

Name: _____

date: _____

period: _____

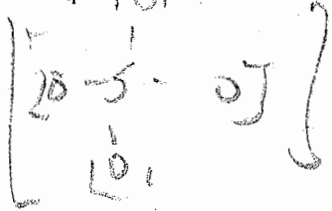
ch. 6, 8, & 9 periodic trends; ionic / covalent compounds; Lewis structure, vsepr, & molecular polarity

test 55 points

honors chemistry

1. Sketch the Lewis structure(s) of SO₄²⁻; might be a hypothetical chemical. [10 points]

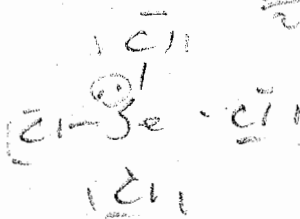
a. SO₄²⁻



S: 1 - 6 = 6

O: 4 - 2 = 24

b. SeCl₄



3 + 2 = 5

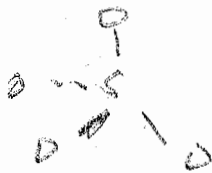
1 lone pair

Se: 1 - 6 = 6
Cl: 4 - 7 = 28

$$\begin{array}{r} 28 \\ + 6 \\ \hline 34 \\ - 8 \\ \hline 26 \end{array}$$

2. Based on the above response, sketch the shape of the chemical, it's bond angle(s), and the name of the shape of the chemical. [10 points]

a. SO₄²⁻



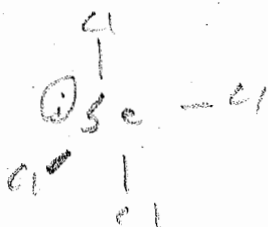
∠ = 109°

tetrahedral

2

1 pt

b. SeCl₄



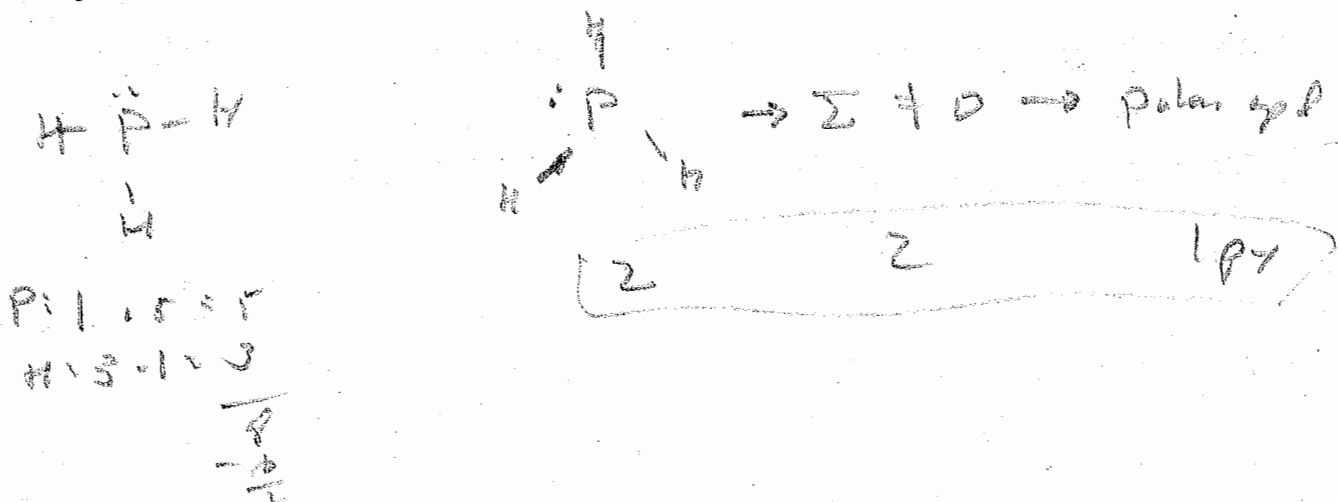
∠ 120°

∠ 90°

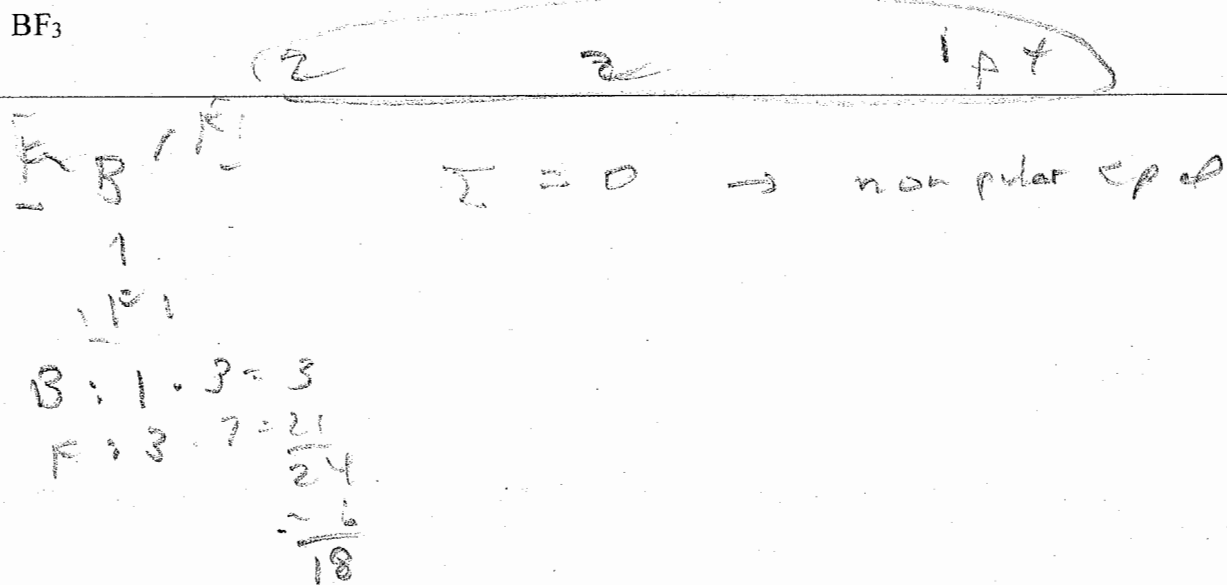
see saw

3. What is the molecular polarity of ___; basis / rationale? Might be a hypothetical chemical. [10 points]

a. PH₃



b. BF₃



4. Fill-in the below table; might be hypothetical compounds. [10 points]

2/10

Chemical name	Chemical formula
disilicon heptoxide	Si ₂ O ₇
Aluminium oxide	Al ₂ O ₃
Barium phosphate	Ba ₃ (PO ₄) ₂
Iron (III) sulfide	Fe ₂ S ₃
B ₄ H ₈	tetra boron octahydride

5. What is the relative atomic size of chlorine and bromide? Basis / rationale? [5 points]

Br larger b/c has more shells of e-

1 + 4 pt

6. What is the relative ^{1st} ionization energy between carbon and nitrogen? Basis / rationale? [10 points]

N bigger b/c ↑ Z } → ↑ Z_eff → ↑ F → harder to remove e-
 ↑ 5 }
 2 2 1 1

↑ I.E ← Reason to remove e-
 1 4 pt

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ch. 6, 8, & 9 periodic trends; ionic / covalent compounds; Lewis structure, vsepr, & molecular polarity

retest 55 points

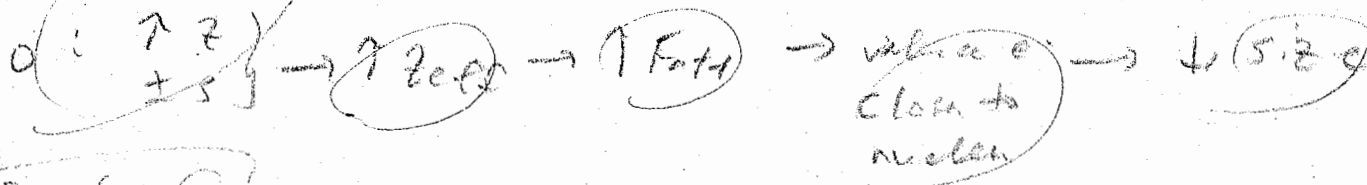
honors chemistry

1. Fill-in the below table; might be hypothetical compounds. [10 points]

Chemical name	Chemical formula
Mercury (I) peroxide	Hg_2O_2
Lithium carbonate	Li_2CO_3
Copper(II) sulfide	CuS
dinitrogen hexafluoride	N_2F_6
hydrogen peroxide	H_2O_2

2. What is the relative atomic size of nitrogen versus oxygen? Basis / rationale? [10 points]

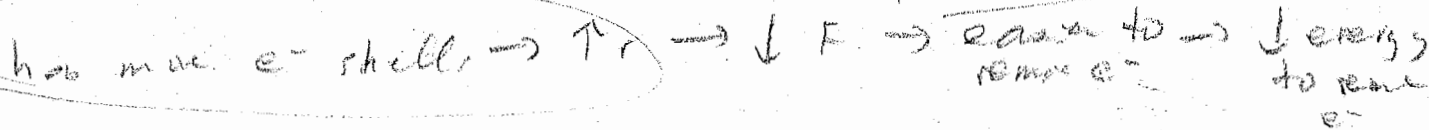
O has smaller atomic size b/c



2 pts @

3. What is the relative first ionization energy of sulfur versus oxygen? Basis / rationale? [10 points]

S has lower 1st IE b/c



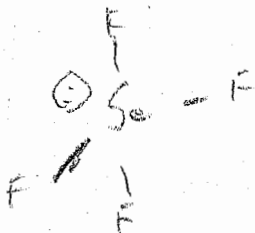
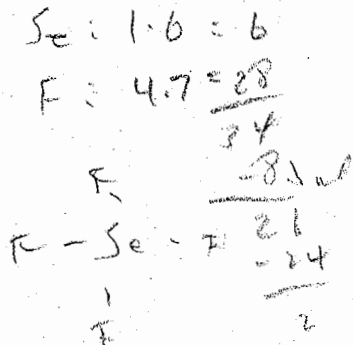
3 pts

1 pt

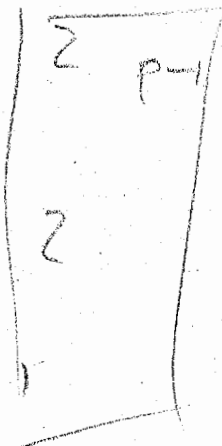
\downarrow
 \downarrow IE

4. What is the molecular polarity of ___; basis / rationale? [10 points]

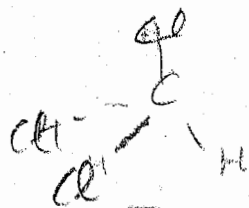
a. selenium tetrafluoride



Σ bond dipole $\neq 0$



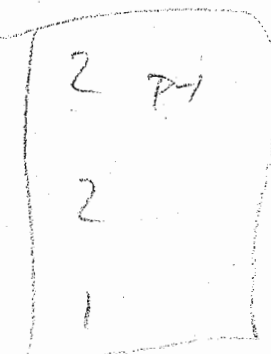
b. $CHCl_3$



Σ bond dipole $\neq 0$

polar yes

polar yes



5. Using the concept of electrostatic forces, what is the basis / rationale of the bonds in ___? [10 points]

a. carbon monoxide

CO ; covalent bond

nucleus in atoms have mutual attraction of shared e^-

b. potassium bromide

KBr ; ionic bond

e^- transf. from K to Br , form

$K^+ Br^-$

Attraction between ions

7. Sketch the Lewis structure(s) of CH_2O . [5 points]

