Equation Writing and Balancing III

For each of the following situations, write and balance the formula equation for the reaction that occurs.

1. A strip of zinc is dropped into a test tube of hydrochloric acid.
   \[ \text{Zn} + 2 \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2(g) \]

2. Hydrogen peroxide decomposes in the presence of manganese dioxide.
   \[ 2 \text{H}_2\text{O}_2 \xrightarrow{\text{MnO}_2} 2 \text{H}_2\text{O} + \text{O}_2(g) \]

3. Copper(II) sulfate pentahydrate is heated to drive off the water of hydration.
   \[ \text{CuSO}_4 \cdot 5 \text{H}_2\text{O} \xrightarrow{\Delta} \text{CuSO}_4 + 5 \text{H}_2\text{O}(g) \]

4. A piece of sodium is dropped into a beaker of water.
   \[ 2 \text{Na} + 2 \text{H}_2\text{O} \rightarrow 2 \text{NaOH} + \text{H}_2(g) \]

5. A piece of limestone (calcium carbonate) is heated in a Bunsen burner flame.
   \[ \text{CaCO}_3 \xrightarrow{\Delta} \text{CaO} + \text{CO}_2(g) \]

6. A piece of zinc is dropped into a solution of silver nitrate.
   \[ \text{Zn} + 2 \text{AgNO}_3 \rightarrow \text{Zn(NO}_3)_2 + 2 \text{Ag(s)} \]

7. Hydrochloric acid is added to a sodium carbonate solution.
   \[ 2 \text{HCl} + \text{Na}_2\text{CO}_3 \rightarrow 2 \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2(g) \]

8. Potassium chlorate is heated in the presence of manganese dioxide.
   \[ 2 \text{KClO}_3 \xrightarrow{\text{MnO}_2} 2 \text{KCl} + 3 \text{O}_2(g) \]

9. Hydrogen gas is burned in air.
   \[ 2 \text{H}_2 + \text{O}_2 \rightarrow 2 \text{H}_2\text{O} \]

10. Sulfuric acid solution is reacted with sodium hydroxide solution.
    \[ \text{H}_2\text{SO}_4 + 2 \text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + 2 \text{H}_2\text{O} \]