

CHEMICAL BONDING

- The valence shell of electrons in an element is very important as the electrons in that shell (valence electrons) that are involved in chemical bonding
- The number of electrons found in the valence shell can determine how reactive the element will be
- If we examine the valence shell of the Noble gases, we find that in all of these gases, the shell is full and can hold no more electrons – this full shell of electrons is what gives the Noble gases their incredible stability
- This arrangement of eight electrons in the outer shell is often called a STABLE OCTET – this idea can also help us to explain why the alkali metals and the halogens are so very reactive.
- Both the alkali metals (1 valence electron) and the halogens (7 valence electrons) are only one electron away from having a stable octet. The alkali metals can lose that one electron and the halogens can gain one electron

Read Section 8.2 (Ionic Compounds) on pages 265-267 and answer the following questions:

1. What is an ion?

2. Define the following terms:

ionic compound - _____

ionic bond - _____

crystal lattice - _____

3. List three properties of ionic compounds:

a) _____

b) _____

c) _____

4. Why do ionic compounds conduct electricity when they are melted, but do not conduct electricity when they are in a solid form?

Read Section 8.3 (Molecular Compounds) on pages 268-276 and answer the following questions:

1. What is a molecular compound?

2. What is a covalent bond? Describe how the electrons can be shared between two atoms.

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3. What is the difference between an ionic and a covalent bond? Explain your answer.

4. List four common properties of many molecular compounds

- a) _____
- b) _____
- c) _____
- d) _____

5. How is graphite like a diamond? How are the two different from one another? Explain some of the uses of these two compounds in terms of their special properties.

6. What is a polymer? _____

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7. Name three different polymers and describe a use for each one:

a) _____

b) _____

c) _____

Taken from St. Andrew web page