

Board – CBSE

Class – 10<sup>th</sup>

Topic – Chemical Reactions and Equations

1. Why should a magnesium ribbon be cleaned before it is burnt in air?

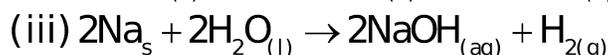
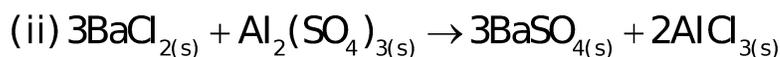
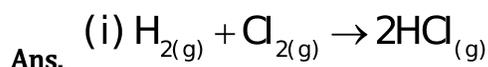
**Ans.** Magnesium is an extremely reactive metal. When stored, it reacts with oxygen to form a layer of magnesium oxide on its surface. This layer of magnesium oxide is quite stable and prevents further reaction of magnesium with oxygen. The magnesium ribbon is cleaned by sand paper for removing this layer so that the underlying metal can be exposed to air.

2. Write the balanced equation for the following chemical reactions.

(i) Hydrogen + Chlorine → Hydrogen chloride

(ii) Barium chloride + Aluminium sulphate → Barium sulphate + Aluminium chloride

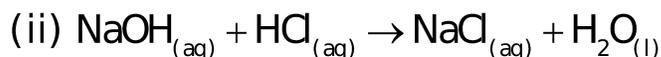
(iii) Sodium + Water → Sodium hydroxide + Hydrogen



3. Write a balanced chemical equation with state symbols for the following reactions.

(i) Solutions of barium chloride and sodium sulphate in water react to give insoluble barium sulphate and the solution of sodium chloride.

(ii) Sodium hydroxide solution (in water) reacts with hydrochloric acid solution (in water) to produce sodium chloride solution and water.



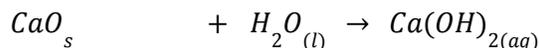
4. A solution of a substance 'X' is used for white washing.

(i) Name the substance 'X' and write its formula.

(ii) Write the reaction of the substance 'X' named in (i) above with water.

**Ans.** (i) The substance 'X' is calcium oxide. Its chemical formula is CaO.

(ii) Calcium oxide reacts vigorously with water to form calcium hydroxide (slaked lime).



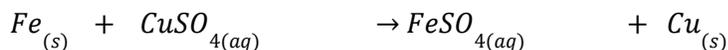
Calcium oxide      water      Calcium hydroxide  
(Quick lime)                      (slaked lime)

**5.** Why is the amount of gas collected in one of the test tubes in Activity 1.7 double of the amount collected in the other? Name this gas.

**Ans.** Water (H<sub>2</sub>O) contains two parts hydrogen and one part oxygen. Therefore, the amount of hydrogen and oxygen produced during electrolysis of water is in a 2:1 ratio. During electrolysis, since hydrogen goes to one test tube and oxygen goes to another, the amount of gas collected in one of the test tubes is double of the amount collected in the other.

**6.** Why does the colour of copper sulphate solution change when an iron nail is dipped in it?

**Ans.** When an iron nail is placed in a copper sulphate solution, iron displaces copper from copper sulphate solution forming iron sulphate, which is green in colour.

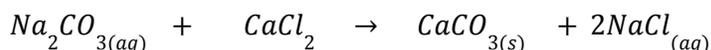


Iron      Copper sulphate      Iron sulphate      Copper  
(Blue colour)                      (Green colour)

Therefore, the blue colour of copper sulphate solution fades and green colour appears.

**7.** Give an example of a double displacement reaction other than the one given in Activity 1.10.

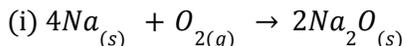
**Ans.** Sodium carbonate reacts with calcium chloride to form calcium carbonate and sodium chloride.

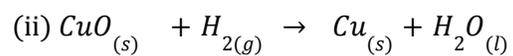


Sodium                      Calcium                      Calcium                      Sodium  
Carbonate                      Chloride                      Carbonate                      chloride

In this reaction, sodium carbonate and calcium chloride exchange ions to form two new compounds. Hence, it is a double displacement reaction.

**8.** Identify the substances that are oxidised and the substances that are reduced in the following reactions.





**Ans.** (i) Sodium (Na) is oxidised as it gains oxygen and oxygen gets reduced.

(ii) Copper oxide (CuO) is reduced to copper (Cu) while hydrogen (H<sub>2</sub>) gets oxidised to water (H<sub>2</sub>O).