

Chapter 1. Chemical Reaction and Equations

1. When iron is heated with sulphur iron sulphide is formed. What is the reaction called? (1 mark)
2. What type of reaction is represented by the digestion of food in our body? (1 mark)
3. What is that reaction called in which one element takes the place of another element in a compound? (1 mark)
4. What happens to copper sulphate solution when a piece of iron metal is placed in it? (1 mark)
5. A reaction takes place with the evolution of heat energy. What is this reaction called? (1 mark)
6. Write the balanced equation for the following chemical reactions. (2 marks)
 - (i) Hydrogen + Chlorine \rightarrow Hydrogen chloride
 - (ii) Barium chloride + Aluminium sulphate \rightarrow Barium sulphate + Aluminium chloride
 - (iii) Sodium + Water \rightarrow Sodium hydroxide + Hydrogen.
7. Write a balanced chemical equations with state symbols for the following reactions: (2 marks)
 - (i) Solutions of barium chloride and sodium sulphate in water react to give insoluble barium sulphate and the solution of sodium chloride.
 - (ii) Sodium hydrogen solution (in water) reacts with hydrochloric acid solution (in water) to produce sodium chloride solution and water.
8. A solution for a substance 'X' is used for white – washing. (2 marks)
 - (i) Name the substance 'X' and write its formula.
 - (ii) Write the reaction of the substance 'X' named in (i) above with water.
9. What way the two reactions in each of the following pairs are different from each other?
 - (i) (a) $\text{NH}_3(\text{g}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{NH}_4\text{OH}(\text{aq})$ (3 marks)
 - (b) $2\text{Mg}(\text{s}) + \text{O}_2(\text{g}) \rightarrow 2\text{MgO}(\text{s})$
 - (ii) (a) $\text{Zn}(\text{s}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$
 - (b) $\text{H}_2\text{S}(\text{aq}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{CuS}(\text{s}) + \text{H}_2\text{SO}_4(\text{aq})$
 - (iii) (a) $\text{CaCO}_3 \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
 - (b) $2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$
10. What is meant by a displacement reaction? Give two examples. (3 marks)
11. What are the advantages of using a chemical equation for the representation of a chemical reaction? (3 marks)

6. Why is a *Combustion* reaction an oxidation reaction? (2)
7. Identify the type of chemical reaction (2)
 (i) $A + B \rightarrow C$ (ii) $A + BC \rightarrow AC + B$
8. Why cannot a chemical change be normally reversed? (2)
9. Identify the substance oxidized and reduced in the reaction. (2)
 $CuO(s) + Zn(s) \rightarrow ZnO(s) + Cu(s)$
10. When you mix solutions of lead (II) nitrate and potassium iodide, (3)
 (a) What is the colour of the precipitate formed? Name the compound evolved?
 (b) Write a balanced chemical reaction?
 (c) Is this a double displacement reaction?
11. Transfer the following into chemical equations and balance them. (3)
 (1) Hydrogen gas combines with nitrogen to form ammonia.
 (2) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.
 (3) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.
12. Balance the equations (3)
 (1) $HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + H_2O$
 (2) $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$
 (3) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + HCl$
13. Write three equations for decomposition reaction where energy is supplied in the form of heat, light and electricity? (3)