

# CHAPTER 3 & 4 HOMEWORK

# 3.58:

Name the following ion.

- ①  $\text{F}^-$  = fluoride ion
- ②  $\text{Si}^{4+}$  = silicon(IV) ion
- ③  $\text{Ba}^{2+}$  = barium(II) ion
- ④  $\text{In}^{3+}$  = indium(III) ion
- ⑤  $\text{Mg}^{2+}$  = Magnesium(II) ion

# 3.61:

Write the symbols for the following ion.

- ① ferrous ion =  $\text{Fe}^{2+}$
- ② tin(IV) ion =  $\text{Sn}^{4+}$
- ③ lead(II) ion =  $\text{Pb}^{2+}$
- ④ chrome ion =  $\text{Cr}^{2+}$

# 3.64:

Write the formula for the following substance.

- ① calcium hypochlorite, used as a swimming pool disinfectant  $\rightarrow \text{Ca}(\text{ClO})_2$
- ② copper(II) sulfate, used to kill algae in swimming pools  $\rightarrow \text{CuSO}_4$
- ③ sodium phosphate, added as detergent to enhance cleaning action  $\rightarrow \text{Na}_3\text{PO}_4$

# 3.70:

Name the following substances.

- ①  $\text{MgCO}_3$  = magnesium carbonate
- ②  $\text{Ca}(\text{HCO}_3)_2$  = calcium bicarbonate
- ③  $\text{AgNO}_3$  = silver nitrate
- ④  $\text{Na}_2\text{Cr}_2\text{O}_7$  = sodium dichromate

# 3.73:

Fill the missing information to give the correct formula for each compound.

- ①  $\text{Ni}^{2+}\text{O}_4^-$  =  $\text{Ni}_3\text{O}_4$
- ②  $\text{NH}_4^+\text{ClO}_4^-$  =  $(\text{NH}_4)_2\text{ClO}_4$
- ③  $\text{Ba}^{2+}\text{O}_4^-$  =  $\text{Ba}_2\text{O}_4$

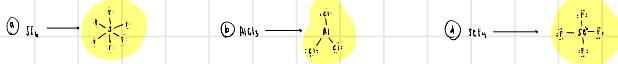
# 4.34:

Identify the bond strength between the following pairs of atoms as either ionic or covalent.

- ① aluminum and boron = ionic
- ② carbon and sulfur = ionic
- ③ lithium and chlorine = ionic
- ④ carbon and fluorine = covalent
- ⑤ zinc and iodine = ionic

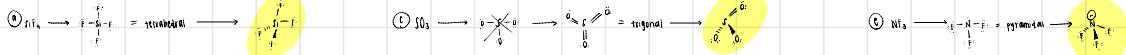
# 4.55:

Draw a Lewis structure for the following molecule.



# 4.66:

Predict the three-dimensional shape of the following molecule.



# 4.71:

Use the periodic table, and then order the following elements in decreasing electronegativity: C, O, Cl, F, Br

 Highest: Cl, O, F, Br, Ca, C, Li

# 4.75:

Based on electronegativity differences, would you expect bonds between the following pairs of atoms to be largely ionic or slightly covalent?

- ① Be and F = ionic
- ② O and Br = covalent
- ③ Ca and Cl = ionic
- ④ Be and Br = covalent