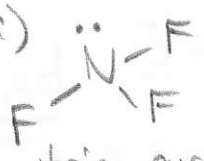
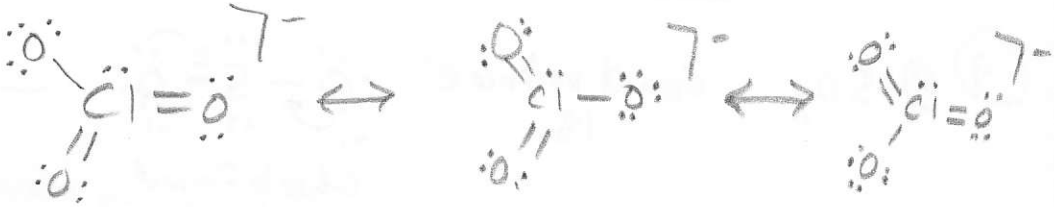
Ch 8

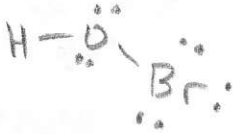
(5) a) 

trig. pyram.

b) 

trig. pyramidal

minimize formal charges!

c) 

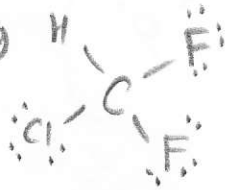
bent

H–O bonds are very common!

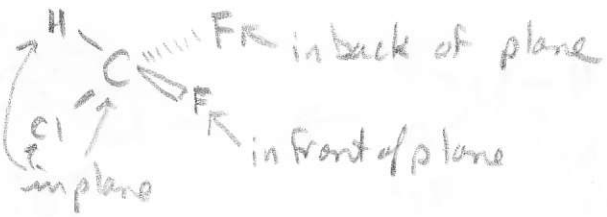
d) 

planar

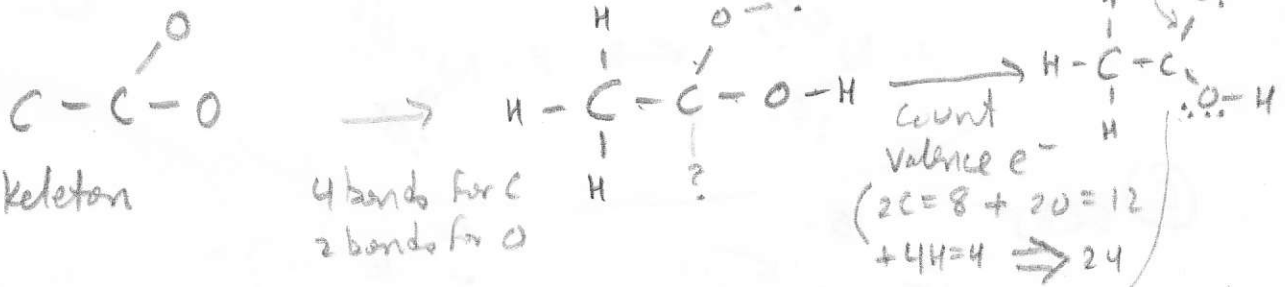
minimize formal charges.

(7) a) 

tetrahedral

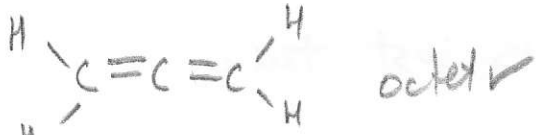


(b) CH_3CO_2H



(c) 

For organic molecules (C-rich) remember that C usually has 4 bp

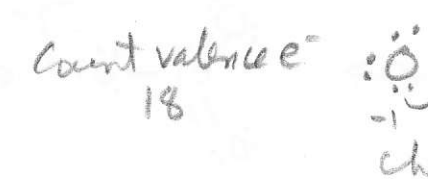
(d) 

octet ✓

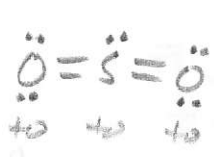
count valence e⁻ = 3C + 4H = 16

Ch 8

(9) @ SO_2 Count valence e⁻ 18

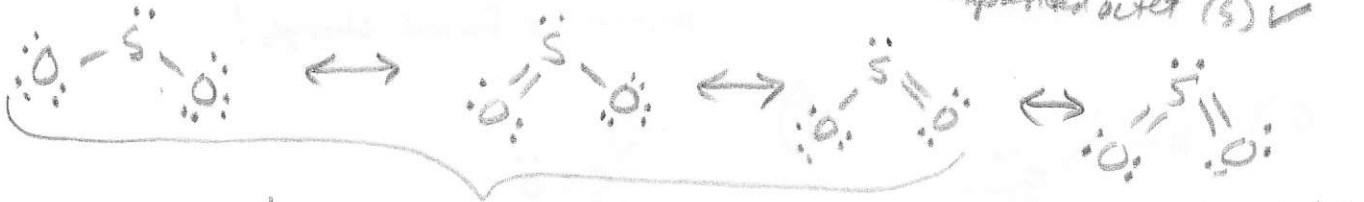


Check Formal charges → minimize



best

octet ✓ (O)
expanded octet (S) ✓



less stable due to formal charges. These Resonance forms are not important for the ground state.

most stable structure.

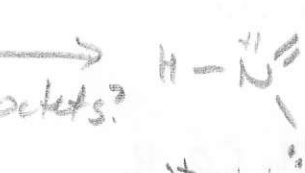
The best answer →

(b) HNO_2

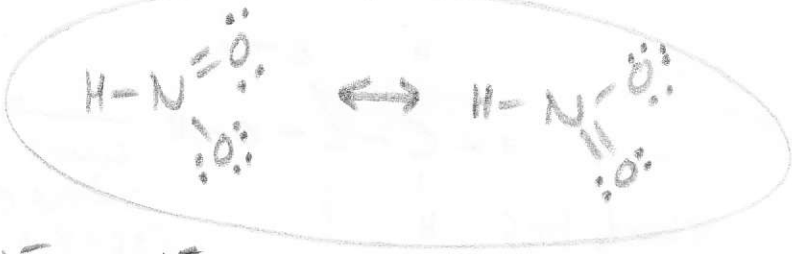
implied by the formula

18e⁻

octets?

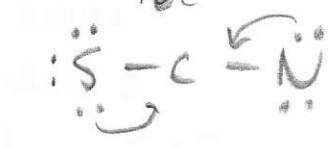


can't minimize F.C. due to octet limits.

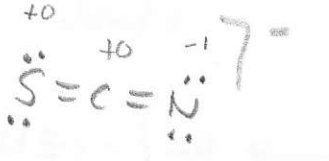


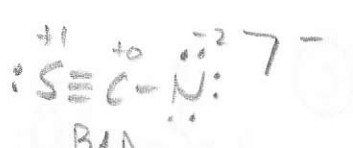
(c) SCN^-

18e⁻

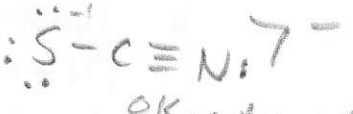


octet?

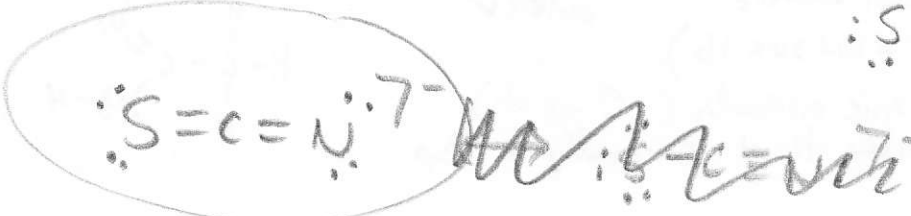




BAD



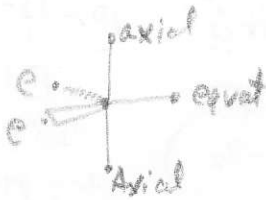
OK, not great.



Best answer is just this.

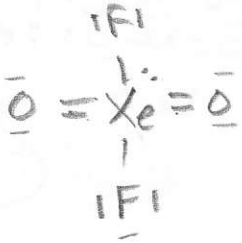
Ch 8

(11) (a) BrF_3



trigonal planar

(c) XeO_2F_2

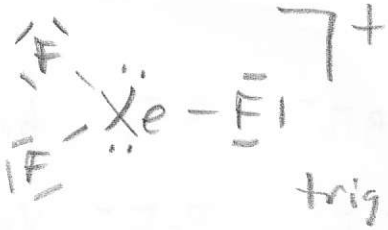


see-saw

(b) I_3^-

linear

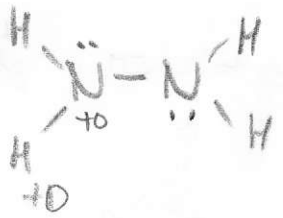
(d) XeF_3^+



trig. planar

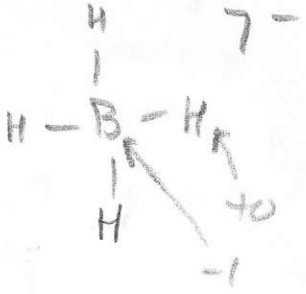
lp occupy more space than bp!

(13) (a)



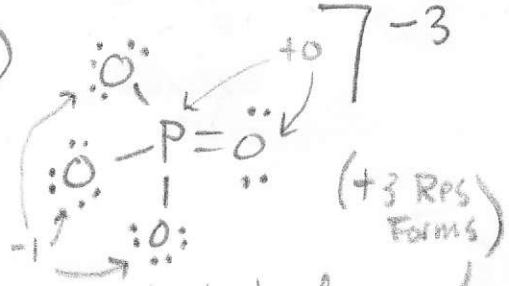
trig. pyramidal at each N

(c)



tetrahedral

(b)

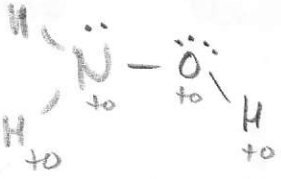


(+3 Res Forms)

tetrahedral

average Formal Charge
each P: +0
each O: $-3/4$

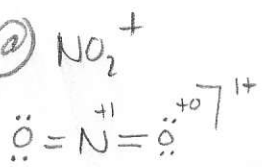
(d)



bent @ O
trig planar @ N

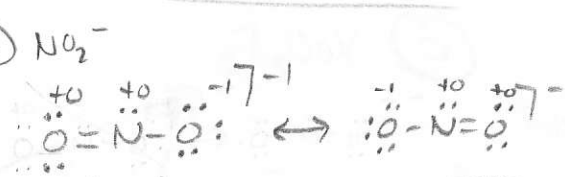
Ch 8

(15) (a) NO_2^+



linear

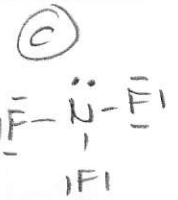
(b) NO_2^-



bent

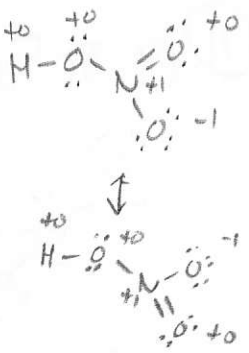
~~average~~ N +0
each O −½
F.C.

(c)



"+0" FC all
trig. pyram.

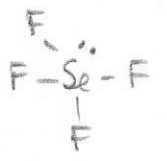
(d)



---

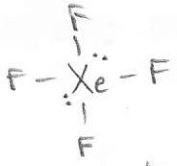
(55) octet? BF_4^- SiF_4 have octets

SeF_4 BrF_4^- XeF_4 have expanded octets



See-saw

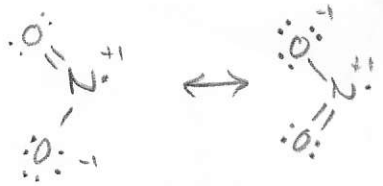
Sq. planar



Sq. planar

octahedral e⁻ geometry.

(56)



odd-electron.
Central atom violates octet

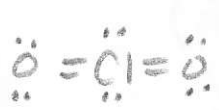
expanded octet

NH_3

octet

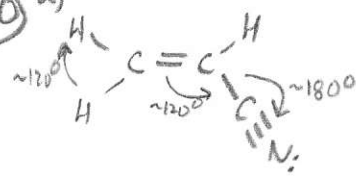
expanded octet

odd-electron
central atom expanded past octet



expanded octet

(70) a)



b,c) C=C shorter & stronger than C-C

d) positive regions are near the H-atoms. Neg Region near the N

e) C≡N bond is most polar

F) yes, the molecule is polar