Ionic Bonding Questions

1. When a metal encounters a nonmetal what type of compound results? Explain in terms of ionization energy and electron affinity.

2. Use Lewis dot structures to represent the reaction between calcium metal and oxygen. Write the balanced equation for this reaction.

3. Predict the result of the following reactions:

   (a) $Ca + Cl_2 \rightarrow$

   (b) $K + O_2 \rightarrow$

   (c) $Al + S \rightarrow$

4. What aqueous ions result when the following solids are dissolved in water?

   (a) sodium iodide _____ and _____

   (b) calcium chloride _____ and _____

   (c) magnesium nitrate _____ and _____

5. What two factors determine the strength of an ionic bond?

6. In each pair of ionic compounds circle the one with the *highest* melting point.

   (a) KI or KCl (b) $CaCl_2$ or NaCl (b) $AlCl_3$ or LiCl

7. Given an unknown solid substance, how could you tell if the substance was ionic? State three pieces of evidence.

8. Explain why ionic solids do not conduct electricity, but molten ionic compound do.

9. Why are some ionic solids water soluble, but others are not?

10. What is lattice energy? What does it depend upon?

11. Identify the cation and anion in each of the following compounds:

   (a) BaS _____ and _____

   (b) $Ca_3(PO_4)2$ _____ and _____