Name:

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**Ionic & Covalent Bonds Guided Notes (Phy Sci Ch 23.3-23.4)**

**23.3 Ionic Bonds Result from a Transfer of Valence Electrons**

1. When an atom that loses electrons comes in contact with an atom that gains them a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs.
2. As a result two oppositely charged atoms or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are formed.
3. An **ionic bond** is formed when two oppositely charged ions have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between them.
4. The new compound formed by the attracted charged ions is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. To make an ionic compound you need ions with charges that balance, for example in NaCl the sodium (Na) +1 ion is balanced by bonding with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ion.
6. When ionic compounds form it usually occurs in a group of ions bonded together to form a crystalline shape. For table salt (NaCl) the crystal shape is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**23.4 Covalent Bonds Result from a Sharing of Valence Electrons**

1. Two atoms in a covalent bond are held together by their mutual \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the electrons they share.
2. A fluorine atom that has a valence of seven electrons needs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ more to fill its outer valence shell.
3. It can share an electron with another \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atom to make the molecule F2.
4. In the term covalent the *co*- refers to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the -*valent* refers to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­­­­­­\_\_\_\_\_.
5. A **molecule** is any substance made of atoms held together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds.
6. Electron dot diagrams are short cut ways of showing the valence electrons and thus bonding between atoms. A straight line represents two atoms in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while two dots represents the extra nonbonding pair of electrons in the valence.
7. The straight-line bond represents two electrons; one from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shared from each atom and bonded together.
8. Hydrogen has only one electron and therefore only needs one more on the first valence shell. Because of this Hydrogen only attracts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ additional electron and forms \_\_\_\_\_\_\_\_\_ covalent bond.
9. Oxygen on the other hand has six valence electrons so it will attract \_\_\_\_\_\_\_\_\_\_\_ more electrons to fill its valence shell.
10. So to make a water molecule (H2O) the Oxygen needs 2 electrons and each Hydrogen has only 1 electron-thus it takes 2 Hydrogen atoms to satisfy Oxygen and thus each atom achieves a filled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shell.
11. Carbon that has 4 valence electrons has room for 4 more electrons and thus makes \_\_\_\_ bonds.
12. A diamond is made of carbon atoms bonded to other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms in four directions to make a covalent crystal which is very strong and thus hard.
13. A double bond is when \_\_\_\_\_\_\_\_\_\_\_ electrons are shared making two (double) pairs or a triple bond that is when \_\_\_\_\_\_\_\_\_\_\_\_\_ electrons are shared making three (triple) pairs of bonds.