

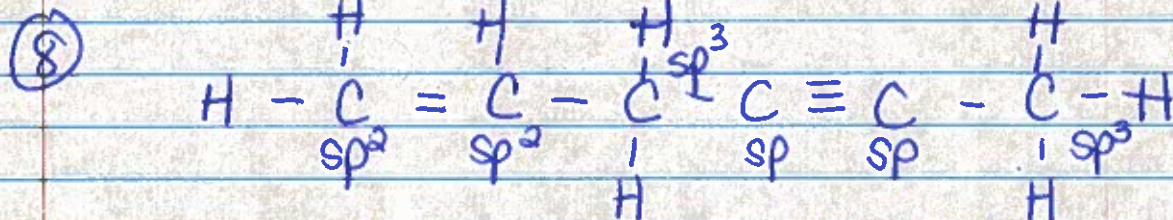
## Chapter 9

- (3) a) square pyramidal  
 b) yes, otherwise would be trigonal bipyramidal with just 5 bonding domains. This molecule has 5 bonding and 1 nonbonding domain.  
 c) has lone pair  $e^-$  (=2) + 5 bonding  $e^-$  so must contain 7 v.e. in A making it a halogen (Group 17)

(5) c) actual bond length of the Cl-Cl bond

- (6) b) tetrahedral  
 c) trigonal planar

(7)  $sp^3$

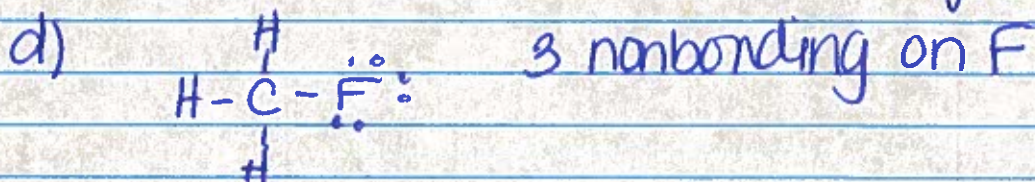
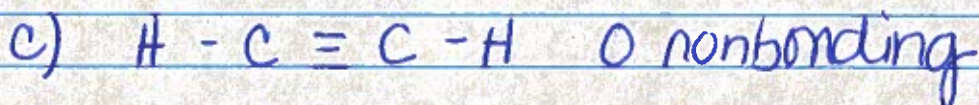
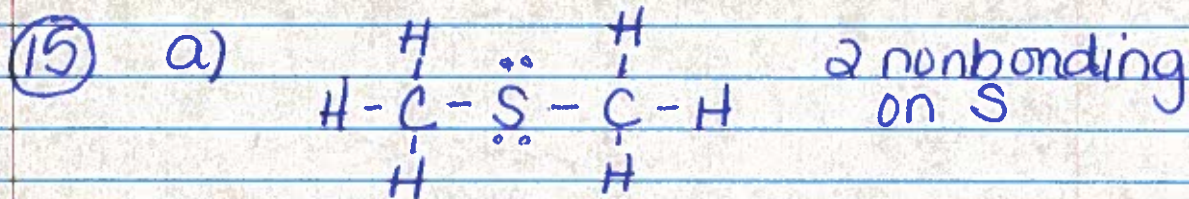


$\sigma$  = all single bonds + 1<sup>st</sup> bond of a multiple bonds

12  $\sigma$  , 3  $\pi$

- (14) a) Count the number of bonded atoms and number of valence  $e^-$  pairs and add them together  
 b) bonding domain - any single, double or triple bond  
 nonbonding : 1 lone valence  $e^-$  pairs



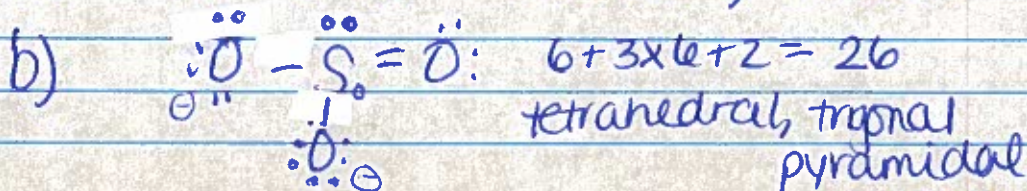
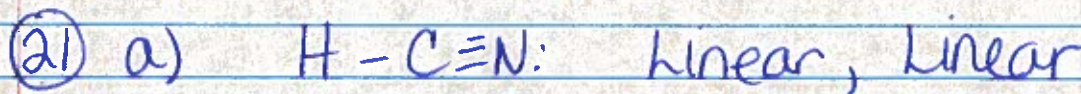


- 16) a) trigonal planar  
 b) tetrahedral  
 c) trigonal bipyramidal  
 d) octahedral

18) trigonal bipyramidal = 5 e<sup>-</sup> domains  
 3 bonding, 2 nonbonding

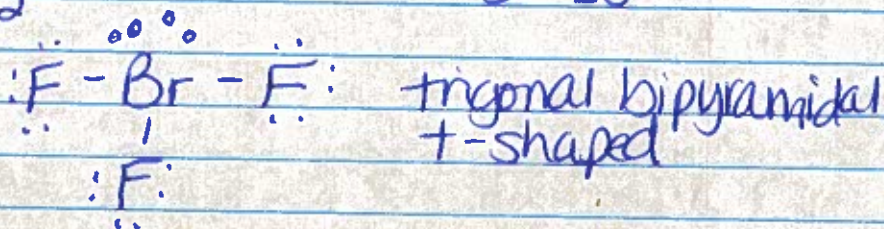
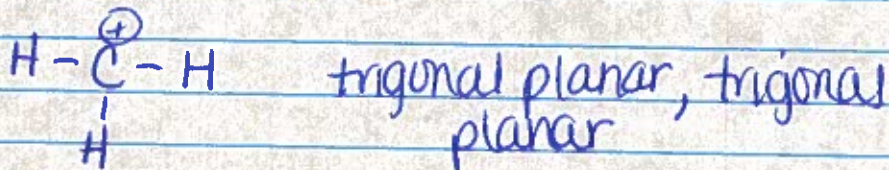
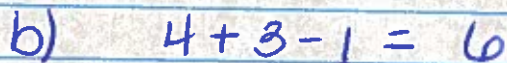
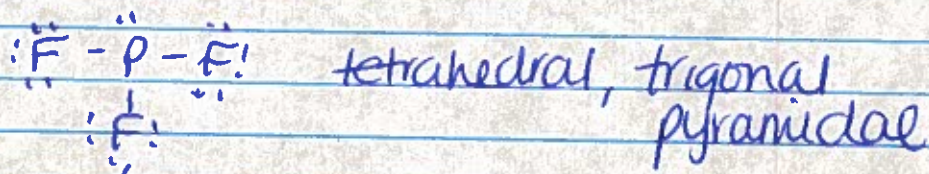
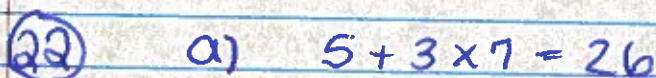
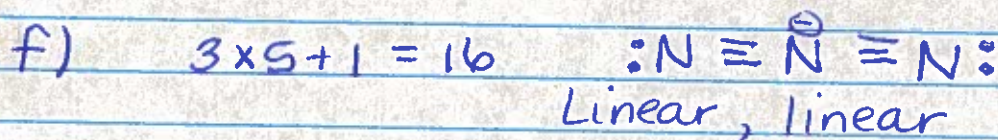
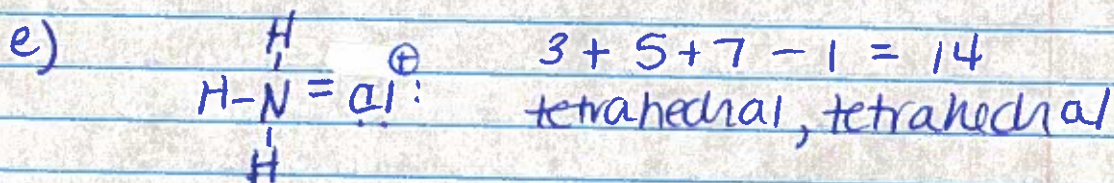
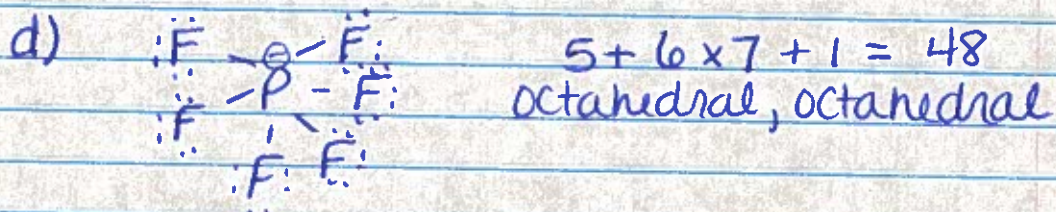
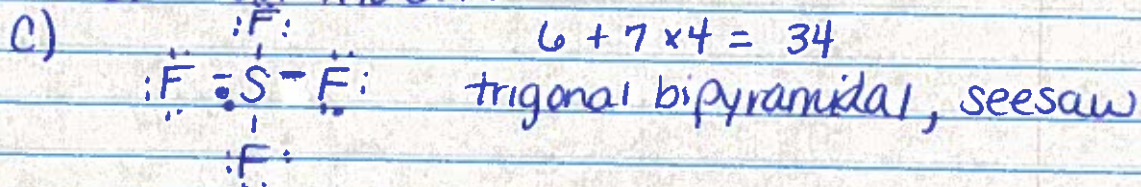
- 19) a) tetrahedral, tetrahedral  
 b) trigonal bipyramidal, + shaped  
 c) octahedral, square pyramidal  
 d) octahedral, square planar

- 20) a) trigonal planar, trigonal planar  
 b) tetrahedral, trigonal pyramidal  
 c) tetrahedral, bent

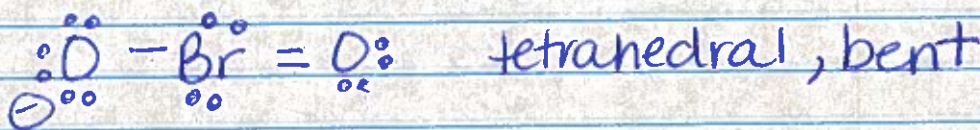
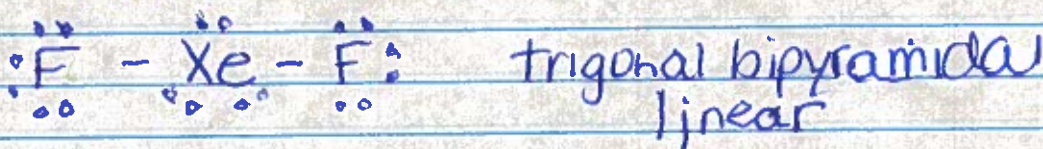
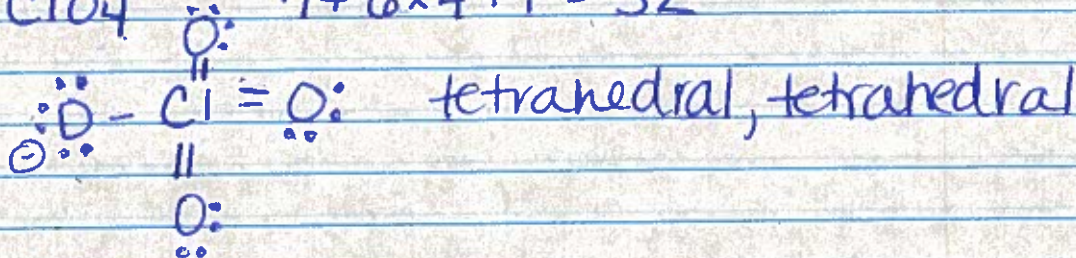
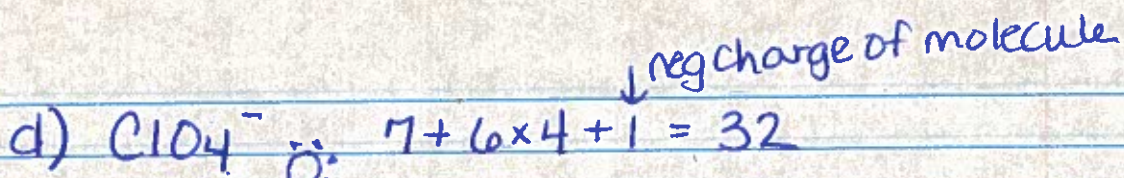




Ch9 continued...





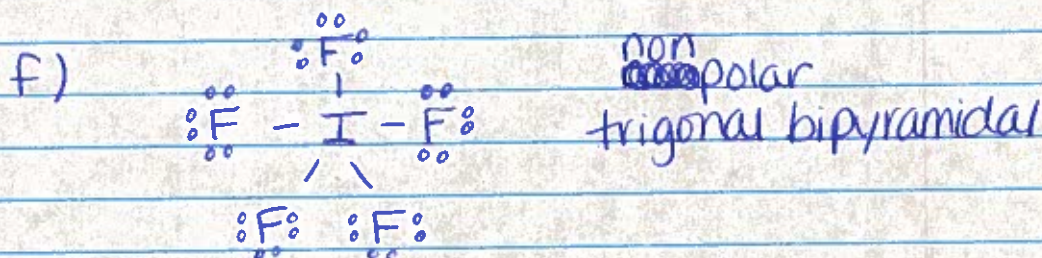
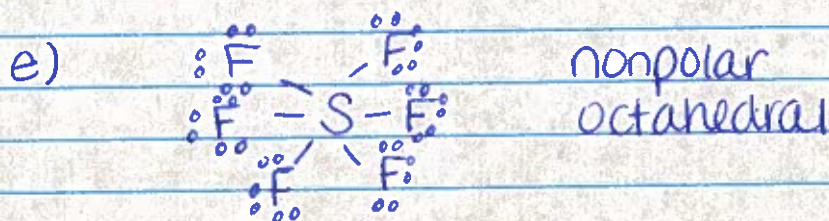
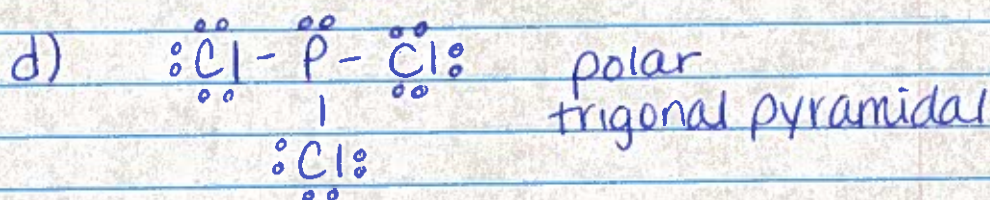
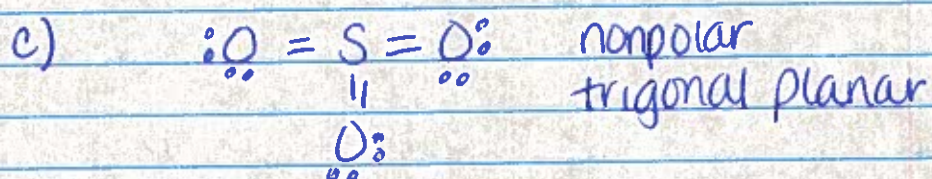
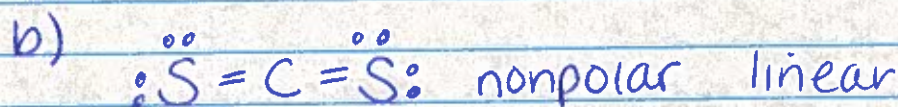
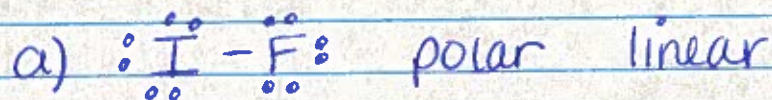


- 25
- a) 1) tetrahedral 109
  - 2) tetrahedral 109
  - b) 3) tetrahedral 109
  - 4) tetrahedral 109
  - c) 5) linear 180
  - d) 6) trigonal planar 120
  - 7) tetrahedral 109
  - 8) tetrahedral 109

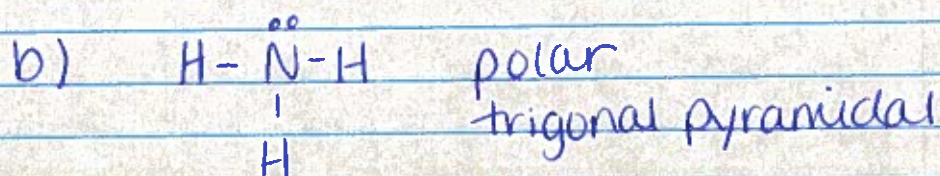
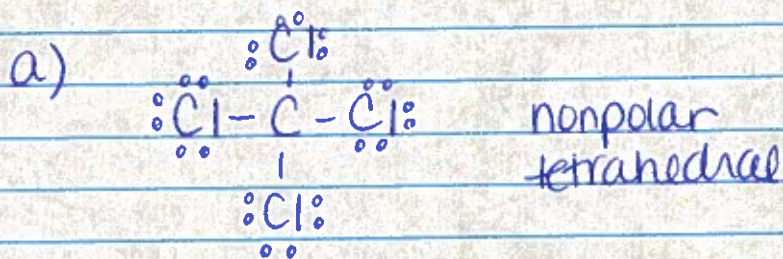
- 26
- a) 1) tetrahedral 109
  - 2) trigonal planar 120
  - b) 3) tetrahedral 109
  - 4) trigonal planar 120
  - c) 5) tetrahedral 109
  - 6) tetrahedral 109
  - d) 7) linear 180
  - 8) tetrahedral 109



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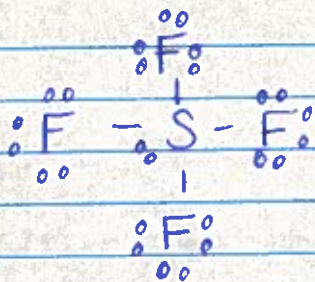


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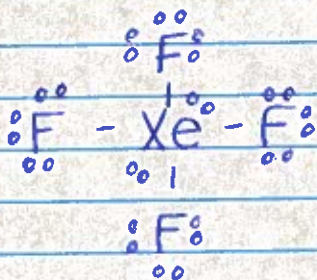
c)



$$4 \times 7 + 6 = 34$$

polar  
seesaw

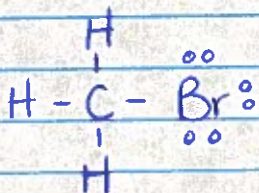
d)



$$8 + 7 \times 4 = 36$$

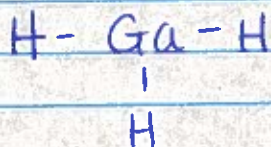
nonpolar  
square planar

e)



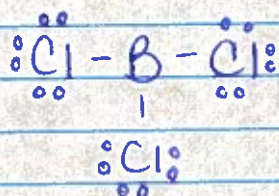
polar  
tetrahedral

f)



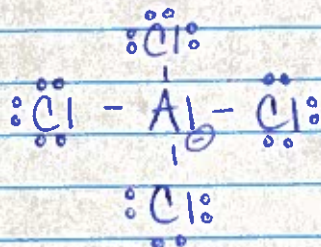
trigonal planar  
nonpolar

47 a)



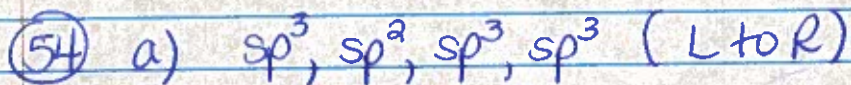
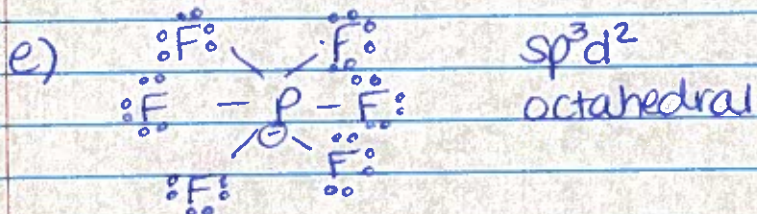
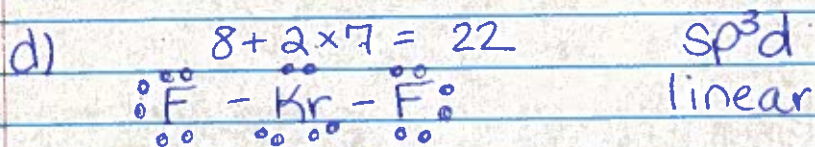
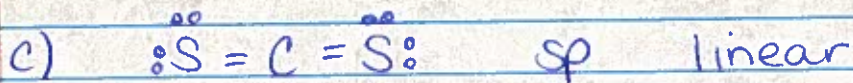
$sp^2$   
trigonal planar

b)



$sp^3$   
tetrahedral





b)  $4 \times 4 + 8 \times 1 + 2 \times 6 = 36$

c)  $\theta$  bonds = single bonds + 1<sup>st</sup> bond of multiple bonds  
 $13 \times 2 = 26$  v.e.

d) 2 v.e.

e) 8 v.e.

