

Class 10

chapter1 science

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

Ans- When magnesium ribbon is exposed to air, it forms a layer of magnesium oxide on its surface. This layer of magnesium oxide, being a stable compound, prevents further reaction of magnesium with oxygen. Hence, it should be cleaned before burning in air to remove this layer so that the metal can be exposed to air properly.

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

(i) Hydrogen + Chlorine  $\rightarrow$  Hydrogen Chloride

(ii) Barium Chloride + Aluminium Sulphate  $\rightarrow$  Barium Sulphate + Aluminum Chloride

(iii) Sodium + Water  $\rightarrow$  Sodium hydroxide + Hydrogen

Ans- (i)  $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g})$

(ii)  $3\text{BaCl}_2(\text{s}) + \text{Al}_2(\text{SO}_4)_3(\text{s}) \rightarrow 3\text{BaSO}_4(\text{s}) + 2\text{AlCl}_3(\text{s})$

(iii)  $2\text{Na}(\text{s}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{H}_2(\text{g})$

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

Ans- (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

(i)  $\text{BaCl}_2(\text{aq}) + \text{Na}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$

(ii)  $\text{NaOH}(\text{aq}) + \text{HCl}(\text{aq}) \rightarrow \text{NaCl}(\text{aq}) + \text{H}_2\text{O}(\text{l})$

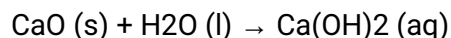
Q.4 A solution of a substance 'X' is used for white washing.

(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  $\text{CaO}$ .

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



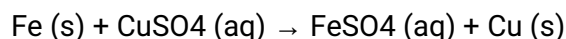
Calcium Oxide (Quick Lime) + Water  $\rightarrow$  Calcium Hydroxide (Slaked Lime)

Q.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.

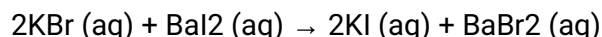
Ans- Water contains two parts of hydrogen and one part oxygen. Therefore, during the electrolysis of water the amount of hydrogen gas collected in one of the test tubes is double than that of the oxygen produced and collected in the other test tube.

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

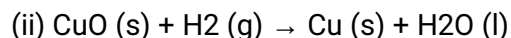
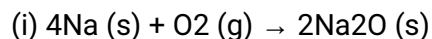
Ans- When an iron nail dipped in the copper sulphate solution than iron displaces copper from the copper sulphate because iron is more reactive than copper. Therefore the colour of the copper sulphate solution changes. The reaction involved here is:



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



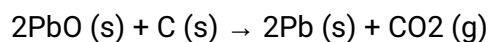
Q.8 Identify the substances that are oxidised and the substances that are reduced in the following reactions.



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).

Q.9 1. Which of the statements about the reaction below are incorrect?



(a) Lead is getting reduced.

(b) Carbon dioxide is getting oxidised.

(c) Carbon is getting oxidised.

(d) Lead oxide is getting reduced.

3. What happens when dilute hydrochloric acid is added to iron filings? Tick the correct answer.

(a) Hydrogen gas and iron chloride are produced.

(b) Chlorine gas and iron hydroxide are produced.

(c) No reaction takes place.

(d) Iron salt and water are produced.

► (a) Hydrogen gas and iron chloride are produced.

4. What is a balanced chemical equation? Why should chemical equations be balanced?

Ans- A reaction which has an equal number of atoms of all elements on both sides of a chemical equation is called balanced chemical equation. The law of conservation of mass states that mass can neither be created nor destroyed. In a chemical equation, the total mass of reactants should be equal to the total mass of products. Hence, it means that