**CHE1031 Lecture 4 take-home Quiz 4**

Please read questions carefully, answer as completely as possible, and ask for clarification (by email) if needed. Since this is a take-home quiz, use all the resources at your command, including a periodic table. Remember that you’ll be taking exams on your own.

**4.1: Solutions & solvents**

1. When methanol (CH3OH) is mixed with water the resulting solution is not an electrolyte. But when acetic acid (HC2H3O2) is mixed with water, a weakly electrolytic solution is produced.

a. Describe what happens in each case.

b. Explain why for each cases.

**4.2: Solution concentration & stoichiometry**

2. Calculate the grams of solute in 0.250 L of 0.175 M KBr solution.

3. Which has the highest concentration of iodide ions?

a. 3.2 M HI solution

b. a solution made by dissolving 145 g of NaI in water to a volume of 150 mL

4. Pure acetic acid, known as glacial acetic acid, is a liquid with a density of 1.049 g/mL at 25°C. Calculate the molarity of a solution of acetic acid made by dissolving 20.00 mL of glacial acetic acid at 25°C in enough water to make 250.0 mL of solution.

5. What volume (mL) of 0.128 M HCl is needed to neutralize (completely react with) 2.87 g of Mg(OH)2?

**4.3: Precipitation Reactions**

6. Identify the reaction that produces a precipitate.

a. Na2(CO3) + (NH4)2(SO4) 🡪

b. Pb(NO3)2 + Na2S 🡪

c. Ca(C2H3O2)2 + K(OH) 🡪

7. For the reaction identified as producing a precipitate in the previous question:

a. Write balanced chemical equation;

b. Write a complete ionic equation; and

c. Cross out spectator ions to produce a net ionic equation.

**4.4: Acids, Bases & Neutralization Reactions**

8. Two base anions produce a gas rather than water when the base is combined with acid. Write a balanced chemical equation for one of those bases combined with sulfuric acid.

9. Acetic acid is reacted with calcium hydroxide. If 3.45 mL of vinegar (acetic acid) is neutralized by 42.5 mL of 0.115 M base, what is the molarity of the acid?

**4.5: Redox Reactions**

10. Spontaneous redox?

a. Which of these combinations will spontaneously undergo a redox reaction?

b. Balance that equation.

c. Use oxidiation numbers to determine which reactant is oxidized and which is reduced.

* Pb + Cr(NO3)3 🡪
* Mg + FeN 🡪
* Ni + Co(C2H3O2) 🡪