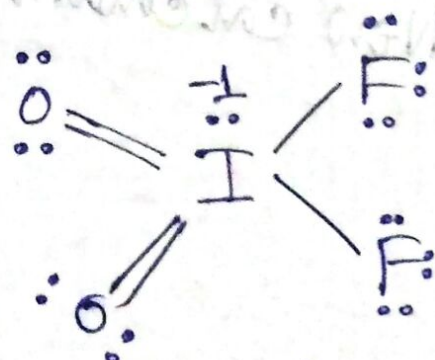
$$\frac{S}{2} = 4$$

$$L = V - S = 34 - 8 = 26$$

$$\therefore \frac{L}{2} = 13$$



High formal charge
(wrong str.)



(Final str.)