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AP Chemistry – Basic Concepts of Bonding – 12

Name _____Per ___

1. How many electrons must a Sulfur atom gain to achieve an octet in its valence shell?

2. If an atom has the electron configuration $1s^2 2s^2 2p^3$. (a) How many valence electrons does the atom have? (b) How many electrons must is gain to achieve an octet in its valence shell?

3. (a) Write the condensed electron configuration for the element Scandium. (b) How many valence electrons does this atom possess? (c) What distinguishes these valence electrons from the other electrons in the atom?

4. What is the Lewis symbol for each of the following atoms or ions:

(a) Mg

(b) As

(c) Sc^{3+}

(d) Se^{2-}

5. Use Lewis symbols to represent the reaction that occurs between Mg and Br atoms to form the compound Magnesium Bromide.

6. Chemicals such as KBr and $CaBr_2$ commonly exist where compounds such as K_2Br and CaBr do not. Explain this fact.

7. Write the formula for the compound that is expected to form from combination of the following pairs of elements:

(a) Rubidium and Oxygen

(b) Barium and Iodine

(c) Lithium and Oxygen

(d) Chlorine and Magnesium

8. Write condensed electron configurations for the following ions and determine which have noble-gas configurations:

(a) Zn^{2+}

(b) Te^{2-}

(c) Se^{3+}

(d) Ru^{2+}

(e) Tl^{+}

(f) Au^{+}

9. The lattice energy of NaF is 910 kJ/mole and MgO is 3795 kJ/mole. Account for the difference between these two lattice energies.

10. The lattice energy of $MgCl_2$ is 2326 kJ/mole and $SrCl_2$ is 2127 kJ/mole. Account for the difference between these two lattice energies.