Chemistry I-Standard

Chemical Bonding Review Sheet

1. Which type of bond (ionic, covalent, or metallic) goes with each of the following?

* 1. losing electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ C. sharing electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. gaining electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ D. pooling electrons \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_ N2 with a triple bond has a \_\_\_\_\_ bond length & is \_\_\_\_\_ than NH3 containing single bonds.

* 1. Shorter, stronger C. longer, stronger
  2. Shorter, weaker D. longer, weaker

3. \_\_\_\_\_\_ The substance whose electron dot formula indicates 3 covalent bonds is

A. HCl B. H2O C. NH3 D. CH4

4. \_\_\_\_\_\_ In a polar covalent bond, electrons are

A. shared equally by 2 atoms C. transferred from 1 atom to another

B. shared unequally by 2 atoms D. located in a mobile “sea” of electons

5. \_\_\_\_\_\_ The total number of pairs of shared electrons in an O2 molecule is

A. 1 B. 2 C. 3 D. 4

6. \_\_\_\_\_\_ How many valence electrons are there in an atom of sulfur?

7. \_\_\_\_\_\_ How does Calcium obey the octet rule when bonding to form compounds?

A. it gains one electron B. it loses two electrons C. it shares electrons D. it splits electrons

8. \_\_\_\_\_\_ You would expect a nonpolar covalent molecule to \_\_\_\_\_\_\_ in water and to \_\_\_\_\_\_\_\_\_\_ electricity.

A. dissolve, conduct C. not dissolve, conduct

B. dissolve, not conduct D. not dissolve, not conduct

9. \_\_\_\_\_\_ Which of the following compounds contains a polyatomic ion?

A. NaCl; B. Ca3N2; C. K3PO4; D. Ca(C2H3O2); E. Both C and D; F. None of these.

10. Compare the boiling points of covalent molecules to ionic compounds.

11. Complete the following sentence using the parenthetical options: *Pure* water is a(an) \_\_\_\_\_\_\_\_\_\_\_\_\_ (covalent / ionic / metallic) compound and therefore \_\_\_\_\_\_\_\_\_\_\_\_ (will / will not) conduct electricity.

12. NaCl most likely has what type of bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. Sugar (C6H12O6) most likely has what type of bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. An alloy of Ni, Ag, and Sn will have what type of bond? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. The molecule SiO2 would have which shape according to VSEPR? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16. Complete the following for CCl4

* 1. Bond type (Intramolecular force) E. Determine the IMF for the molecule
  2. Draw the Lewis structure F. Does it conduct electricity
  3. Name the VSEPR shape of the molecule. G. Describe the boiling point (high or low).
  4. Determine the overall polarity of the molecule. H. What will its phase (state of matter) likely be?