

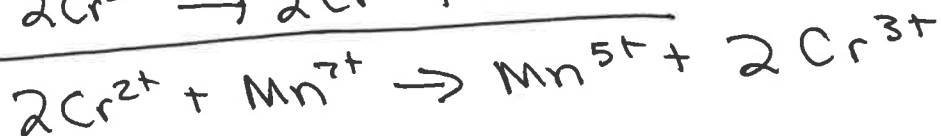
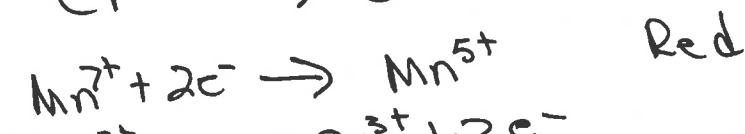
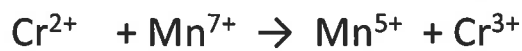
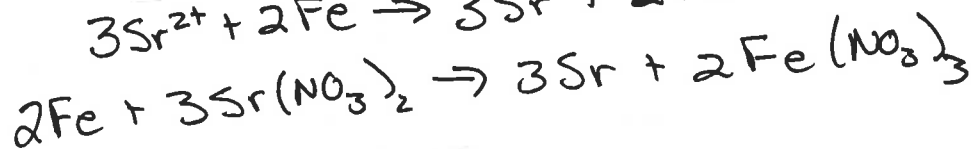
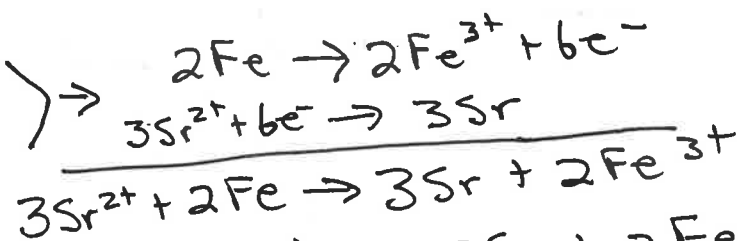
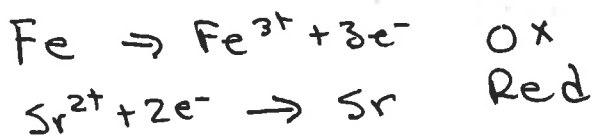
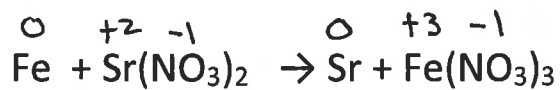
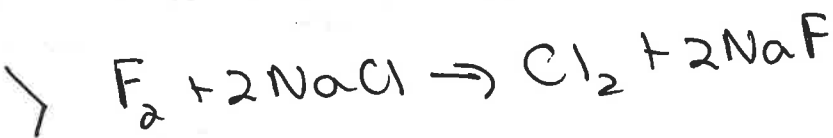
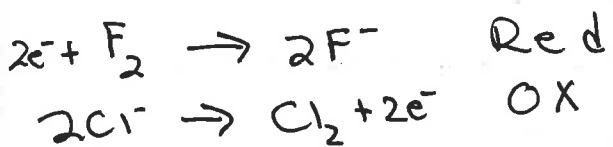
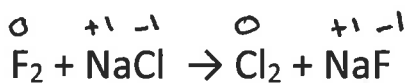
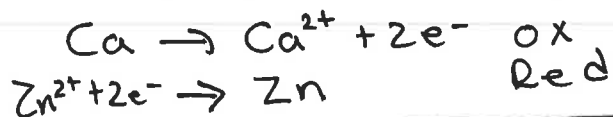
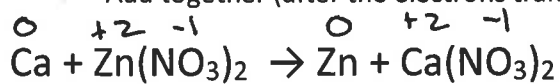
Electrochemistry Unit: Assignment 4

Answer Key

Balancing half reactions Practice (practice from lecture in assignment 3)

Directions: for the following reactions:

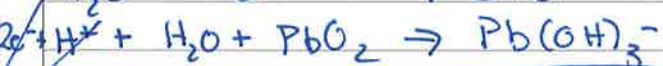
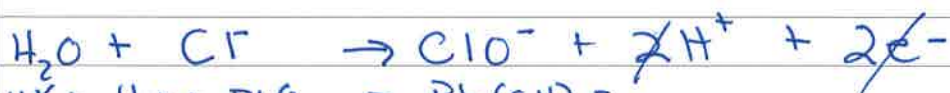
- Assign oxidation states
- Pull out each half reaction and identify as oxidized or reduced
- Balance mass and charge of each half reaction
- Add together (after the electrons transferred are equal)



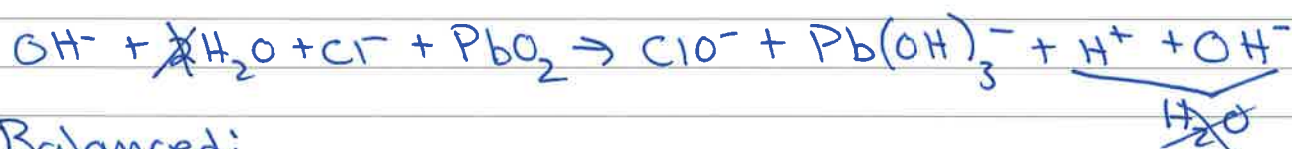
After completing, place in your unit folder

Assignment 6 answers (con't)

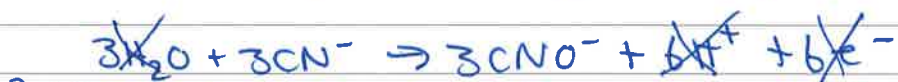
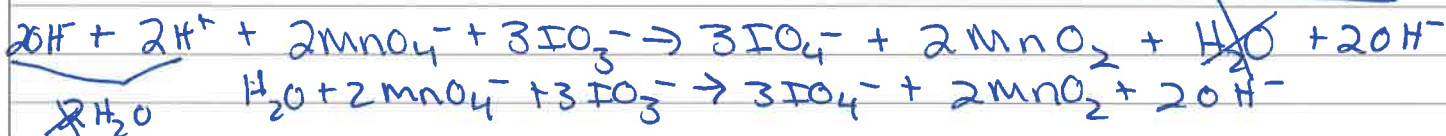
Basic Sol'n



Now Basic part



Balanced:

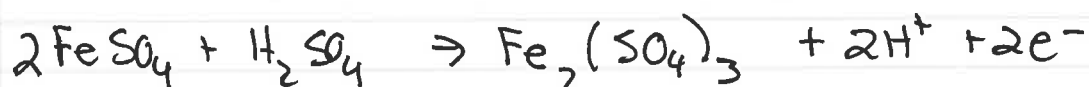
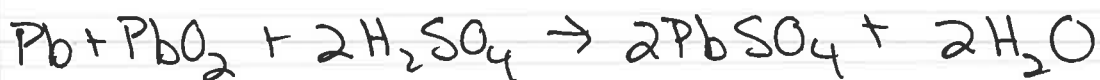
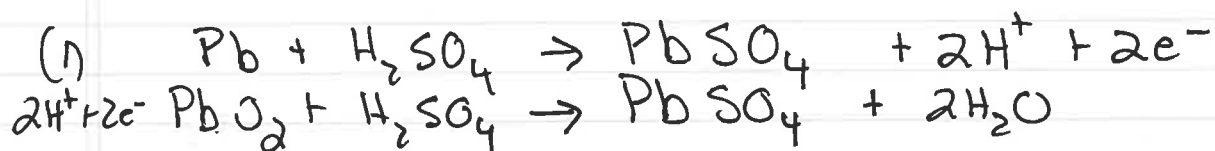


$\cancel{2\text{H}_2\text{O}}$

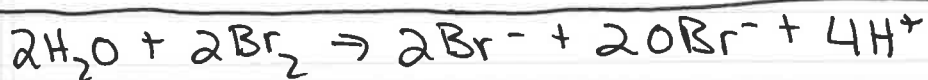
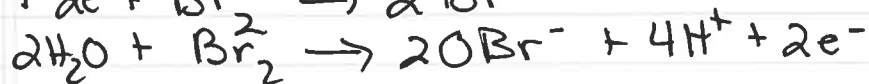


Assignment 9 answers

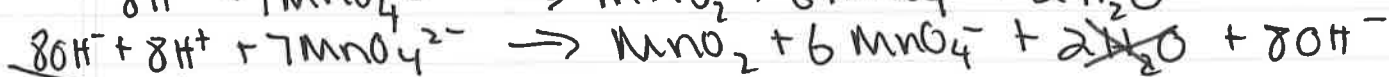
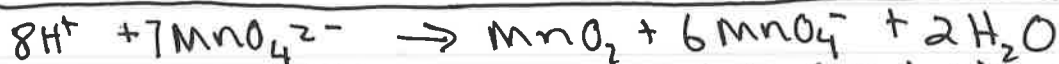
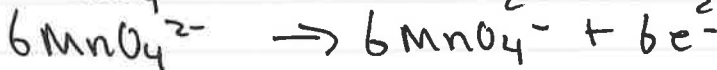
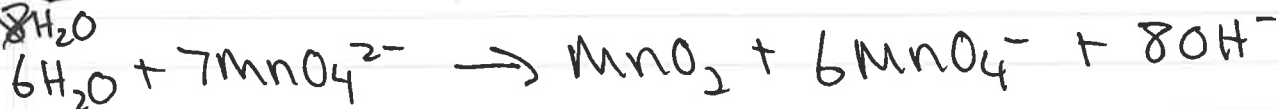
Acidic



[you probably could have balanced straight out!]

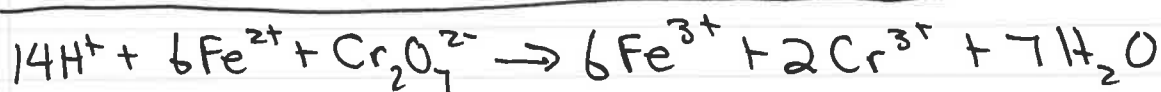
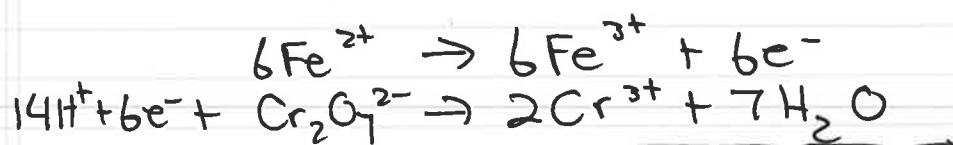
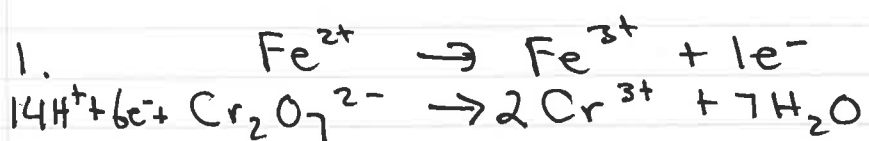


Basic


~~8H₂O~~


Assignment 9 answers (cont)

Redox Titration Problem



2. Cr is Reduced; Goes from $\text{Cr}^{6+} \rightarrow \text{Cr}^{3+}$

3. At endpoint we have equivalent moles
 $M_{\text{Cr}_2\text{O}_7^{2-}} V_{\text{Cr}_2\text{O}_7^{2-}} = \text{moles Cr}_2\text{O}_7$

$$(.035\text{M})(.046\text{L}) = 1.61 \times 10^{-3} \text{ moles Cr}_2\text{O}_7^{2-}$$

From BCE: 1 mole $\text{Cr}_2\text{O}_7^{2-}$ reacts with 6 mol Fe^{2+}
 $1.61 \times 10^{-3} \text{ moles Cr}_2\text{O}_7^{2-} \left| \frac{6 \text{ mol Fe}^{2+}}{1 \text{ mol Cr}_2\text{O}_7^{2-}} \right. = 9.66 \times 10^{-3} \text{ mol Fe}^{2+}$

$$M = \frac{\text{mol}}{\text{L}} = \frac{9.66 \times 10^{-3} \text{ mol}}{.0105 \text{ L}} = .92 \text{ M Fe}(\text{NO}_3)_2$$

4. Using either rxn as a starting point since there is no limiting reactant:

$$9.66 \times 10^{-3} \text{ mol Fe}^{2+} \left| \frac{6 \text{ mol Fe}^{3+}}{6 \text{ mol Fe}^{2+}} \right| \frac{55.8 \text{ g Fe}^{3+}}{1 \text{ mol Fe}^{3+}} = .54 \text{ g Fe}^{3+}$$

$$9.66 \times 10^{-3} \text{ mol Fe}^{2+} \left| \frac{2 \text{ mol Cr}^{3+}}{6 \text{ mol Fe}^{2+}} \right| \frac{52 \text{ g Cr}^{3+}}{1 \text{ mol Cr}^{3+}} = .17 \text{ g Cr}^{3+}$$