Big Chem: Units 12 & 13 Bonding & Structure

PRINT Name _____ Period _____

1. Classify the bonds between the following pairs of atoms as principally ionic or covalent: *Hint: remember how these bonds are formed.*
   a. boron and carbon, b. cesium and fluorine, c. fluorine and silicon, d. hydrogen and chlorine, e. magnesium and nitrogen, f. beryllium and fluorine, g. bromine and strontium, h. chlorine and lithium, i. bromine and sodium, j. hydrogen and iodine.
2. For each atom pair listed below, decide whether an ionic or a covalent bond would form between the elements: *Hint: see where they are located on the* The Periodic Table of the Elements.
   a. fluorine - astatine, b. potassium - iodine, c. calcium - fluorine, d. barium - silicon, e. strontium - chlorine, f. sodium - oxygen.
3. Explain the **four** factors affect the values obtained for ionization energies of an element.
4. What is the major difference between sigma, σ , and π , bonds?
5. Draw Boxes and Dot structures for a. NF_3, b. H_2S, c. N_2.
6. Explain the *Intermolecular Force* (van der Waals) & give an example.
7. Explain the *Hydrogen Bond* and give an example.
8. Explain the *Metallic Bond* and give an example.
9. Explain *Infra-red Spectroscopy* and what we learn from it.
10. Name the *Four Modes of Molecular Vibrations*.
11. Define *Polar Molecule* and give an example.
12. Define the *Hydrogen Bond* and give an example.
13. What is the difference between an *Intermolecular Forces* and a *Covalent Bond*?
14. What is a *Hydrogen Bond* and how does it compare in strength with a *Covalent Bond*?
15. Define Symmetric & Asymmetric Molecules. Why are they important?
16. Define *Allotrope*, name two allotropes of oxygen and write their formulas.

STAPLE THIS PAPER TO YOUR PAPERS (at home).
Turn in at the Beginning of the Period when due.