Practice Problems for Balancing Redox Equations in Acid/Base

Redox Reactions in Acidic Solution:

1. $I^-(aq) + ClO^-(aq) \longrightarrow I_3^-(aq) + Cl^-(aq)$

2. $As_2O_3(s) + NO_3^-(aq) \longrightarrow H_3AsO_4(aq) + NO(g)$

3. $Br^-(aq) + MnO_4^-(aq) \longrightarrow Br_2(l) + Mn^{2+}(aq)$

4. $CH_3OH(aq) + Cr_2O_7^{2-}(aq) \longrightarrow CH_2O(l) + Cr^{3+}(aq)$

5. $Mn^{2+}(aq) + BiO_3^-(aq) \longrightarrow Bi^{3+}(aq) + MnO_4^-(aq)$

6. $S_8(s) + NO_3^-(aq) \longrightarrow SO_3^{2-}(aq) + NO(g)$

7. $H_3AsO_4(aq) + Zn(s) \longrightarrow AsH_3(g) + Zn^{2+}(aq)$

8. $P_4(s) + Cr_2O_7^{2-}(aq) \longrightarrow H_3PO_4(aq) + Cr^{3+}(aq)$

Redox Reactions in Basic Solution

1. $Al(s) + MnO_4^-(aq) \longrightarrow MnO_2(s) + Al(OH)_4^-(aq)$

2. $NO_2^-(aq) + Al(s) \longrightarrow NH_3(aq) + AlO_2^-(aq)$

3. $Cr(s) + CrO_4^{2-}(aq) \longrightarrow Cr(OH)_3(s)$
   Note: $Cr(OH)_3$ is found in BOTH half reactions!

4. $MnO_4^-(aq) + S^{2-}(aq) \longrightarrow MnO_2(s) + SO_3^{2-}(aq)$

5. $Cl_2(aq) + Br_2(l) \longrightarrow OBr^-(aq) + Cl^-(aq)$

6. $H_2O_2(aq) + I^-(aq) \longrightarrow IO_3^-(aq)$

7. $NO_3^-(aq) + NH_3(aq) \longrightarrow NO_2^-(aq)$

8. $S_8(aq) + MnO_4^-(aq) \longrightarrow SO_4^{2-}(aq) + MnO_2(s)$