Pre-AP [redacted] Chemistry ~~[redacted]~~ Homework Problems

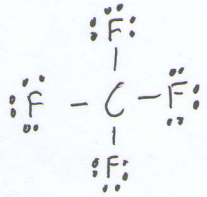
Beijing National Day School [redacted]

Lewis Structures I: The Octet Rule

1. For each of the following molecules, draw the best possible Lewis structure. Include all **non-zero** formal charges, and indicate **resonance** if appropriate.

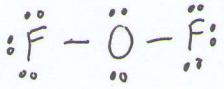
CF_4

Total valence e^- = VE(C) + 4 VE(F)
= 4 + 4(7) = 32



OF_2

Total valence e^- = VE(O) + 2VE(F)
= 6 + 2(7) = 20

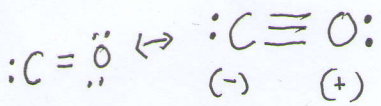


HCN

Total valence e^- = VE(H) + VE(C) + VE(N)
= 1 + 4 + 5 = 10

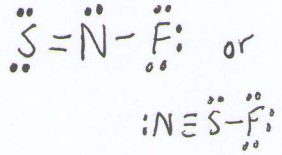
CO

Total valence e^- = VE(C) + VE(O)
= 4 + 6 = 10



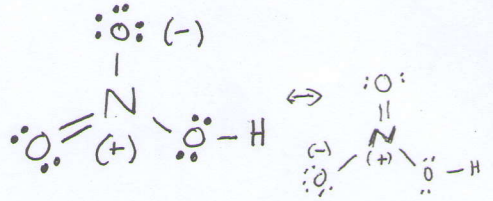
NSF

Total valence e^- = VE(N) + VE(S) + VE(F)
= 5 + 6 + 7 = 18



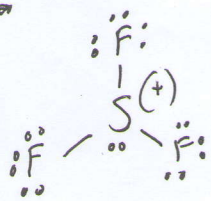
HNO_3

Total valence e^- = VE(H) + VE(N) + 3 VE(O)
= 1 + 5 + 3(6) = 24



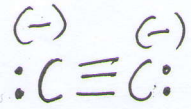
SF_3^+

Total valence e^- = VE(S) + 3VE(F) − 1
= 6 + 3(7) − 1 = 26



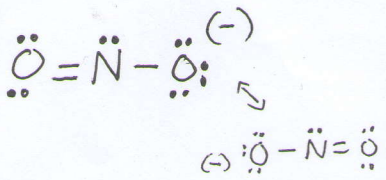
C_2^{2-}

Total valence e^- = 2VE(C) + 2
= 2(4) + 2 = 10



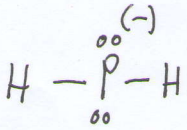
NO_2^-

Total valence e^- = VE(N) + 2VE(O) + 1
= 5 + 2(6) + 1 = 18



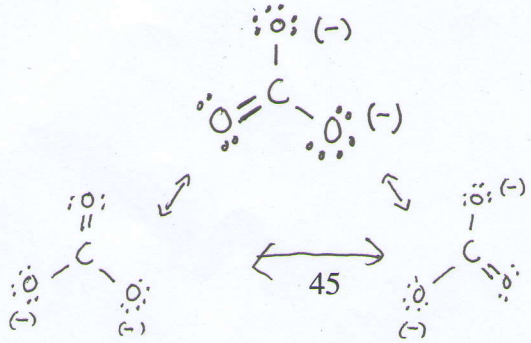
PH_2^-

Total valence e^- = VE(P) + 2VE(H) + 1
= 5 + 2(1) + 1 = 8



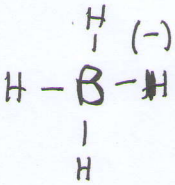
CO_3^{2-}

Total valence e^- = VE(C) + 3VE(O) + 2
= 4 + 3(6) + 2 = 24



BH_4^-

Total valence e^- = VE(B) + 4 VE(H) + 1
= 3 + 4(1) + 1 = 8



* Multiple answers accepted for some problems. See Mr. Shank if you have any questions *