

I. For each of the following statements, write "I" for ionic, "C" for covalent and "M" for metallic.

- _____ electrons are shared
- _____ electrons delocalized
- _____ electrons are transferred
- _____ crystal lattice
- _____ luster
- _____ nonconductors in the solid, molten, and dissolved state
- _____ malleable and ductile
- _____ high melting and boiling points
- _____ volatile liquids and gases
- _____ weaker forces between atoms
- _____ hard—difficult to crush

II. Fill in the blanks.

When an atom loses an electron, it becomes a(n) _____ with a _____ charge. When an atom gains an electron, it becomes a(n) _____ with a _____ charge.

In a polar covalent bond, the electrons are shared _____. In a nonpolar covalent bond, the electrons are shared _____.

A molecule consisting of only two atoms has a _____ shape. A molecule with _____ atoms bonded to the central atom with _____ unshared pair(s) of electrons has a linear shape. A molecule with _____ atoms bonded to the central atom with _____ unshared pair(s) of electrons has a trigonal planar shape. A molecule with _____ atoms bonded to the central atom with _____ unshared pair(s) of electrons has a tetrahedral shape. A molecule with _____ atoms bonded to the central atom with _____ unshared pair(s) of electrons has a bent shape. A molecule with _____ atoms bonded to the central atom with _____ unshared pair(s) of electrons has a trigonal pyramidal shape.

While bonding is the force of attraction WITHIN molecules,
_____ are the forces of attraction BETWEEN molecules.

The force present in all molecules that results from the movement of electrons is called _____. The force of attraction between the positive end of one molecule and the negative end of another molecule is _____. The special type of this force involving hydrogen is called _____. This occurs when hydrogen is bonded to _____, _____, or _____.

III. What type of bond will form between the following pairs of atoms?

Na and F

N and O

I and I

Fe and Cl

Br and I

Ca and O

IV. Draw Electron Dot Diagrams for the following elements.

magnesium

iodine

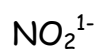
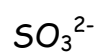
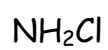
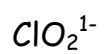
boron

sulfur

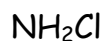
carbon

krypton

V. Draw Lewis Structures for the following molecules and polyatomic ions.



VI. Predict the shape each of the following molecules will form. (Hint: see previous page for Lewis Structures.)



VII. Draw the Lewis Structure for H_2O . Predict the bond type. Label any partially positive or negative ends. Determine whether a molecule of water is polar or nonpolar and explain your answer.

Draw the Lewis Structure for SiCl_4 . Predict the bond type. Label any partially positive or negative ends. Determine whether a molecule of SiCl_4 is polar or nonpolar and explain your answer.

VIII. Circle the intermolecular forces in the following diagram.

