Name KEY Date _____ Class _____

8 COVALENT BONDING

Practice Problems

In your notebook, solve the following problems.

SECTION 8.1 MOLECULAR COMPOUNDS

1. Classify each of the following as an atom or a molecule.
   a. Be A c. N_2 M e. Ne A
   b. CO_2 M d. H_2O M
2. Which of the following are diatomic molecules?
   a. CO_2 ✗ c. O_2 ✓ e. CO ✓
   b. N_2 ✓ d. H_2O ✗
3. What types of elements tend to combine to form molecular compounds? 2 or more nonmetals
4. What information does a molecule's molecular structure give? Kinds/# of atoms
5. How do ionic compounds and molecular compounds differ in their relative melting and boiling points? Lower pts

SECTION 8.2 THE NATURE OF COVALENT BONDING

1. Draw the electron dot structure for hydrogen fluoride, HF.
2. Draw the electron dot structure for phosphorus trifluoride, PF_3.
3. Draw the electron dot structure for nitrogen trichloride, NCl_3.
4. Draw the electron dot configuration for acetylene, C_2H_2.
5. How many resonance structures can be drawn for CO_3^{2-}? Show the electron dot structures for each. 3

SECTION 8.3 BONDING THEORIES

1. Predict the shape and bond angle for the compound carbon tetrafluoride, CF_4. Tetrahedral 109.5°
2. Predict the shape and bond angle for phosphorus trifluoride, PF_3. Pyramidal 107°
3. Predict the type of hybridized orbitals involved in the compound boron trichloride, BCl_3. sp^2 3 sigma
4. What types of hybrid orbitals are involved in the bonding of the silicon atoms in silicon tetrafluoride, SiF_4? sp^3
5. Predict the shape and bond angle of fluorine monoxide, F_2O. Bent triatomic 104.5°

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