## **Oxidation and Reduction Practice**

In each of the following equations, indicate the element that has been oxidized and the one that has been reduced. You should also label the oxidation state of each before and after the process:

1) 2 Na + FeCl<sub>2</sub> 
$$\rightarrow$$
 2 NaCl + Fe

2) 
$$2 C_2H_2 + 5 O_2 \rightarrow 4 CO_2 + 2 H_2O$$

3) 
$$2 \text{ PbS} + 3 \text{ O}_2 \rightarrow 2 \text{ SO}_2 + 2 \text{ PbO}$$

4) 
$$2 H_2 + O_2 \rightarrow 2 H_2O$$

5) Cu + HNO<sub>3</sub> 
$$\rightarrow$$
 CuNO<sub>3</sub> + H<sub>2</sub>

6) AgNO<sub>3</sub> + Cu 
$$\rightarrow$$
 CuNO<sub>3</sub> + Ag

## **Oxidation and Reduction Practice - Solutions**

In each of the following equations, indicate the element that has been oxidized and the one that has been reduced. You should also label the oxidation state of each before and after the process:

- 1) 2 Na + FeCl<sub>2</sub>  $\rightarrow$  2 NaCl + Fe
  - Sodium is oxidized, going from a 0 to +1 oxidation state.
  - Iron is reduced, going from a +2 to 0 oxidation state.
- 2)  $2 C_2H_2 + 5 O_2 \rightarrow 4 CO_2 + 2 H_2O$ 
  - Carbon is oxidized, going from a -1 to +4 oxidation state.
  - Oxygen is reduced, going from a 0 to -2 oxidation state.
- 3)  $2 \text{ PbS} + 3 \text{ O}_2 \rightarrow 2 \text{ SO}_2 + 2 \text{ PbO}$ 
  - Sulfur is oxidized, going from a -2 to +4 oxidation state.
  - Oxygen is reduced, going from a 0 to -2 oxidation state.
- 4)  $2 H_2 + O_2 \rightarrow 2 H_2O$ 
  - Hydrogen is oxidized, going from a 0 to +1 oxidation state.
  - Oxygen is reduced, going from a 0 to -2 oxidation state.
- 5) Cu + HNO<sub>3</sub>  $\rightarrow$  CuNO<sub>3</sub> + H<sub>2</sub>
  - Copper is oxidized, going from a 0 to +1 oxidation state.
  - Hydrogen is reduced, going from a +1 to 0 oxidation state.
- 6) AgNO<sub>3</sub> + Cu  $\rightarrow$  CuNO<sub>3</sub> + Ag
  - Copper is oxidized, going from a 0 to +1 oxidation state.
  - Silver is reduced, going from a +1 to 0 oxidation state.