

CHEM 1311
Homework
Chemical Bonding

I. Ionic

- (3.38) Write formulas for the following binary compounds:
 - Potassium chloride
 - Tin (II) bromide
 - Calcium oxide
 - Barium chloride
 - Aluminum hydride
- (3.40) Name each of the following ions:
 - Ba^{2+}
 - Cs^+
 - V^{3+}
 - HCO_3^-
 - NH_4^+
 - Ni^{2+}
 - NO_2^-
 - ClO_2^-
 - Mn^{2+}
 - ClO_4^-
- (3.53) Determine the identity of element X in the following ions:
 - X^{2+} , a cation having 36 electrons
 - X, an anion having 36 electrons
- (3.55 & 56) Determine the likely ground-state electron configuration of the following anions:
 - Se^{2-}
 - N^{3-}
 - Ca^{+2}
 - Ti^{+2}
- (3.68) Arrange the following from smallest to largest first ionization energy:
 - Li, Ba, K
 - B, Be, Cl
 - Ca, C, Cl
- Arrange the following from smallest to largest electron affinity:
 - Li, Ba, K
 - B, Be, Cl
 - Ca, C, Cl

II. Covalent

- (4.34) Order the following elements according to increasing electronegativity:
Li, Br, Pb, K, Mg, C
- (4.36) Determine which of the following substances are largely ionic and which are covalent:
 - HF
 - BBr_3
 - HI
 - NaOH
 - PdCl_2
 - CH_3Li
- (4.37) Using electronegativity data, predict which bond in each of the following pairs is more polar:
 - C-H or C-Cl
 - Si-Li or Si-Cl
 - N-Cl or N-Mg

4. (4.38) Show the direction of polarity for each of the following bonds:
- a. C-H
 - b. C-Cl
 - c. Si-Li
 - d. Si-Cl
 - e. N-C
 - f. N-Mg
5. (4.40) Determine which of the following are (a) largely ionic, (b) nonpolar covalent, or (c) polar covalent:
- a. CdBr₂
 - b. P₄
 - c. BrF₃
 - d. MgO
 - e. NF₃
 - f. BaCl₂
 - g. POCl₃
 - d. LiBr
 - i. S₈
 - j. CaCl₂
6. (4.41) Determine which of the following are (a) largely ionic, (b) nonpolar covalent, or (c) polar covalent:
- a. S₈
 - b. CaCl
 - c. SOCl₂
 - d. NaF
 - e. CBr₄
 - f. BrCl
 - f. LiF
 - g. AsH₃