Name:_____

SCH 3U Bonding Quiz

1. For each of the following:
    -   determine the type of bonding (ionic vs covalent) and clearly state to the left of the atoms
    -   do the rough work
    -   show the results (draw good answer diagrams)
    -   add the details

Ca   Br

$\overline{5}$

P   Cl

$\overline{5}$

C   O

$\overline{5}$

H   O

$\overline{5}$

$\overline{20}$

Name:_____

SCH 3U Bonding Quiz

1. For each of the following:
   - determine the type of bonding (ionic vs covalent) and clearly state to the left of the atoms
   - do the rough work
   - show the results (draw good answer diagrams)
   - add the details

___

ionic

$\Rightarrow$

$\frac{}{5}$

$\Delta EN = 2.96 - 1.00$

$= 1.96$

___

covalent

$\frac{}{5}$

$\Delta EN = 3.16 - 2.19$

$= 0.97$

___

covalent

$\frac{}{5}$

$\Delta EN = 3.44 - 2.55$

$= 0.89$

___

covalent

$\frac{}{5}$

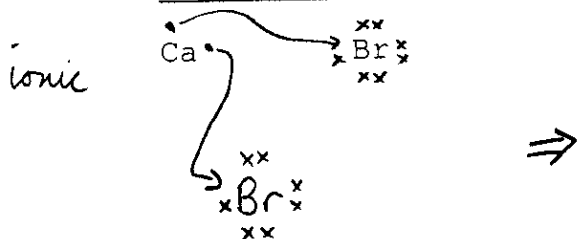$\Delta EN = 3.44 - 2.20$

$= 1.24$
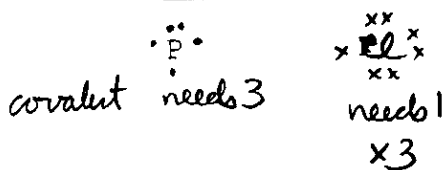
$\overline{20}$

$\overline{37}$ = %

SCH 3U Bonding Quiz

1. For each of the following:
   - determine the type of bonding (ionic vs covalent) and clearly state to the left of the atoms
   - do the rough work
   - show the results (draw good answer diagrams)
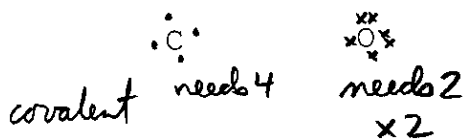   - add the details

---

ionic

$\cdot$Ca$\cdot$ $\longrightarrow$ $^{xx}_{x}$Br$^{x}_{xx}$

$\Longrightarrow$

$^{xx}_{x}$Br$^{x}_{xx}$

$\overline{5}$

$\Delta EN = 2.96 - 1.00$

$= 1.96$

---

covalent $\cdot\overset{\cdot\cdot}{P}\cdot$ needs 3 $^{xx}_{x}\overset{..}{Cl}^{x}_{xx}$

needs 1
×3

$\overline{5}$

$\Delta EN = 3.16 - 2.19$

$= 0.97$

---

covalent $\cdot\overset{\cdot}{\underset{\cdot}{C}}\cdot$ needs 4 $^{xx}_{x}\overset{}{O}^{x}_{x}$ needs 2
×2

$\overline{5}$

$\Delta EN = 3.44 - 2.55$

$= 0.89$

---

covalent   H$\cdot$ needs 1
×2 $^{xx}_{x}O^{x}_{x}$ needs 2

$\overline{5}$

$\Delta EN = 3.44 - 2.20$

$= 1.24$

$\overline{20}$

Name:_____

SCH 3U Bonding Quiz

1. For each of the following:
    -   determine the type of bonding (ionic vs covalent) and clearly state to the left of the atoms
    -   do the rough work
    -   show the results (draw good answer diagrams)
    -   add the details
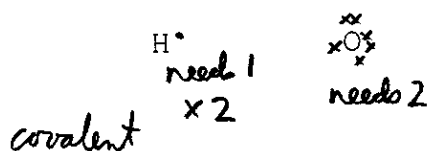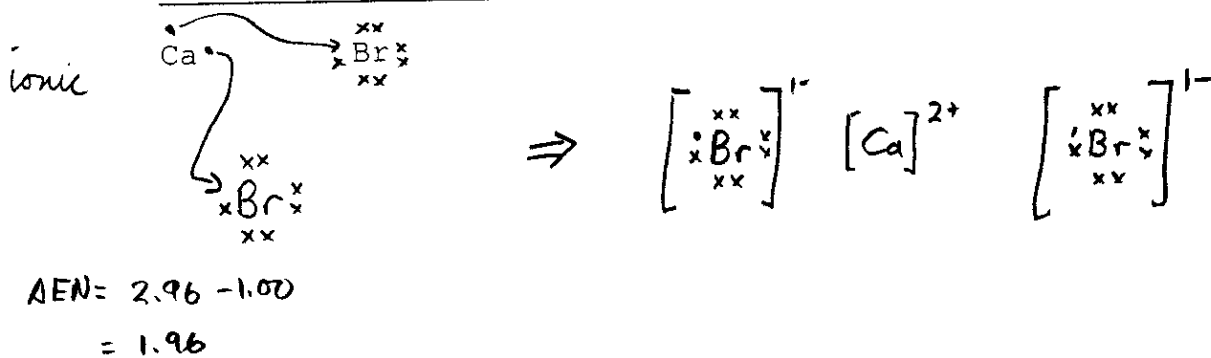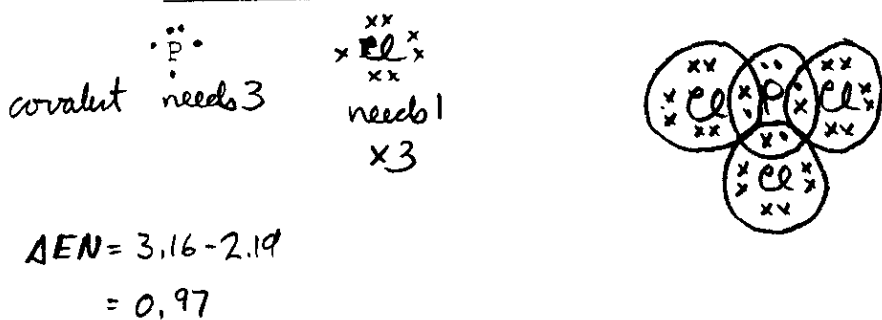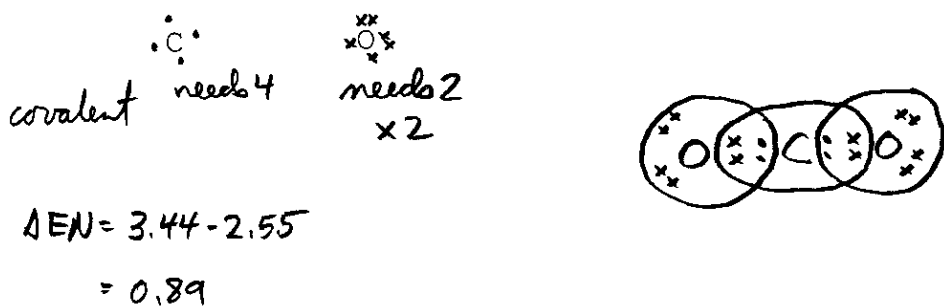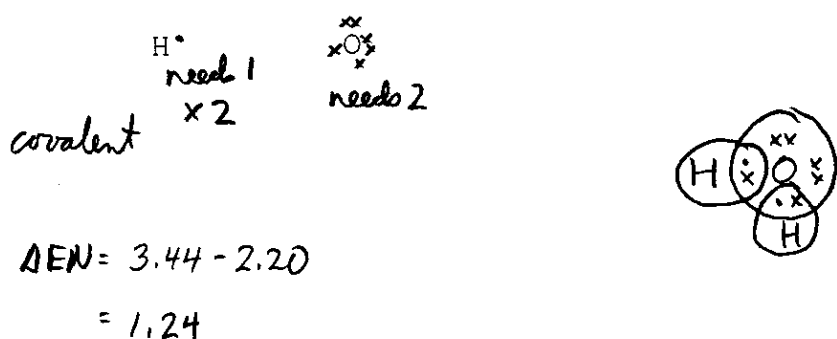
---

ionic

$\Delta EN = 2.96 - 1.00$

$\quad = 1.96$

$\dfrac{}{5}$

---

covalent   needs 3   needs 1   ×3

$\Delta EN = 3.16 - 2.19$

$\quad = 0.97$

$\dfrac{}{5}$

---

covalent   needs 4   needs 2   ×2

$\Delta EN = 3.44 - 2.55$

$\quad = 0.89$

$\dfrac{}{5}$

---

covalent   needs 1   needs 2   ×2

$\Delta EN = 3.44 - 2.20$

$\quad = 1.24$

$\dfrac{}{5}$

$\dfrac{}{20}$

SCH 3U Bonding Quiz

1. For each of the following:
   - determine the type of bonding (ionic vs covalent) and clearly state to the left of the atoms
   - do the rough work
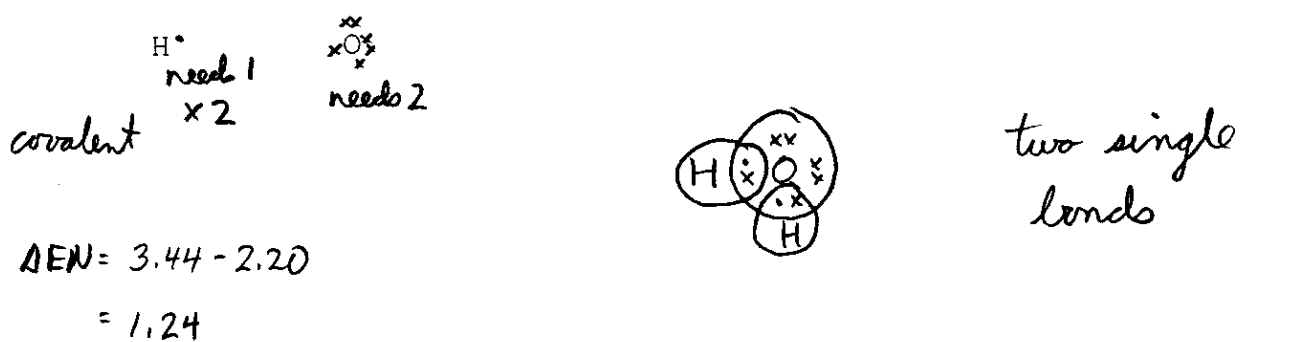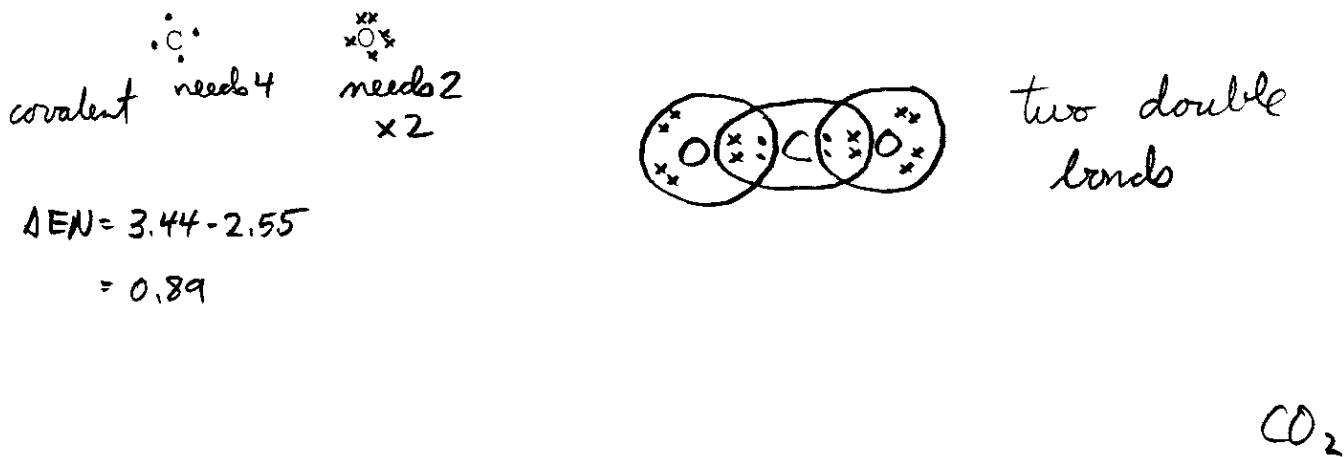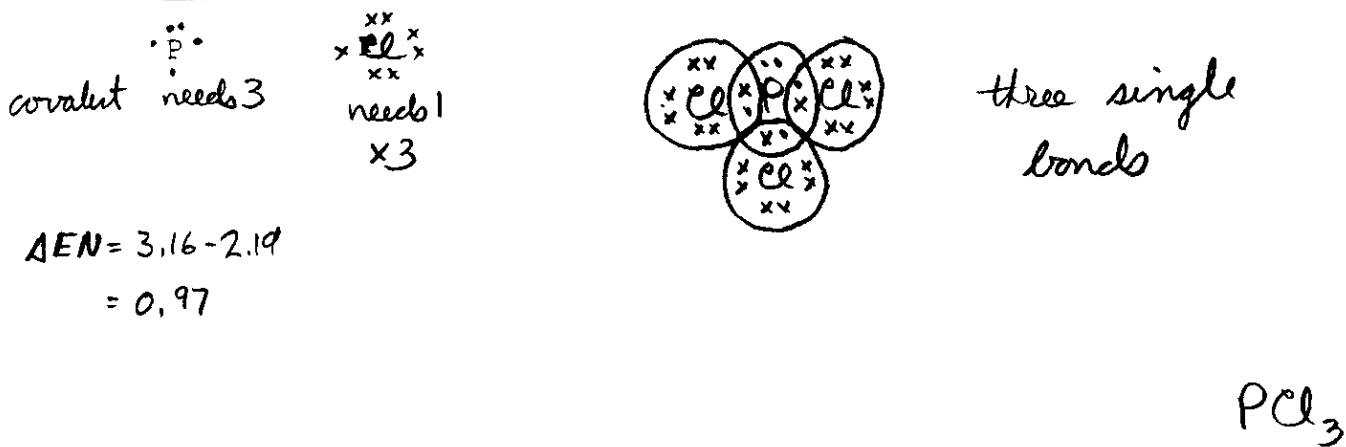   - show the results (draw good answer diagrams)
   - add the details

---

ionic

$\Delta EN = 2.96 - 1.00$

$= 1.96$

$CaBr_2$

/5

---

covalent   needs 3   needs 1 $\times 3$

three single bonds

$\Delta EN = 3.16 - 2.19$

$= 0.97$

PCl_3

/5

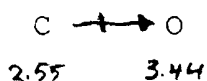covalent   needs 4   needs 2 $\times 2$

two double bonds

$\Delta EN = 3.44 - 2.55$

$= 0.89$

CO_2

/5

---

covalent   needs 1 $\times 2$ needs 2

two single bonds

$\Delta EN = 3.44 - 2.20$

$= 1.24$

H_2O

/5

$\overline{20}$

2. For each of the following pairs of atoms in covalent bonds
   - look up and write the electronegativity below each atom
   - determine the direction of bond polarization and indicate this answer by adding arrowhead and etc. to each bond (i.e. should look like this   X —+→ Z or X ←+— Z depending on the direction of polarization
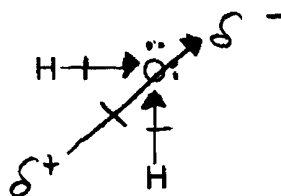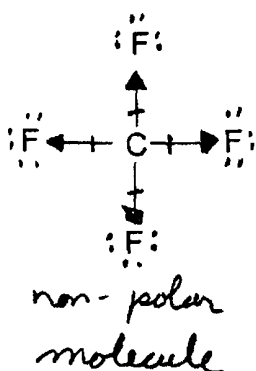
C —+→ F   O ←+— H   P —+→ Cl
2.55   3.98   3.44   2.20   2.19   3.16

                                                    /
                                                    6
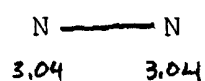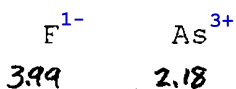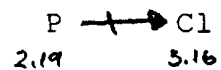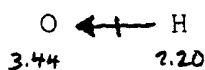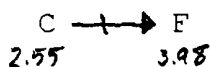
C —+→ O   F^{1-} As^{3+} N ——— N
2.55   3.44   3.99   2.18   3.04   3.04
                 IONIC
                 $\Delta EN = 1.81$

3. For the following molecules, add bond polarizations, determine net molecular polarizations and add δ⁺ and δ⁻ as appropriate. Complete each diagram as appropriate.

non-polar molecule

                                                    /
                                                    6

4. For the formula CH_2F_2, write two different possible stick structures and discus the implication for net molecular polarization. Would this be an important consideration in the strength of intermolcular forces?

non-polar molecule

improved intermolecular force

                                                    /
                                                    5

                                                    /
                                                    1