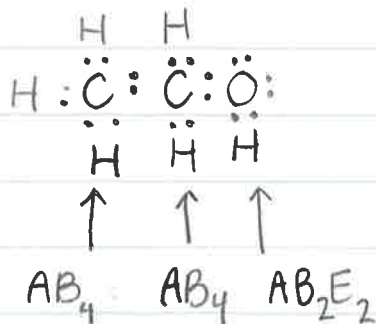
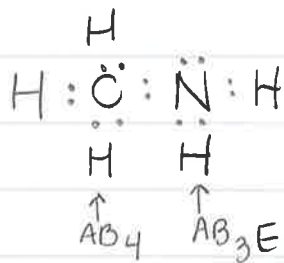
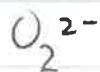
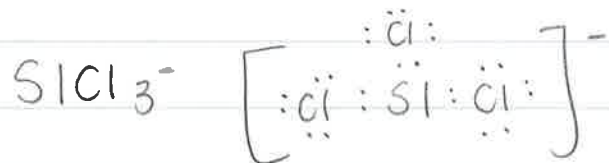
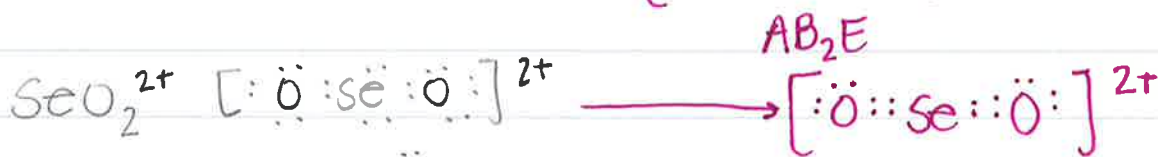
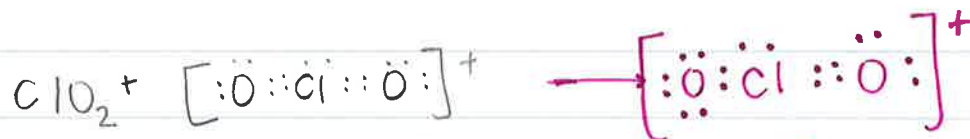


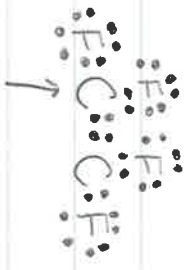
Find the mistakes:

October 30th



CF₂CF₂

October 30th



AB₃
↓
sp³



↳ carbon monoxide

FC: -1
+1
O = TOTAL 0

*underlined means central atom



AB₂

linear 180°

putting nitrogen in FIRST

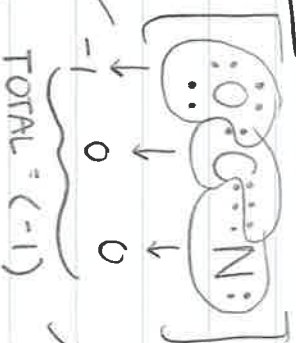


putting oxygen in FIRST

Formal charges:

↳ all e⁻ of an element + half of bonded e⁻

BEST



TOTAL = (-1)

oxygen is more electronegative! (↳ MUST)

match charge of overall molecule!

or



TOTAL = (-1)

NOT TOO BAD

BAD

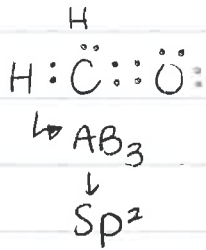


↳ +1 0 -2

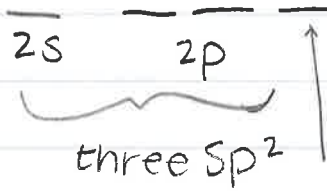
separation of charges ↳ NOT IDEAL!

CH₂O

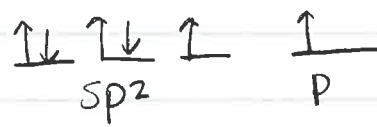
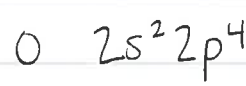
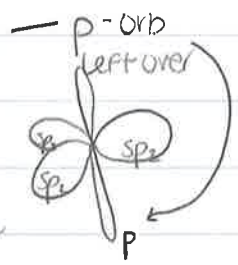
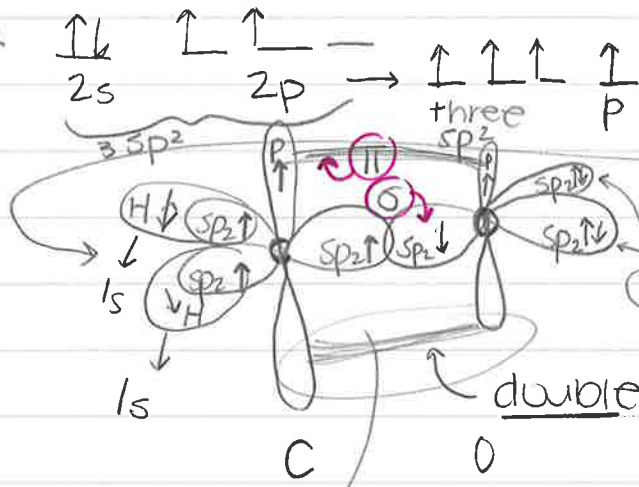
October 30th



Sp²



C Sp²



σ bond = single bond (σ bond ONLY)
(sigma)

π bond = double bond (π bond + σ bond)
(pi)

triple bond = one σ + 2π bonds

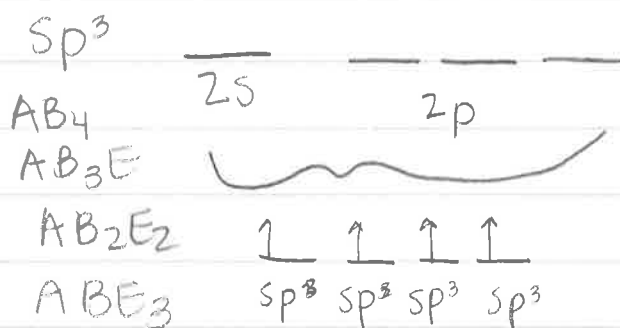
stronger bonds & shorter

Sp² + p ← likely to make a π bond

Sp + two p ← likely to make two π bonds



October 30th



Expanded octets

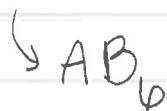
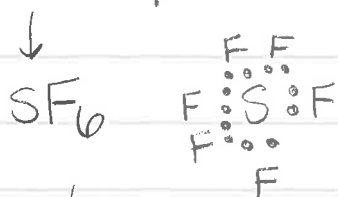
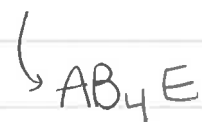
(a.k.a. fluorine chemistry)

* period 3 or greater for central element

(not B C N O F)

* E group (one or more)

* E \rightarrow 2B



Chapter 8 Day 1 (Sections 8.1 – 8.4) (Unit 4) 30 October 2019

1. Sketch Lewis dot structures for these molecules and add the ABE for each central atom.

(a) C_2O_2 (Atoms arranged: O – C – C – O)	(b) CH_3NH_2
(c) CH_3CCH (the C atoms are arranged: C – C – C)	(d) CH_3COCH_3 (the C atoms are arranged: C – C – C)

2. Add hybridization labels to every non-H atom in the above drawings.

3. What is the total number of σ -bonds in each molecule? What is the total number of π -bonds in each molecule?

(a) C_2O_2 _____ σ -bonds and _____ π -bonds	(b) CH_3NH_2 _____ σ -bonds and _____ π -bonds
(c) CH_3CCH _____ σ -bonds and _____ π -bonds	(d) CH_3COCH_3 _____ σ -bonds and _____ π -bonds

4. Indicate which atoms are the most electronegative with δ^- by the atomic symbols.

5. Which structure(s) has(have) the shortest and strongest carbon-carbon bond?

6. Which structure(s) has(have) a linear carbon center?

7. Which structures has(have) carbon centers with 120° angles?

Questions in final exam format (multiple choice):

8. What is the molecular geometry of CH_3^- ?

- A. T-shaped
- B. tetrahedral
- C. trigonal planar
- D. trigonal pyramidal

9. What is the F—B—F bond angle in BF_3 ?

- A. less than 109.5°
- B. 109.5°
- C. 120°
- D. greater than 120°

10. The orbital hybridization on the central carbon atom in CH_3CCH is

- A. sp
- B. sp^2
- C. sp^3
- D. sp^4

11. A molecule with the formula XF_3 where the element X has the hybridization sp^3 . Which of the following elements could be X?

- A. C
- B. P
- C. B
- D. Si

Now try these problems from the book:

Section 8.1. (Shapes) Problems: 1 – 4, 38 – 56 (even)

Section 8.2 – 8.4. (Valence bond theory) Problems: 5 – 10, 30, 32, 58 – 76 (even)

Practice test (pg 317) 1 - 9