ASSIGNMENT QUESTIONS SET – 1
CHAPTER – 1
CHEMICAL REACTIONS AND EQUATIONS

VERY SHORT ANSWER TYPE QUESTIONS

1. How are chemical reactions expressed in the shortest way?

2. What is the type of reaction in which the reactant gives simpler products?

3. What is the type of reaction in which two or more reactants combine to a give a single product?

4. In which type of reaction does an exchange of partners take place?

5. Why are chemical equations balanced?

6. What symbol is used to indicate a solution made in water?

7. What type of reaction does occur during the digestion of food inside our body?

8. What type of reaction is represented by the following equation?

$$CaCO_3 \rightarrow CaO + CO_2$$

9. What type of reaction does occur when silver bromide is exposed to sunlight?

10. A solution of a substance is used for white-washing. Name the substance with its formula.

11. Name the type of reaction which is represented by the following equations:

$$Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$$

12. Balance the following equation using state symbols: $Fe + HCl \rightarrow FeCl_2 + H_2$.

13. Express the following statement in the form of a balanced chemical equation: "Sodium reacts with water to form sodium hydroxide and hydrogen".

14. Write the balanced chemical equation for the reaction that occurs between aluminium hydroxide and sulphuric acid forming aluminium sulphate and water.

15. What type of reaction does occur when ammonia is allowed to react with hydrogen chloride?

16. Name the type of reaction involved when a zinc plate is dipped in a solution of copper sulphate?

17. In the reaction, $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(l)$. Pick out the following:

(i) the substance which is oxidised

(ii) the substance which is reduced

(iii) the oxidizing agent

(iv) the reducing agent

18. What chemical reaction is involved in the corrosion of iron?

19. Aluminum metal when burnt in air forms aluminium oxide. Write the balanced chemical equation for the reaction.

20. Is the reaction represented by the following reaction a displacement reaction?

$$2KI + Cl_2 \rightarrow 2KCl + I_2$$

21. Express the following reaction in the form of a balanced chemical equation: "When a strip of copper is dipped in a solution of silver nitrate, silver metal is precipitated and a solution of copper nitrate is produced."

22. Write the following equation in a balanced form?

$$NH_3 + O_2 \rightarrow N_2 + 2H_2O$$

23. What is the process called in which a substance is converted into a new substance?

24. Name the gas evolved when a magnesium ribbon is dropped into dilute sulphuric acid?

25. Give an example of a double displacement reaction.

26. Is copper more reactive than iron? Give the equation of the reaction in support of your answer?

27. Can a combustion reaction be a redox reaction?

28. Can a double displacement reaction be a redox reaction?

29. State one characteristics of the chemical reaction when lemon juice is added gradually to potassium permanganate solution?

30. Which gas does evolve when dilute HCl is added to sodium carbonate?

31. Why is photochemical reaction considered an endothermic reaction?

32. Which term is applied for the process in which unpleasant smell and taste develop in foods containing fats and oils?

33. What are the substances called which are added to foods containing fats and oils to protect them from becoming rancid?

34. Why are potato chips packaged in nitrogen?

35. In the refining of silver, silver is obtained from silver nitrate by using copper metal. Write down the reaction involved?

36. A shiny brown coloured element when heated in air becomes black. Name the element and the black coloured substance so formed.

37. Name the substance which is oxidised in the following reaction:

$$H_2S + Cl_2 \rightarrow 2HCl + S$$

38. Why are all decomposition reactions endothermic?

39. Is the decomposition of vegetable matter into compost an exothermic reaction?

40. Why is photosynthesis an endothermic reaction?

41. Balance the following equation:

(i) $MNO_2 + HCl \rightarrow MNCl_2 + Cl_2 + H_2O$

(ii) $Na + O_2 \rightarrow Na_2O$

(iii) $H_2O_2 \rightarrow H_2O + O_2$

(iv) $Mg(OH)_2 + HCl \rightarrow MgCl_2 + H_2O$

(v) $Fe + O_2 \rightarrow Fe_2O_3$

(vi) $Al(OH)_3 \rightarrow Al_2O_3 + H_2O$

(vii) $NH_3 + CuO \rightarrow Cu + N_2 + H_2O$

(viii) $Al_2(SO_4)_3 + NaOH \rightarrow Al(OH)_3 + Na_2SO_4$

(ix) $HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + H_2O$

(x) $NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$

(xi) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + HCl$

(xii) Calcium hydroxide + Carbon dioxide → Calcium carbonate + Water

(xiii) Aluminium + Copper chloride → Aluminium chloride + Copper

(xiv) Calcium + Water → Calcium hydroxide + Hydrogen

(xv) Sulphur dioxide + Oxygen → Sulphur trioxide

(xvi) $MnO_2 + HCl \rightarrow MnCl_2 + Cl_2 + H_2O$

(xvii) $Zn + HCl \rightarrow ZnCl_2$

SHORT ANSWER TYPE QUESTIONS

1. What do you mean by a Chemical reaction? Give an example of a chemical reaction.

2. What do you mean by a combination reaction? Give an example.

3. What do you mean by a displacement reaction? Give an example.

4. What do you mean by a decomposition reaction? Give an example.

5. What do you mean by a double displacement reaction? Give an example.

6. Explain the term "Electrolytic decomposition", giving a suitable example.

7. Mention any two uses of decomposition reaction.

8. Give an example of a reaction in which a less reactive non-metal is displaced by a more reactive non-metal.

9. Why does the blue colour of copper sulphate change when a piece of iron is dropped into it?

10. In the reactions given below, identify the substances that act as oxidizing and reducing agents:

(i) $4Na\ (s) + O_2\ (g) \rightarrow 2Na_2O\ (s)$

(ii) $ZnO\ (s) + C(s) \rightarrow Zn(s) + CO\ (g)$

11. Write the balanced chemical equation for the following reactions and identify the type of reaction in each case:

(i) Potassium chloride (aq) + Barium iodide (aq) → Potassium iodide (aq) + barium chloride (s)

(ii) Zinc carbonate (s) → Zinc oxide (s) + Carbon dioxide (g)

(iii) Hydrogen (g) + Chlorine (g) → Hydrogen chloride (g)

(iv) Magnesium (s) + Hydrochloride acid (aq) → Magnesium chloride (aq) + Hydrogen(g)

12. Name the type of reaction involved in the reactions represented by the following equations:

(i) $CaO + H_2O \rightarrow Ca(OH)_2$

(ii) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

(iii) $Al_2(SO_4)_3 + 6NH_4OH \rightarrow 2Al(OH)_3 + 3(NH_4)_2SO_4$

(iv) $CaCO_3 \rightarrow CaO + CO_2$

(v) $H_2 + Cl_2 \rightarrow 2HCl$

13. Why is magnesium ribbon cleaned before burning it in air?

14. State the characteristics of a chemical reaction.

15. What is a chemical equation?

16. Write the balanced chemical equations for the following chemical reactions:

(i) Hydrogen + Chlorine → Hydrogen Chloride

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

(iii) Sodium + water → Sodium Chloride + hydrogen

17. 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 a precipitate of barium sulphate and the solution of sodium chloride.

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

18. How can you explain that respiration is an exothermic reaction?

19. What do you mean by a precipitation reaction? Explain by giving example.

20. What are anti-oxidants? Name two substances which are usually used as anti-oxidants.

21. State any two ways to prevent the rancidity of food containing oils and fats.

22. What observations do you expect to get when granulated zinc taken in a test tube is treated with dilute sulphuric acid?

23. Give an example of a chemical reaction which take place with fall in temperature.

24. State on characteristic of chemical reaction taking place when

(i) dilute sulphuric acid is made to react with marble chips.

(ii) lemon juice is added to a solution of potassium permanganate.

(iii) dilute hydrochloride acid is added to a solution of lead nitrate in the cold.

(iv) water is added to quick lime.

25. Which of the following reactions are exothermic and which are endothermic?

(i) Burning of natural gas

(ii) Photosynthesis

(iii) Electrolysis of water

(iv) Respiration

26. What would you observe when lead nitrate is heated in a test tube?

27. Why is respiration considered an exothermic reaction?

28. Give an example of a decomposition reaction. Describe an activity to illustrate such a reaction by heating.

29. When hydrogen is passed over copper oxide, copper and steam are formed. Write a balanced equation for this reaction and state which of the chemicals are (i) elements (ii)compounds (iii) reactants (iv) products (v) metals (vi) non-metals

30. (a) What is a balanced chemical equation? Why should chemical equations be balanced?

(b) Aluminium burns in chlorine to form aluminium chloride. Write a balanced chemical equation for this reaction.

LONG ANSWER TYPE QUESTIONS

1. Balance the chemical equations for the following reactions:

(i) $Cu + H_2SO_4 \rightarrow CuSO_4 + SO_2 + H_2O$

(ii) $NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$

2. Differentiate between balanced and an unbalanced chemical equation.

3. Write the following chemical equation with state symbols:

(i) $CaCO_3 \rightarrow CaO + CO_2$

(ii) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

(iii) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$

(iv) $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

4. What do you mean by exothermic and endothermic reactions? Give examples.

5. What is the difference between displacement and double displacement reactions? Write equations for these reactions.

6. Explain, how do oxidation and reduction processes occur simultaneously.

7. What is corrosion? Write the chemical reaction that takes place during the corrosion of iron?

8. What are the various ways to make a chemical equation more informative?

9. Explain the following terms: (i) corrosion (ii) Rancidity

10. When metal X is treated with a dilute acid Y, then a gas Z is evolved which burns readily by making a little explosion.

(a) Name any two metals which can behave like metal X.

(b) Name any two acids which can behave like acid Y.

(c) Name the gas Z.

(d) Is the gas Z lighter than or heavier than air?

(e) Is the reaction between metal X and acid Y exothermic or endothermic?

(f) 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 state of all the reactants and products.