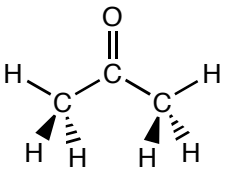
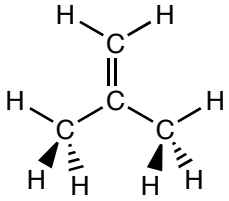
CHEM 0101 Name _____
Fall 2009 (11/9)

Quiz 2

1. (30 pts.) The boiling points and the structures of two molecules are given below

B.P. = 56 °C M.P. = –94 °C acetone 	 B.P. = –6 °C M.P. = –140 °C 2-methylpropene

a. At room temperature, would these molecules be solids, liquids or gases?

b. Which molecules have stronger intermolecular forces, acetone molecules or 2-methylpropene molecules?

c. List the intermolecular forces that an acetone molecule can use when interacting with another acetone molecules.

2. (40 pts.) Acetone will dissolve in water, 2-methylpropene will not.

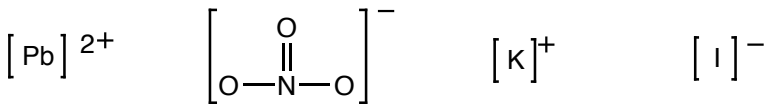
a. Water molecules interact with other water molecules using which intermolecular forces.

b. Water molecules can interact with acetone molecules using which intermolecular forces.

c. Water molecules can interact with 2-methylpropene molecules using which intermolecular forces.

d. Explain why acetone can dissolve in water and why 2-methylpropene will not.

3. (30 pts.) Lead nitrate, made by reacting paint with nitric acid, can be dissolved in water. When soluble potassium iodide is added to the water, the lead(II) nitrate and the potassium iodide will react to form lead(II) iodide, which will precipitate from solution, and soluble potassium nitrate.



lead ion nitrate ion potassium ion iodide ion

a. Write the chemical formula(s) for the reactant(s) in the reaction described above.

b. Write the chemical formula(s) for the product(s) in the reaction described above.

c. Write a balanced chemical equation for the reaction.

4. (40 pts.) Sodium chloride reacts with silver nitrate according to the equation written below.

$$AgNO_3(aq) + NaCl(aq) \longrightarrow AgCl(s) + NaNO_3(aq)$$

a. What do the "(aq)" and "(s)" in the equation above mean?

b. Determine the mass of 1 mole of NaCl.	c. Determine the mass of 1 mole of AgCl

d. The salt (NaCl) from a piece of bread was dissolved in water. Excess $AgNO_3$ was added to the water. If 0.445 g of AgCl precipitated from solution, how many grams of NaCl did the bread contain?