ELECTROCHEMISTRY REVIEW AND PRACTICE 1

1. For each reaction, write the oxidation and reduction half-reactions, and determine if the reaction is spontaneous.

   (a) $2\ Al(s) + 3\ Pb(NO_3)_2(aq) \rightarrow 2\ Al(NO_3)_3(aq) + 3\ Pb(s)$

   (b) $Mg^{2+}(aq) + 2\ Cr^{2+}(aq) \rightarrow 2\ Cr^{3+}(aq) + Mg(s)$

   (c) $2\ NaBr(aq) + Cl_2(g) \rightarrow 2\ NaCl(aq) + Br_2(l)$

2. Use the oxidation-number method to balance the following redox reaction occurring in acidic solution.

   $$Cl^-(aq) + SO_4^{2-}(aq) \rightarrow Cl_2(g) + SO_2(g)$$

3. Use the oxidation-number method to balance the following redox reaction occurring in basic solution.

   $$MnO_2(s) + Br_2(l) \rightarrow MnO_4^-(aq) + Br^-(aq)$$

4. Use the half-reaction method to balance the following redox reaction occurring in acidic solution.

   $$CN^-(aq) + CrO_4^{2-}(aq) \rightarrow CNO^-(aq) + Cr^{3+}(aq)$$

5. Using a redox table, predict the reaction that occurs in each case.

   (a) Aqueous tin(II) chloride is mixed with aqueous iron(III) bromide.

   (b) An acidic solution of sodium sulfate is spilled on the iron base of a retort stand.