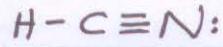
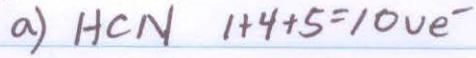


Practice Problems - 9/18/2019

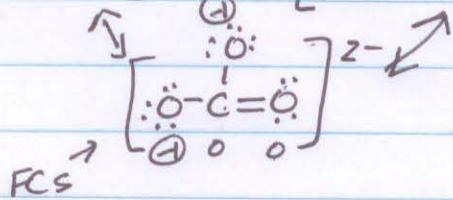
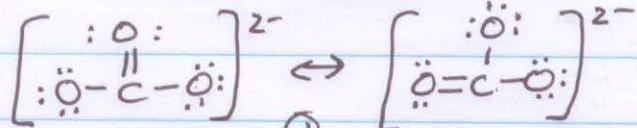
1.

- a) Li_2CO_3
- b) tetraphosphorus hexoxide
- c) Vanadium(III) oxide
- d) SiCl_4

2.

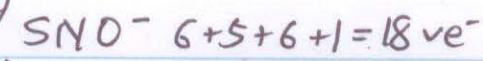


F.C. $\begin{matrix} \text{:O:} \\ \text{o} \end{matrix} \quad \begin{matrix} \text{:O:} \\ \text{o} \end{matrix} \quad \begin{matrix} \text{:O:} \\ \text{o} \end{matrix}$

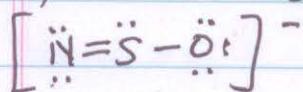


Need all 3 equivalent resonance structures here.

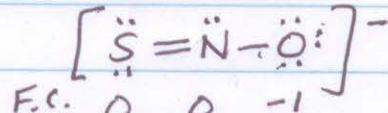
c)



i.) Comparing S vs. N as central atom:



F.C. $\begin{matrix} -1 \\ -1 \end{matrix} \quad \begin{matrix} +1 \\ +1 \end{matrix} \quad \begin{matrix} -1 \\ -1 \end{matrix}$

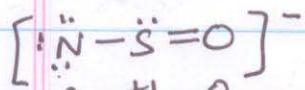


F.C. $\begin{matrix} 0 \\ 0 \end{matrix} \quad \begin{matrix} 0 \\ 0 \end{matrix} \quad \begin{matrix} -1 \\ -1 \end{matrix}$

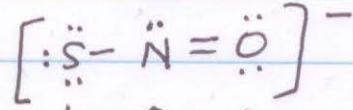
I

vs.

J



F.C. $\begin{matrix} -2 \\ -2 \end{matrix} \quad \begin{matrix} +1 \\ +1 \end{matrix} \quad \begin{matrix} 0 \\ 0 \end{matrix}$



F.C. $\begin{matrix} -1 \\ -1 \end{matrix} \quad \begin{matrix} 0 \\ 0 \end{matrix} \quad \begin{matrix} 0 \\ 0 \end{matrix}$

For a stable ion, N is the central atom. It allows for F.C.s to be minimized—as close to zero as possible

$[0, 0, -1]$

ii) Choosing the best structure:

$\left[\begin{matrix} \text{:S=O-O:} \\ \text{:S=O-O:} \end{matrix} \right]^-$ is best. Both structures having N as the central atom have F.C.s

minimized; this structure additionally places the -1 F.C. on the more electronegative O atom—the atom that is best able to attract e^- to itself.

Therefore, it gives the most reasonable picture of bonding.