

## PRACTICE EXERCISE 1.1

- Q1. Why is respiration considered an exothermic process? **V.V.I.**
- Q2. On what basis is a chemical equation balanced?
- Q3. What happens chemically when quicklime is added to water filled in a bucket?
- Q4. Why should magnesium ribbon be cleaned before burning in air? **V.V.I.**
- Q5. State whether the following statement is true or false:  
A chemical equation can be balanced easily by altering the formula of a reactant or product.
- Q6. What is wrong with the following chemical equation?  
$$\text{Mg} + \text{O} \rightarrow \text{MgO}$$
  
Correct and balance it.
- Q7. What does the symbol (aq) represent in a chemical equation?
- Q8. Why is photosynthesis considered an endothermic reaction? **V.V.I.**
- Q9. Correct and balance the following equations:  
(a)  $\text{Ca} + \text{H}_2\text{O} \rightarrow \text{CaOH} + \text{H}$   
(b)  $\text{N} + \text{H} \rightarrow \text{NH}_3$
- Q10. Fill in the following blanks with suitable words:  
(a) Chemical equations are balanced to satisfy the law of .....  
(b) A solution made in water is known as an ..... solution and indicated by the symbol.
- Q11. Give one example of a chemical reaction. State two characteristics of the chemical reaction which takes place when dilute sulphuric acid is poured over zinc metal. **V.V.I.**
- Q12. Give two characteristics of the chemical reaction which occurs on adding potassium iodide solution to lead nitrate solution.
- Q13. What is a chemical equation? Explain with the help of an example.
- Q14. Giving examples, state the difference between balanced and unbalanced chemical equations.
- Q15. When hydrogen is passed over copper oxide, copper and steam are formed. Write a balanced equation for this reaction and state which of the chemical are:  
(i) elements      (ii) compounds
- (iii) reactants      (iv) products  
(v) metals      (vi) non-metals.
- Q16. What are the various ways in which a chemical equation can be made more information? Give examples to illustrate your answer.
- Q17. What is a balanced chemical equation? Why should chemical equations be balanced?
- Q18. Aluminium burns in chlorine to form aluminium chloride ( $\text{AlCl}_3$ ). Write a balanced chemical equation for this reaction.
- Q19. Potassium metal reacts with water to give potassium hydroxide and hydrogen gas. Write a balanced chemical equation for this reaction.
- Q20. Explain, with example, how the physical states of the reactants and products can be shown in a chemical equation.
- Q21. Write any two observations in an activity which may suggest that a chemical reaction has taken place. Give an example in support of your answer.
- Q22. Aluminium hydroxide reacts with sulphuric acid to form aluminium sulphate and water. Write a balanced equation for this reaction.
- Q23. Rewrite the following information in the form of a balanced chemical equation:  
Magnesium burns in carbon dioxide to form magnesium oxide and carbon.
- Q24. Ammonia reacts with oxygen to form nitrogen and water. Write a balanced chemical equation for this reaction. Add and the state symbols for all the reactants and products.
- Q25. Write a balanced chemical equation for the process of photosynthesis giving the physical states of all the substances involved and the conditions of the reaction.
- Q26. Translate the following statement into chemical equation and then balance it:  
Barium chloride solution reacts with aluminium sulphate solution to form a precipitate of barium sulphate and aluminium chloride solution.
- Q27. When potassium nitrate is heated, it decomposes into potassium nitrite and oxygen. Write a balanced equation for this reaction and add the state symbols of the reactants and products.

## PRACTICE EXERCISE 1.2

- Q1. When the solution of substance X is added to a solution of potassium iodide, then a yellow solid separates out from the solution.
- What do you think substance X is likely to be?
  - Name the substance which the yellow solid consists of.
  - Which characteristic of chemical reactions is illustrated by this example?
  - Write a balanced chemical equation for the reaction which takes place. Mention the physical states of all the reactants and products involved in the chemical equation.
- Q2. When water is added gradually to a white solid X, a hissing sound is heard and a lot of heat is produced forming a product Y. A suspension of Y in water is applied to the walls of a house during white washing clear solution of Y is also used for testing carbon dioxide gas in the laboratory.
- What could be solid X? Write its chemical formula.
  - What could be product Y? Write its chemical formula.
  - What is the common name of the solution of Y which is used for testing carbon dioxide gas?
  - Write chemical equation of the reaction which takes place on adding water to solid x.
  - Which characteristic of chemical reactions is illustrated by this example?
- Q3. When metal X is treated with a dilute acid Y, then a gas Z is evolved which burns readily by making a little explosion.
- Name any two metals which can behave like metal X.
  - Name any two acids which can behave like acid Y.
  - Name the gas Z.
  - Is the gas Z lighter than or heavier than air?
  - Is the reaction between metal X and dilute acid Y exothermic or endothermic?
  - By taking a specific example of metal X and dilute acid Y, write a balanced chemical equation for the reaction which takes place. Also indicate physical states of all the reactants and products.
- Q4. A silvery-white metal X taken in form of ribbon, when ignited, burns in air with a dazzling white flame to form a white powder Y. When water is added to powder Y, it dissolves partially to form another substance Z.
- What could metal X be?
  - What is powder Y?
  - With which substance metal X combines to form powder Y?
  - What is substance Z? Name one domestic use of substance Z.
  - Write a balanced chemical equation of the reaction which takes place when metal X burns in air to form powder Y.
- Q5. When a mixture of gases X and Y is compressed to 300 atm pressure and then passed over a catalyst consisting of a mixture of zinc oxide and chromium oxide (heated to a temperature of  $300^{\circ}\text{C}$ ), then an organic compound Z having the molecular formula  $\text{CH}_4\text{O}$  is formed. X is a highly poisonous gas which is formed in appreciable amounts when a fuel burns in a limited supply of air; Y is a gas which can be made by the action of a dilute acid on a active metal; and Z is a liquid organic compound which can react with sodium metal to produce hydrogen gas.
- What are X, Y and Z?
  - Write a balanced chemical equation of the reaction which takes place when X and Y combine to form Z. Indicate the conditions under which the reaction occurs.
- Q6. Gas A, which is the major cause of global warning, combines with hydrogen oxide B in nature in the presence of an environmental factor C and a green material D to form a six carbon organic compound E and a gas F. The gas F is necessary for breathing.
- What is gas A?
  - What is the common name of B?
  - What do you think could be C?
  - What is material D? Where is it found?
  - Name the organic compound E.

## PRACTICE EXERCISE 1.3

Balance the following chemical equations:

- Q1.  $\text{CH}_4 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Heat}$
- Q2.  $\text{C}_4\text{H}_{10} + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Heat}$
- Q3.  $\text{Fe} + \text{H}_2\text{O} \longrightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$
- Q4.  $\text{Cu} + \text{H}_2\text{SO}_4 \longrightarrow \text{CuSO}_4 + \text{SO}_2 + \text{H}_2\text{O}$
- Q5.  $\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \longrightarrow \text{AlCl}_3 + \text{BaSO}_4$
- Q6.  $\text{Zn} + \text{AgNO}_3 \longrightarrow \text{Zn}(\text{NO}_3)_2 + \text{Ag}$
- Q7.  $\text{Na} + \text{H}_2\text{O} \longrightarrow \text{NaOH} + \text{H}_2$
- Q8.  $\text{Al} + \text{H}^+ \longrightarrow \text{Al}^{3+} + \text{H}_2$
- Q9.  $\text{Sn}^{2+} + \text{Hg}^{2+} \longrightarrow \text{Sn}^{4+} + \text{Hg}^+$
- Q10.  $\text{NaHCO}_3 \longrightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
- Q11.  $\text{K}_2\text{Cr}_2\text{O}_7 + \text{KOH} \longrightarrow \text{H}_2\text{O} + \text{K}_2\text{CrO}_4$
- Q12.  $\text{Na}_2\text{CO}_3 + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$
- Q13.  $\text{As}_2\text{O}_3 + \text{H}_2\text{S} \longrightarrow \text{As}_2\text{S}_3 + \text{H}_2\text{O}$
- Q14.  $\text{Zn}(\text{NO}_3)_2 \longrightarrow \text{ZnO} + \text{NO}_2 + \text{O}_2$
- Q15.  $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \longrightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$
- Q16.  $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \longrightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
- Q17.  $\text{Fe}_2\text{O}_3 + \text{Al} \longrightarrow \text{Al}_2\text{O}_3 + \text{Fe} + \text{Heat}$
- Q18.  $\text{C} + \text{H}_2\text{O} \longrightarrow \text{CO} + \text{H}_2$
- Q19.  $\text{SOCl}_2 + \text{H}_2\text{O} \longrightarrow \text{SO}_2 + \text{HCl}$
- Q20.  $\text{Na}_2\text{CO}_3 + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{CO}_3$
- Q21.  $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2$
- Q22.  $\text{CuSO}_4 + \text{H}_2\text{S} \longrightarrow \text{CuS} + \text{H}_2\text{SO}_4$
- Q22.  $\text{MnO}_2 + \text{HCl} \longrightarrow \text{MnCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$
- Q22.  $\text{FeSO}_4 \longrightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$
- Q23.  $\text{MgO} + \text{H}_2\text{SO}_4 \longrightarrow \text{MgSO}_4 + \text{H}_2\text{O}$
- Q24.  $\text{Na}_2\text{CO}_3 + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + \text{CO}_2 + \text{H}_2\text{O}$
- Q25.  $\text{Mg}(\text{OH})_2 + \text{HCl} \longrightarrow \text{MgCl}_2 + \text{H}_2\text{O}$
- Q26.  $\text{Ca}(\text{OH})_2 + \text{Dil H}_2\text{SO}_4 \longrightarrow \text{CaSO}_4 + \text{H}_2\text{O}$
- Q27.  $\text{Al}(\text{OH})_3 \longrightarrow \text{Al}_2\text{O}_3 + \text{H}_2\text{O}$

Balance the following chemical equations:

- Q1.  $\text{NH}_3 + \text{CuO} \longrightarrow \text{Cu} + \text{N}_2 + \text{H}_2\text{O}$
- Q2.  $\text{Al}_2(\text{SO}_4)_3 + \text{NaOH} \longrightarrow \text{Al}(\text{OH})_3 + \text{Na}_2\text{SO}_4$
- Q3.  $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \longrightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$
- Q4.  $\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- Q5.  $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + \text{HCl}$
- Q6.  $\text{N}_2 + \text{H}_2 \longrightarrow \text{NH}_3$
- Q7.  $\text{C} + \text{CO}_2 \longrightarrow \text{CO}$
- Q8.  $\text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COOH} \longrightarrow \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$
- Q9.  $\text{Fe} + \text{H}^+ \longrightarrow \text{Fe}^{2+} + \text{H}_2$
- Q11.  $\text{Br}_2 + \text{I}^- \longrightarrow \text{Br}^- + \text{I}_2$
- Q12.  $\text{Na} + \text{H}^+ \longrightarrow \text{Na}^+ + \text{H}_2$
- Q13.  $\text{C}_2\text{H}_5\text{OH} + \text{Na} \longrightarrow \text{C}_2\text{H}_5\text{ONa} + \text{H}_2$
- Q14.  $\text{KClO}_3 \longrightarrow \text{KCl} + 3\text{O}_2$
- Q15.  $\text{CuSO}_4 + \text{NaOH} \longrightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$
- Q16.  $\text{Zn} + \text{H}_2\text{SO}_4 \longrightarrow \text{ZnSO}_4 + \text{H}_2$
- Q17.  $\text{CO} + \text{H}_2 \longrightarrow \text{CH}_3\text{OH}$
- Q18.  $\text{Ca}(\text{OH})_2 + \text{CO}_2 \longrightarrow \text{CaCO}_3 + \text{H}_2\text{O}$
- Q19.  $\text{H}_2\text{S} + \text{Cl}_2 \longrightarrow \text{S} + 2\text{HCl}$
- Q20.  $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$
- Q21.  $\text{SO}_2 + \text{H}_2\text{S} \longrightarrow \text{H}_2\text{O} + \text{S}$
- Q22.  $\text{H}_2\text{S} + \text{I}_2 \longrightarrow \text{HI} + \text{S}$
- Q23.  $\text{Pb}(\text{NO}_3)_2 + \text{KI} \longrightarrow \text{PbI}_2 + \text{KNO}_3$
- Q24.  $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$
- Q25.  $\text{AlCl}_3 + \text{NH}_4 + \text{H}_2\text{O} \longrightarrow \text{Al}(\text{OH})_3 + \text{NH}_4\text{Cl}$
- Q26.  $\text{CuSO}_4 + \text{H}_2\text{S} \longrightarrow \text{CuS} + \text{H}_2\text{SO}_4$
- Q27.  $\text{BaCl}_2 + \text{CuSO}_4 \longrightarrow \text{BaSO}_4 + \text{CuCl}_2$
- Q28.  $\text{ZnCO}_3 \longrightarrow \text{ZnO} + \text{CO}_2$
- Q29.  $\text{Mg} + \text{HCl} \longrightarrow \text{MgCl}_2 + \text{H}_2$
- Q30.  $\text{NaHCO}_3 + \text{HCl} \longrightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$

## PRACTICE EXERCISE 1.4

- Q1. Translate the following statements into chemical equations and then balance the equations:
- (i) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.
  - (ii) Phosphorus burns in air to give phosphorus pentoxide. **Hints:**  $P_4 + O_2 \rightarrow P_2O_5$
  - (iii) Carbon di sulphide burns in air to give carbon di oxide and sulphur di oxide.
  - (iv) Aluminium metal replaces iron from ferric oxide ( $Fe_2O_3$ ), giving aluminium oxide and iron.
  - (v) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate.
  - (vi) An aqueous calcium hydroxide solution (lime water) reacts with carbon di oxide gas to produce a solid calcium carbonate precipitate and water.
  - (vii) Barium Chloride react with sulphuric acid to form Barium sulphate and Hydrogen chloride.
  - (viii) Sodium Hydroxide react with sulphuric acid to form sodium sulphate and water.
  - (ix) Methane ( $CH_4$ ) burns in the presence of oxygen of air to form carbon di oxide and water.
  - (x) Iron react with oxygen to form Iron III oxide.
- Q2. Translate the following statements into chemical equations and then balance the equations:
- (i) An aqueous solution of ferrous sulphate react with an aqueous solution of sodium hydroxide to form a precipitate of ferrous hydroxide and sodium sulphate remains in solution.
  - (ii) Aluminium hydroxide reacts with sulphuric acid to form aluminium sulphate and water.
  - (iii) Magnesium carbonate react with hydrochloric acid to produce magnesium chloride, carbon di oxide and water.
  - (iv) Sodium hydroxide react with sulphuric acid to produce sodium sulphate and water.
  - (v) Carbon monoxide react with hydrogen under certain condition to form methanol ( $CH_3OH$ )
  - (vi) Potassium chlorate on heating forms potassium chloride and oxygen.
  - (vii) When Potassium Iodide solution is added to lead nitrate solution, then a yellow precipitate of lead iodide is produced along with potassium nitrate solution.
  - (viii) Calcium carbonate reacts with hydrochloric acid to produce calcium chloride, water and carbon di oxide.
  - (ix) Sodium Hydroxide solution reacts with hydrochloric acid solution to produce sodium chloride solution and water.
  - (x) Ammonia react with oxygen to form nitrogen and water.
  - (xi) Barium chloride solution reacts with aluminium sulphate solution to form precipitate of barium sulphate and aluminium chloride solution.
  - (xii) When potassium nitrate is heated, it decomposes into potassium nitrate and oxygen.
  - (xiii) When zinc react with oxygen to form zinc oxide.
  - (xiv) When calcium carbonate is heated it decomposes to form calcium oxide and carbon di oxide gas.
  - (xv) Hydrogen burns in oxygen of air to form water.
  - (xvi) When lead nitrate is heated, strongly, it breaks down to form simpler substances like lead mono oxide, nitrogen di oxide and oxygen.
  - (xvii) When electric current is passed through molten aluminium oxide, it decomposes to give aluminium metal and oxygen gas.
  - (xviii) When a piece of iron metal is placed in a copper sulphate solution, then iron sulphate solution and copper metal is formed.
  - (xix) When iron (III) oxide is heated with aluminium powder, then aluminium oxide and iron metal are formed.
  - (xx) When silver nitrate solution is added to sodium chloride solution, then a white precipitate of silver chloride is formed along with sodium nitrate solution.
  - (xxi) When barium chloride solution is added to sodium sulphate solution, then a white precipitate of Barium sulphate is formed along with sodium chloride solution.
  - (xxii) Magnesium burns in carbon dioxide to form magnesium oxide and carbon.

## PRACTICE EXERCISE 1.5

- Q1. What type of reaction is represented by the digestion of food in our body?
- Q2. Name the various types of chemical reactions.
- Q3. Why does the colour of copper sulphate solution change when an iron nail is kept immersed in it?
- Q4. Write the balanced chemical equation for the following reaction:  
Zinc + Silver nitrate  $\rightarrow$  Zinc nitrate + Silver
- Q5. Which term is used to indicate the development of unpleasant smell and taste in fat and oil containing foods due to aerial oxidation (when they are kept exposed for a considerable time)?
- Q6. What is the general name of the chemicals which are added to fat and oil containing foods to prevent the development of rancidity?
- Q7. State an important use of decomposition reactions.
- Q8. What are anti-oxidants? Why are they added to fat and oil containing foods?
- Q9. Explain why, food products containing fats and oils (like potato chips) are packaged in nitrogen.
- Q10. Give one example of a decomposition reaction which is carried out:  
(a) with electricity  
(b) by applying heat
- Q11. What type of chemical reaction is used to extract metals from their naturally occurring compounds like oxides or chlorides?
- Q12. Name two anti-oxidants which are usually added to fat and oil containing foods to prevent rancidity.
- Q13. Write one equation each for the decomposition reactions where energy is supplied in the form of (a) heat, (b) light, and (c) electricity.
- Q14. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the chemical equation of the reaction involved.
- Q15. In the following reaction between lead sulphide and hydrogen peroxide:  
 $PbS(s) + 4H_2O_2(aq) \longrightarrow PbSO_4(s) + 4H_2O(l)$   
(a) Which substance is reduced?  
(b) Which substance is oxidised?
- Q16. Identify the component oxidised in the following reaction:  $H_2S + Cl_2 \longrightarrow S + 2HCl$
- Q17. When  $SO_2$  gas is passed through saturated solution of  $H_2S$ , the following reaction occurs:  
 $SO_2 + 2H_2S \longrightarrow 2H_2O + 3S$   
In this reaction, which substance is oxidised and which one is reduced?
- Q18. What is an oxidation reaction? Identify in the following reaction (i) the substance oxidised, and (ii) the substance reduced:  
 $ZnO + C \longrightarrow Zn + CO$
- Q19. What is a redox reaction? Explain with an example.
- Q20. When a magnesium ribbon burns in air with a dazzling flame and forms a white ash, is magnesium oxidised or reduced? Why?
- Q21. In the reaction represented by the equation:  
 $MnO_2 + 4HCl \longrightarrow MnCl_2 + 2H_2O + Cl_2$   
(i) name the substance oxidised.  
(ii) name the oxidising agent.  
(iii) name the substance reduced.  
(iv) name the reducing agent
- Q22. Define a combination reaction.
- Q23. Give one example of a combination reaction which is also exothermic.
- Q24. Give one example of a combination reaction which is also endothermic.
- Q25. Give an example of an oxidation reaction.
- Q26. Is oxidation an exothermic or an endothermic reaction?
- Q27. Explain, by giving an example, how oxidation and reduction proceed side by side.
- Q28. What is the colour of ferrous sulphate crystals? How does this colour change after heating?
- Q29. Name the product formed on strongly heating ferrous sulphate crystals. What type of chemical reaction occurs in this change?
- Q30. Give one example of an oxidation-reduction reaction which is also a combination reaction.

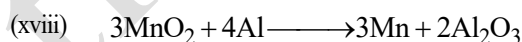
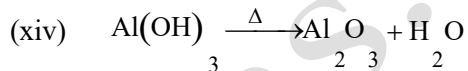
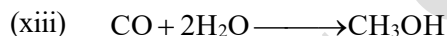
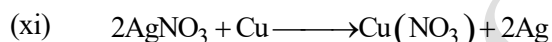
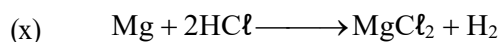
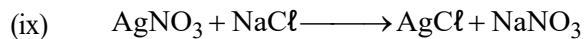
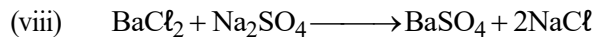
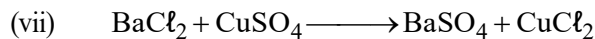
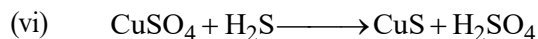
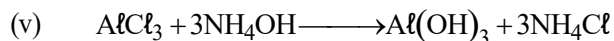
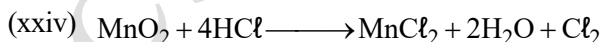
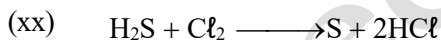
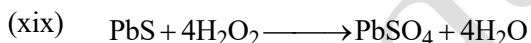
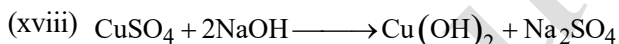
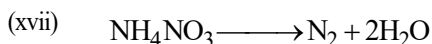
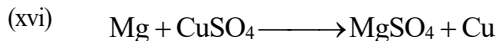
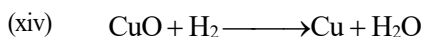
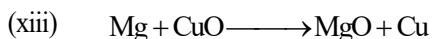
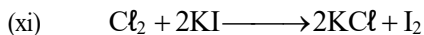
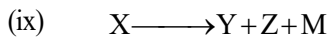
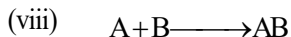
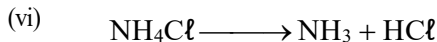
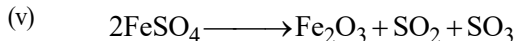
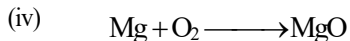
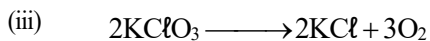
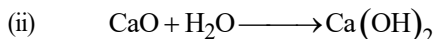


## PRACTICE EXERCISE 1.6

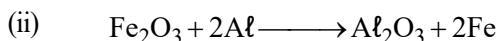
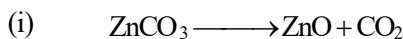
- Q1. What is a decomposition reaction? Give an example of a decomposition reaction. Describe an activity to illustrate such a reaction by heating.
- Q2. Zinc oxide reacts with carbon, on heating, to form zinc metal and carbon monoxide. Write a balanced chemical equation for this reaction. Name (i) oxidising agent, and (ii) reducing agent, in this reaction.
- Q3. What is the difference between displacement and double displacement reactions? Write equations for these reactions.
- Q4. What do you mean by a precipitation reaction? Explain giving an example.
- Q5. Explain the following in terms of gain or loss of oxygen with one example each:  
(i) oxidation (ii) reduction
- Q6. When copper powder is heated strongly in air, it forms copper oxide. Write a balanced chemical equation for this reaction. Name (i) substance oxidised, and (ii) substance reduced.
- Q7. Define the following in terms of gain or loss of hydrogen with one example each:  
(i) oxidation (ii) reduction
- Q8. When magnesium ribbon is heated, it burns in air to form magnesium oxide. Write a balanced chemical equation for this reaction. Name (i) substance oxidised, and (ii) substance reduced.
- Q9. What is meant by (a) displacement reaction, and (b) double displacement reaction? Explain with the help of one example each.
- Q10. Why are decomposition reactions called the opposite of combination reactions? Explain with equations of these reactions.
- Q11. Express the following facts in the form of a balanced chemical equation:  
“When a strip of copper metal is placed in a solution of silver nitrate, metallic silver is precipitated and a solution containing copper nitrate is formed”.
- Q12. What happens when a piece of iron metal is placed in copper sulphate solution? Name the type of reaction involved.
- Q13. Write balanced chemical equation with state symbols for the following reaction:  
Barium chloride solution reacts with sodium sulphate solution to give insoluble barium sulphate and a solution of sodium chloride.
- Q14. In the reaction represented by the following equation:  
$$\text{CuO (s)} + \text{H}_2 \text{ (g)} \longrightarrow \text{Cu (s)} + \text{H}_2\text{O (l)}$$
  
(a) name the substance oxidised  
(b) name the substance reduced  
(c) name the oxidising agent  
(d) name the reducing agent
- Q15. What happens when silver nitrate solution is added to sodium chloride solution?  
(a) Write the equation for the reaction which takes place.  
(b) Name the type of reaction involved.
- Q16. What happens when silver chloride is exposed to sunlight? Write a chemical equation for this reaction. Also give one use of such a reaction.
- Q17. What happens when a zinc strip is dipped into a copper sulphate solution? Write the equation for the reaction that takes place. Name the type of reaction involved.
- Q18. Explain the term “corrosion” with an example. Write a chemical equation to show the process of corrosion of iron.
- Q19. What special name is given to the corrosion of iron?
- Q20. What type of chemical reaction is involved in the corrosion of iron?
- Q21. Name any three objects (or structures) which are gradually damaged by the corrosion of iron and steel.
- Q22. Explain the term “rancidity”. What damage is caused by rancidity?
- Q23. What type of chemical reaction is responsible for causing rancidity?
- Q24. State and explain the various methods for preventing or retarding rancidity of food.
- Q25. What happens when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride?

## PRACTICE EXERCISE 1.7

Q1. What type of chemical reactions are represented by the following equations:

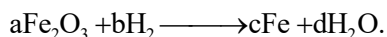


Q2. What type of chemical reactions are represented by the following equations:



## PRACTICE EXERCISE 1.8

Q1. What is the value of  $a$ ,  $b$ ,  $c$  in the following equation:



- (a) 1, 1, 2, 3      (b) 1, 1, 1, 1  
(c) 1, 2, 2, 3      (d) 1, 3, 2, 3

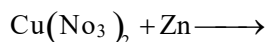
[Ans: (d)]

Q2. On heating solid mercury (II) oxide liquid mercury and oxygen gas is produced. Its chemical equation is:

- (a)  $2\text{HgO}(s) \xrightarrow{\Delta} 2\text{Hg}(l) + \text{O}_2(g)$   
(b)  $\text{HgO}_2(s) \xrightarrow{\Delta} \text{Hg}(l) + \text{O}_2(g)$   
(c)  $2\text{Hg}_2\text{O}(s) \xrightarrow{\Delta} 4\text{Hg}(l) + \text{O}_2(g)$   
(d) None of these

[Ans: (a)]

Q3. Complete the following chemical equation:



- (a)  $\text{Cu}(\text{NO}_3)_2 + \text{Zn} \longrightarrow \text{CuNO}_3 + \text{ZnNO}_3$   
(b)  $\text{Cu}(\text{NO}_3)_2 + \text{Zn} \longrightarrow \text{ZnCu} + 2\text{NO}_3$   
(c)  $\text{Cu}(\text{NO}_3)_2 + \text{Zn} \longrightarrow \text{Zn}(\text{NO}_3)_2 + \text{Cu}$   
(d) None of these

[Ans: (c)]

Q4. Phosphorus burns in chlorine gas to produce phosphorus pentaoxide. The chemical equation is:

- (a)  $\text{P}(s) + \text{Cl}_2(g) \longrightarrow \text{PCl}_2$   
(b)  $2\text{P}(s) + 5\text{Cl}_2 \longrightarrow 2\text{PCl}_5$   
(c)  $\text{P} + 3\text{Cl}_2 \longrightarrow \text{PCl}_6$   
(d)  $2\text{P} + \text{Cl}_2 \longrightarrow \text{P}_2\text{Cl}_2$

[Ans: (b)]

Q5. Carbon disulphide burns in air to produce carbon dioxide and sulphur dioxide. The chemical equation is:

- (a)  $\text{CS}_2 + \text{O}_2 \longrightarrow \text{CO}_2 + 2\text{S}$   
(b)  $\text{CS}_2 + 3\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{SO}_2$   
(c)  $\text{CS}_2 + 2\text{O}_2 \longrightarrow \text{CO}_2 + \text{SO}_2 + \text{S}$   
(d) None of these.

[Ans: (b)]

Q6. The reaction in which one substance breaks into two or more simple substances is:

- (a) Combination

- (b) Double displacement  
(c) Decomposition  
(d) Displacement

[Ans: (c)]

Q7. Which of the following sign shows that a product is obtained as a precipitate:

- (a)  $\rightarrow$       (b)  $\uparrow$   
(c)  $\leftarrow$       (d)  $\downarrow$

[Ans: (d)]

Q8. Which one is an endothermic reaction:

- (a) Reactant + heat  $\rightarrow$  Product  
(b) Reactant - heat  $\rightarrow$  Product  
(c) Reactant  $\rightarrow$  Product + heat  
(d) Reactant + light  $\rightarrow$  Product

[Ans: (a)]

Q9. In which reaction heat is evolved:

- (a) Exothermic      (b) Endothermic  
(c) Reduction      (d) None of these

[Ans: (a)]

Q10. In which reaction heat is absorbed:

- (a) Exothermic      (b) Endothermic  
(c) Reduction      (d) None of these

[Ans: (b)]

Q11. Gaining of hydrogen by any substance is:

- (a) Oxidation      (b) Reduction  
(c) Hydrogenation      (d) None of these

[Ans: (b)]

Q12. Oxidation is the process in which a substance:

- (a) Gains hydrogen  
(b) Gains oxygen  
(c) Gains electrons  
(d) None of these

[Ans: (b)]

Q13.  $\text{Cl}_2 + 2\text{KI} \rightarrow 2\text{KCl} + \text{I}_2$  is a:

- (a) Combination reaction  
(b) Decomposition reaction  
(c) Displacement reaction  
(d) Double displacement reaction

[Ans: (c)]

Q14.  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$  is a:

- (a) Combination reaction  
(b) Displacement reaction  
(c) Double displacement reaction  
(d) Decomposition reaction

[Ans: (d)]

Q15.  $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$  is a:

- (a) Combination reaction



- (b) Displacement reaction
- (c) Decomposition reaction
- (d) Double displacement reaction

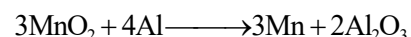
[Ans: (a)]

Q16. Which of the following is double displacement reaction:

- (a)  $\text{HCl} + \text{NaOH} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$
- (b)  $\text{Mg} + 2\text{HCl} \longrightarrow \text{MgCl}_2 + \text{H}_2$
- (c) Both (a) and (b)
- (d) None of these

[Ans: (a)]

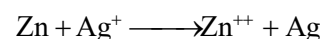
Q17. Which substance is reduced in the following reaction:



- (a)  $\text{MnO}_2$
- (b)  $\text{Al}$
- (c)  $\text{Al}_2\text{O}_3$
- (d)  $\text{Mn}$

[Ans: (a)]

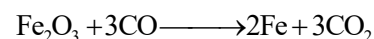
Q18. The substance oxidised in the following reaction is:



- (a)  $\text{Zn}^{++}$
- (b)  $\text{Ag}^+$
- (c)  $\text{Ag}$
- (d)  $\text{Zn}$

[Ans: (d)]

Q19. The substance reduced in the following reaction is:



- (a)  $\text{CO}$
- (b)  $\text{Fe}$
- (c)  $\text{CO}_2$
- (d)  $\text{Fe}_2\text{O}_3$

[Ans: (d)]

Q20. The combination reaction is:

- (a) Burning of metals
- (b) Extraction of metal
- (c) Addition of more active metal to a solution of less active metal compound.
- (d) Electrolysis

[Ans: (a)]

Q21. Which of the following is double displacement reaction:

- (a)  $\text{A} + \text{BC} \longrightarrow \text{AB} + \text{C}$
- (b)  $\text{A} + \text{B} \longrightarrow \text{AB}$
- (c)  $\text{ABC} \longrightarrow \text{BCA}$
- (d)  $\text{AB} + \text{XY} \longrightarrow \text{AX} + \text{BY}$

[Ans: (d)]

Q22. Which of the following is not true for an oxidation reaction:

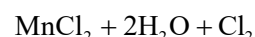
- (a) Addition of Oxygen

- (b) Gain of electrons
- (c) Removal of hydrogen
- (d) Release of electrons

[Ans: (b)]

Q23. In which reaction hydrogen is being oxidised:

- (a)  $\text{SO}_2 + \text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$
- (b)  $\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$
- (c)  $\text{H}_2\text{S} + \text{Cl}_2 \longrightarrow \text{S} + 2\text{HCl}$
- (d)  $\text{MnO}_2 + 4\text{HCl} \longrightarrow$



[Ans: (b)]

Q24. Double decomposition reaction is:

- (a) Electrolysis of water
- (b) Burning of hydrogen in air
- (c) Digestion of food in our body.
- (d) Addition of dilute sulphuric acid to barium chloride solution.

[Ans: (d)]

Q25. One of the following is an endothermic reaction. This is:

- (a) combination of carbon and oxygen to form carbon monoxide.
- (b) combination of nitrogen and oxygen to form nitrogen monoxide.
- (c) combination of glucose and oxygen to form carbon dioxide and water.
- (d) combination of zinc and hydrochloric acid to form zinc chloride and hydrogen.

[Ans: (b)]

Q26. Which of the following is not an endothermic reaction?

- (a)  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
- (b)  $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- (c)  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- (d)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

[Ans: (d)]

Q27. One of the following is an exothermic reaction. This is:

[Ans: (c)]

- (a) electrolysis of water
- (b) conversion of limestone into quicklime
- (c) process of respiration
- (d) process of photosynthesis