$\qquad$
Chemistry 30
Unit 6: Redox Reactions and Electrochemistry
Assignment 2 Balancing Redox Reactions

1. Balance the following reactions using the oxidation number method.
a. $\mathrm{NaClO}+\mathrm{H}_{2} \mathrm{~S} \rightarrow \mathrm{NaCl}+\mathrm{H}_{2} \mathrm{SO}_{4}$
b. $\mathrm{Sn}+\mathrm{HNO}_{3}+\mathrm{H}_{2} \mathrm{O} \rightarrow \mathrm{H}_{2} \mathrm{SnO}_{3}+\mathrm{NO}$
c. $\mathrm{K}_{2} \mathrm{Cr}_{2} \mathrm{O}_{7}+\mathrm{SnCl}_{2}+\mathrm{HCl} \rightarrow \mathrm{CrCl}_{3}+\mathrm{SnCl}_{4}+\mathrm{KCl}+\mathrm{H}_{2} \mathrm{O}$

Name:
2. Balance the following half-reactions. Be sure to balance for atoms first, then balance for charge by adding electrons to the appropriate side of the equation. Also identify each as either an oxidation or reduction.
a. $\mathrm{Br}_{2} \rightarrow \mathrm{Br}^{-}$
b. $\mathrm{Fe}^{2+} \rightarrow \mathrm{Fe}^{3+}$
c. $\mathrm{MnO}_{4}^{-}+\mathrm{H}^{+} \rightarrow \mathrm{Mn}^{2+}+\mathrm{H}_{2} \mathrm{O}$
3. Break each equation into two half-reactions. Identify each half-reaction as oxidation or reduction.
a. $2 \mathrm{~K}+\mathrm{I}_{2} \rightarrow 2 \mathrm{KI}$
b. $2 \mathrm{Br}^{-}+\mathrm{F}_{2} \rightarrow \mathrm{Br}_{2}+2 \mathrm{~F}^{-}$
4. Balance the following reactions using the half-reaction method.
a. $\mathrm{Na}+\mathrm{Br}_{2} \rightarrow \mathrm{NaBr}$

Name:
b. $\mathrm{CrO}_{4}{ }^{2-}+\mathrm{H}^{+}+\mathrm{Cl}^{-} \rightarrow \mathrm{Cr}^{3+}+\mathrm{Cl}_{2}+\mathrm{H}_{2} \mathrm{O}$

Remember to balance for atoms before adding electrons to balance for charge.
5. Balance the following reactions using either the oxidation number method or the half-reaction method.
a. $\mathrm{NO}+\mathrm{As}+\mathrm{H}_{2} \mathrm{O} \rightarrow \mathrm{N}_{2} \mathrm{O}+\mathrm{HAsO}_{2}$
b. $\mathrm{Ce}^{4+}+\mathrm{I}^{-}+\mathrm{OH}^{-} \rightarrow \mathrm{Ce}^{3+}+\mathrm{IO}_{3}^{-}+\mathrm{H}_{2} \mathrm{O}$

