CHM 152/54 Quiz 9 25 Pts Fall 2019 Name: _____

DUE DATE: 12/5/2019

1. a. (7 Pts) What would be the E^0 value in volts for a zinc–silver galvanic cell? _____

Standard Reduction Potentials	
$Zn^{2+} + 2e^- \rightleftarrows Zn$ $E^0 = -0.76$ V	$Ag^+ + e^- \rightleftarrows Ag$ $E^0 = +0.80$ V

b. Use the above reactions to draw and label a voltaic cell. Be sure to label the anode (show which reaction occurs here), cathode (show which reaction occurs here), and the salt bridge.

Then: a. show the directions of electron flow, cation flow, and anion flow.

b. show the relative size changes of the electrodes.

2. (8 Pts) Balance the following REDOX reactions (you must show your work to receive credit).

a. $Cr_2O_7^{2-}(aq) + Br^{1-}(aq) \rightarrow Cr^{3+}(aq) + BrO_3^{1-}(aq)$ (acidic solution)

b. $MnO_4^{1-}(aq) + SO_3^{2-}(aq) \rightarrow MnO_2(s) + SO_4^{2-}(aq)$ (basic solution)

3.(4 Pts) Determine the emf of the following voltaic cell at 25ºC: You must look up the reduction potentials.

$Zn(s)|Zn^{2+}(1.00 \times 10^{-5}\ M)||Cu^{2+}(0.100\ M)|Cu(s)$

4. (4 Pts) The standard emf for the following voltaic cell is 1.10 V:

$Zn(s)|Zn^{2+}(aq)||Cu^{2+}(aq)|Cu(s)$

Calculate the equilibrium constant for the reaction: $Zn(s) + Cu^{2+}(aq) \Leftrightarrow Zn^{2+}(aq) + Cu(s)$

5. (2 Pt) List one good oxidizing agent and one good reducing agent.