

**Basic Competency Quiz #1**

Chemistry, 7<sup>th</sup> ed., Zumdahl & Zumdahl, sections 8.1-8.4, 8.9-8.11, 8.13 & portions of 10.1-10.7

revised 1/16/2009

Unless otherwise specified, each question is worth 5 points.

1. Predict which bond in each of the following groups will be most polar:

- a. F—F      F—Cl      Cl—I  
 b. P—F      P—Cl      P—Br  
 c. Li—C      Ca—S      Sr—Br  
 d. Na—Cl      Na—H      Na—C  
 e. C—C      Si—C      Si—Si

(POLAR, BUT NOT IONIC; NOT CORRECT, BUT ACCEPTED)

2. Circle any of the following substances that consist of polar molecules:

- a. F<sub>2</sub>  
b. OF<sub>2</sub>  
 c. CO<sub>2</sub>

- ~~d. NF<sub>3</sub>~~ (NOT ON ORIGINAL QUIZ)  
 e. CF<sub>4</sub>  
 f. CCl<sub>4</sub>

3. Identify the most important (strongest) types of interparticle forces present in the solids of each of the following substances:

- a. NF<sub>3</sub> ..... C DD H I LD  
 b. CH<sub>3</sub>CHOHCH<sub>3</sub> ..... C DD H I LD  
 c. Fe ..... C DD H I LD  
 d. Kr ..... C DD H I LD  
 e. KCl ..... C DD H I LD

C = covalent bonds; DD = dipole-dipole; H = hydrogen bonding; I = ionic bonds; LD = London Dispersion

4. Circle the substance in each pair with the strongest interparticle forces (when these substances are solids or liquids):

- a. H<sub>2</sub>O      H<sub>2</sub>S      d. HBr      HCl  
 b. CH<sub>4</sub>      CH<sub>3</sub>CH<sub>2</sub>CH<sub>4</sub>      e. CO      CO<sub>2</sub>  
 c. PbF<sub>4</sub>      CF<sub>4</sub>

