Write the equations for the following chemical reactions:

1)	When dissolved barium chloride reacts with dissolved potassium sulfate in water, barium sulfate precipitate and aqueous potassium chloride are made.
2)	When calcium chloride and potassium phosphate are dissolved in water they react to form aqueous potassium chloride and calcium phosphate powder.
3)	When sucrose ( $C_{12}H_{22}O_{11}$ ) burns in oxygen, carbon dioxide, water and heat are produced.
4)	When dissolved calcium hydroxide reacts with sulfuric acid ( $H_2SO_4$ ), a precipitate of calcium sulfate, water, and heat are formed.
5)	When sodium metal reacts with iron (III) chloride, iron metal and sodium chloride are formed.

## Solutions

Write the equations for the following chemical reactions:

 When dissolved barium chloride reacts with dissolved potassium sulfate in water, barium sulfate precipitate and aqueous potassium chloride are made.

$$BaCl_{2(aq)} + K_2SO_{4(aq)} \rightarrow BaSO_{4(s)} + 2 KCl_{(aq)}$$

When calcium chloride and potassium phosphate are dissolved in water they react to form aqueous potassium chloride and calcium phosphate powder.

$$3 \text{ CaCl}_{2 (aq)} + 2 \text{ K}_{3}\text{PO}_{4 (aq)} \rightarrow \text{Ca}_{3}(\text{PO}_{4})_{2 (s)} + 6 \text{ KCl}_{(aq)} + \text{heat}$$

When sucrose  $(C_{12}H_{22}O_{11})$  burns in oxygen, carbon dioxide, water and heat are produced.

$$2 C_{12}H_{22}O_{11 (s)} + 24 O_{2 (q)} \rightarrow 24 CO_2 + 22 H_2O_{(l)} + heat$$

4) When dissolved calcium hydroxide reacts with sulfuric acid (H<sub>2</sub>SO<sub>4</sub>), a precipitate of calcium sulfate, water, and heat are formed.

$$Ca(OH)_{2 (aq)} + H_2SO_{4 (aq)} \rightarrow CaSO_{4 (s)} + 2 H_2O_{(l)} + heat$$

5) When sodium metal reacts with iron (III) chloride, iron metal and sodium chloride are formed.

$$3 \text{ Na}_{(s)} + \text{FeCl}_{3(s)} \rightarrow \text{Fe}_{(s)} + 3 \text{ NaCl}_{(s)}$$