Chapter 11

1. Which is the most reactive of these Group II elements?
   - A. Magnesium
   - B. Calcium
   - C. Strontium
   - D. Barium

2. When strontium reacts with water the products are …
   - A. strontium + hydrogen
   - B. strontium hydroxide
   - C. strontium hydroxide + hydrogen
   - D. strontium hydroxide + oxygen

3. Which of these carbonates needs the highest temperature before it undergoes thermal decomposition?
   - A. MgCO₃
   - B. CaCO₃
   - C. SrCO₃
   - D. BaCO₃
4. Complete the balanced equation for the thermal decomposition of calcium nitrate shown below:

\[ 2\text{Ca(NO}_3\text{)}_2(s) \xrightarrow{\text{heat}} \ldots \]

A. \(2\text{CaO}(s) + 2\text{NO}_2(g) + \text{O}_2(g)\)
B. \(2\text{CaO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)\)
C. \(2\text{CaO}(s) + 4\text{NO}(g) + 3\text{O}_2(g)\)
D. \(2\text{CaO}(s) + 4\text{N}_2(g) + 5\text{O}_2(g)\)

5. Which halogen exists as dark grey crystals that sublime to give a purple vapour?

A. Fluorine
B. Chlorine
C. Bromine
D. Iodine

6. Which is the most electronegative halogen?

A. Fluorine
B. Chlorine
C. Bromine
D. Iodine

7. Which of these hydrogen halides is most easily decomposed by a hot wire placed in the gas?

A. Hydrogen fluoride
B. Hydrogen chloride
C. Hydrogen bromide
D. Hydrogen iodide
8 A Group II halide gives an apple-green flame colour when tested in a non-luminous Bunsen flame. Its solution forms a cream precipitate with silver nitrate solution. The precipitate is insoluble in dilute ammonia solution but does dissolve in concentrated ammonia solution. What is the Group II halide?

A Strontium iodide  
B Magnesium bromide  
C Barium bromide  
D Calcium chloride

9 Which one of the following gases will not be formed when sodium iodide reacts with concentrated sulfuric acid?

A $\text{I}_2(\text{g})$  
B $\text{H}_2(\text{g})$  
C $\text{SO}_2(\text{g})$  
D $\text{H}_2\text{S}(\text{g})$

10 Aqueous chlorine reacts with cold alkali as shown below:

$$\text{Cl}_2(\text{aq}) + 2\text{OH}^- (\text{aq}) \rightarrow \text{Cl}^- (\text{aq}) + \text{ClO}^- (\text{aq}) + \text{H}_2\text{O}(\text{l})$$

What is this type of reaction called?

A Disproportionation  
B Displacement  
C Decomposition  
D Dehydration