CHM151 Quiz 5 25 Pts Fall 2014 Name: _____

Due Wednesday October 15th at the BEGINNING of class.

1. (2 Pts) Determine the oxidation number of each element in $K_3Fe(CN)_6$

   K_____ Fe _____ C _____ N_____

2. (1 Pt) The oxidation number of Cr in $Cr_2O_7^{2-}$ is _____.

3. (2 Pts) Identify the elements that are oxidized and reduced in the following reaction.

   $KClO_3(aq) + 6HBr(aq) \rightarrow KCl(aq) + 3Br_2(l) + 3H_2O(l)$

   _____is oxidized and _____ is reduced

   _____is th oxidizing agent and _____is the reducing agent

4. (2 Pts) What mass of $C_{12}H_{22}O_{11}$ (sucrose) is needed to prepare 255 mL of a 0.570 M solution of sucrose in water? Show your work.

5. (2 Pts) A 50.0 mL sample of 0.436 M $(NH_4)_2SO_4$ is diluted with water to a total volume of 250.0 mL.
   a. What is the ammonium sulfate concentration in the resulting solution? Show work.

   b. What is the ammonium ion concentration in the resulting solution? Show work.

6. (2 Pts) 25.0 mL of a 0.2450 M NH_4Cl solution is added to 55.5 mL of 0.1655 M $FeCl_3$. What is the concentration of chloride ion in the final solution? Show work.

7. (4 Pts) When 38.0 mL of 0.1250 M H_2SO_4 is added to 100. mL of a solution of PbI_2, a precipitate of $PbSO_4$ forms. The $PbSO_4$ is then filtered from the solution, dried, and weighed. If the recovered $PbSO_4$ is found to have a mass of 0.0471 g, what was the concentration of iodide ions in the original solution? You must first write a balanced equation and then show your work.

8. (3 Pts) 34.62 mL of 0.1510 M NaOH was needed to neutralize 50.0 mL of an H_2SO_4 solution. What is the concentration of the original sulfuric acid solution? You must first write a balance equation and then show all work.

9. (3 Pts) What volume (mL) of a 0.3428 M HCl(aq) solution is required to completely neutralize 23.55 mL of a 0.2350 M $Ba(OH)_2$(aq) solution? Write a balanced equation and show all work.

10. (4 Pts) Zinc dissolves in hydrochloric acid to yield hydrogen gas:

    $Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$

    What mass of hydrogen gas is produced when a 7.35 g chunk of zinc dissolves in 500. mL of 1.200M HCl?