

## PRACTICE EXERCISE 1.1

Q1. Why is respiration considered an exothermic process? **V.V.I.**

Q2. On what basis is a chemical equation balanced?

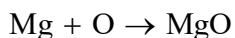
Q3. What happens chemically when quicklime is added to water filled in a bucket?

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?

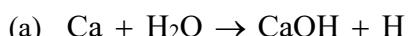


Correct and balance it.

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:



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 informative? 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.

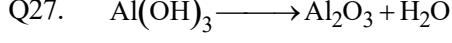
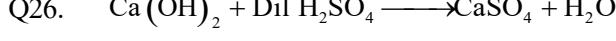
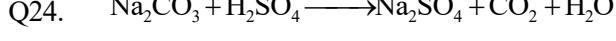
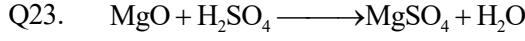
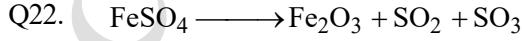
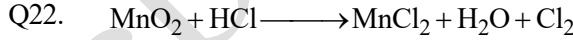
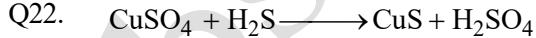
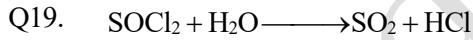
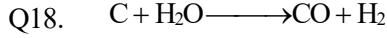
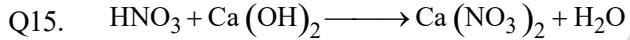
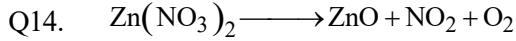
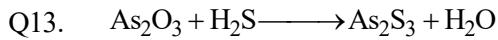
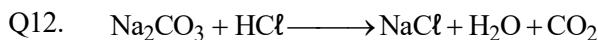
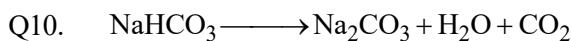
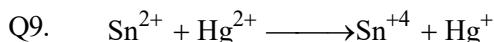
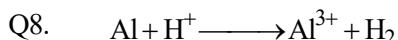
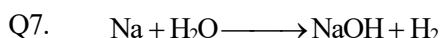
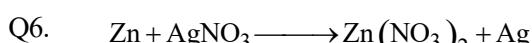
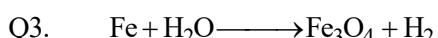
- What are X, Y and Z?
- Write a balanced chemical equation of the reaction which takes place when X and Y combine to form Z. Indicate the conditions under which the reaction occurs.

Q6. Gas A, which is the major cause of global warming, 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.

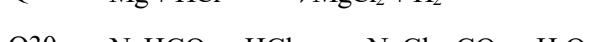
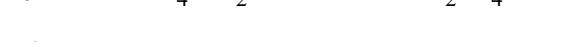
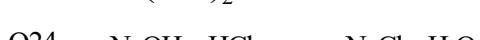
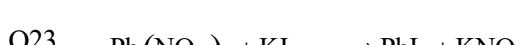
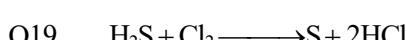
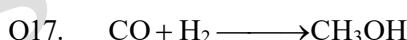
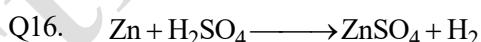
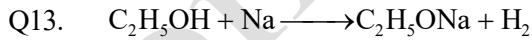
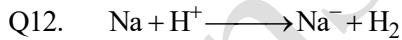
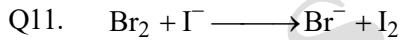
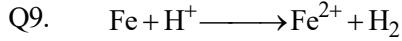
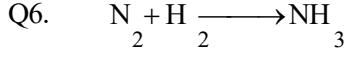
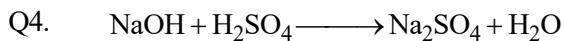
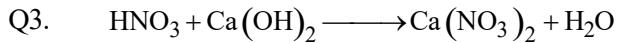
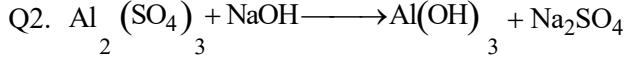
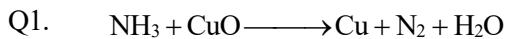
- What is gas A?
- What is the common name of B?
- What do you think could be C?
- What is material D? Where is it found?
- Name the organic compound E.

## PRACTICE EXERCISE 1.3

Balance the following chemical equations:



Balance the following chemical equations:



## 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 pentaoxide. **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 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.

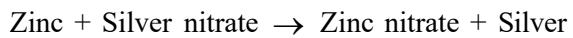
## PRACTICE EXERCISE 1.5

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:



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

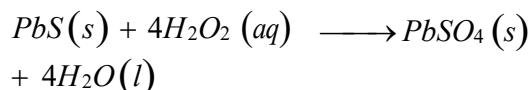
Q11. What type of chemical reaction is used to extract metals from their naturally occurring compounds like oxides or chlorides?

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:



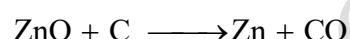
(a) Which substance is reduced?  
(b) Which substance is oxidised?

Q16. Identify the component oxidised in the following reaction:  $\text{H}_2\text{S} + \text{Cl}_2 \longrightarrow \text{S} + 2\text{HCl}$

Q17. When  $\text{SO}_2$  gas is passed through saturated solution of  $\text{H}_2\text{S}$ , the following reaction occurs:  $\text{SO}_2 + 2\text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$

In this reaction, which substance is oxidised and which one is reduced?

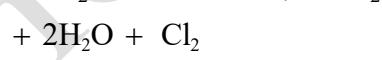
Q18. What is an oxidation reaction? Identify in the following reaction (i) the substance oxidised, and (ii) the substance reduced:



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:



(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:  
 $\text{CuO}(\text{s}) + \text{H}_2(\text{g}) \longrightarrow \text{Cu}(\text{s}) + \text{H}_2\text{O}(\text{l})$   
(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 the 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:

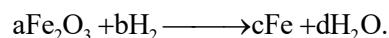
(i)  $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$  (iv)  $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \longrightarrow \text{PbI}_2 + 2\text{KNO}_3$   
 (ii)  $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2$  (v)  $\text{AlCl}_3 + 3\text{NH}_4\text{OH} \longrightarrow \text{Al}(\text{OH})_3 + 3\text{NH}_4\text{Cl}$   
 (iii)  $2\text{KClO}_3 \longrightarrow 2\text{KCl} + 3\text{O}_2$  (vi)  $\text{CuSO}_4 + \text{H}_2\text{S} \longrightarrow \text{CuS} + \text{H}_2\text{SO}_4$   
 (iv)  $\text{Mg} + \text{O}_2 \longrightarrow \text{MgO}$  (vii)  $\text{BaCl}_2 + \text{CuSO}_4 \longrightarrow \text{BaSO}_4 + \text{CuCl}_2$   
 (v)  $2\text{FeSO}_4 \longrightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$  (viii)  $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + 2\text{NaCl}$   
 (vi)  $\text{NH}_4\text{Cl} \longrightarrow \text{NH}_3 + \text{HCl}$  (ix)  $\text{AgNO}_3 + \text{NaCl} \longrightarrow \text{AgCl} + \text{NaNO}_3$   
 (vii)  $\text{A} + \text{BC} \longrightarrow \text{AC} + \text{B}$  (x)  $\text{Mg} + 2\text{HCl} \longrightarrow \text{MgCl}_2 + \text{H}_2$   
 (viii)  $\text{A} + \text{B} \longrightarrow \text{AB}$  (xi)  $2\text{AgNO}_3 + \text{Cu} \longrightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$   
 (ix)  $\text{X} \longrightarrow \text{Y} + \text{Z} + \text{M}$  (xii)  $6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6$   
 (x)  $\text{PQ} + \text{RS} \longrightarrow \text{PS} + \text{RQ}$  (xiii)  $\text{CO} + 2\text{H}_2\text{O} \longrightarrow \text{CH}_3\text{OH}$   
 (xi)  $\text{Cl}_2 + 2\text{KI} \longrightarrow 2\text{KCl} + \text{I}_2$  (xiv)  $\text{Al}(\text{OH})_3 \xrightarrow{\Delta} \text{Al}_2\text{O}_3 + \text{H}_2\text{O}$   
 (xii)  $2\text{K} + \text{Cl}_2 \longrightarrow 2\text{KCl}$  (xv)  $\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \longrightarrow \text{AlCl}_3 + \text{BaSO}_4$   
 (xiii)  $\text{Mg} + \text{CuO} \longrightarrow \text{MgO} + \text{Cu}$  (xvi)  $\text{P}_4 + 5\text{O}_2 \longrightarrow 2\text{P}_2\text{O}_5$   
 (xiv)  $\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$  (xvii)  $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$   
 (xv)  $\text{CaO} + \text{CO}_2 \longrightarrow \text{CaCO}_3$  (xviii)  $3\text{MnO}_2 + 4\text{Al} \longrightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$   
 (xvi)  $\text{Mg} + \text{CuSO}_4 \longrightarrow \text{MgSO}_4 + \text{Cu}$  (xix)  $\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$   
 (xvii)  $\text{NH}_4\text{NO}_3 \longrightarrow \text{N}_2 + 2\text{H}_2\text{O}$   
 (xviii)  $\text{CuSO}_4 + 2\text{NaOH} \longrightarrow \text{Cu}(\text{OH})_2 + \text{Na}_2\text{SO}_4$   
 (xix)  $\text{PbS} + 4\text{H}_2\text{O}_2 \longrightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$   
 (xx)  $\text{H}_2\text{S} + \text{Cl}_2 \longrightarrow \text{S} + 2\text{HCl}$   
 (xxi)  $\text{SO}_2 + 2\text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$   
 (xxii)  $2\text{PbO} + \text{C} \longrightarrow 2\text{Pb} + \text{CO}_2$   
 (xxiii)  $2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$   
 (xxiv)  $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$   
 (xxv)  $\text{Fe} + \text{S} \longrightarrow \text{FeS}$

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

(i)  $\text{ZnCO}_3 \longrightarrow \text{ZnO} + \text{CO}_2$   
 (ii)  $\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$   
 (iii)  $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$

## 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

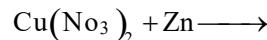
[Ans: (d)]

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

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

[Ans: (c)]

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

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

[Ans: (d)]

Q15.  $\text{NH}_3 + \text{HCl} \rightleftharpoons \text{NH}_4\text{Cl}$  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)]

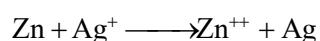
**Q17. Which substance is reduced in the following reaction:**



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

[Ans: (a)]

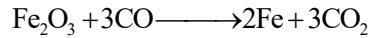
**Q18. The substance oxidised in the following reaction is:**



- (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:**

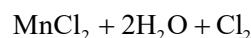
- (a) Addition of Oxygen

- (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 decompositon 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