

CHAPTER - 1 CHEMICAL REACTIONS & EQUATIONS

41. Write the balanced chemical equations for the following and identify the type of reaction in each case.

- Nitrogen gas is treated with hydrogen gas in the presence of a catalyst at 773 K to form ammonia gas.
- Sodium hydroxide solution is treated with acetic acid to form sodium acetate and water.
- Ethanol is warmed with ethanoic acid to form ethyl acetate and water in the presence of Concentrated Sulphuric acid.
- Chlorine gas is passed in an aqueous iodide solution to form potassium chloride and solid iodine.
- Ethanol is burnt in air to form carbon dioxide, water and releases heat.
- Termite reaction, iron (III) oxide reacts with aluminum and gives molten iron and aluminum oxide.
- Sodium carbonate on reaction with hydrochloric acid in equal molar concentration gives sodium chloride and sodium hydrogen carbonate.
- Sodium hydrogen carbonate on reaction with hydro chloride acid gives sodium chloride, water and liberates carbon dioxide.
- Copper sulphate on treatment with potassium iodide precipitates cuprous iodide, liberates iodine gas and also forms potassium sulphate.

42) Which among the following are physical or chemical changes?

- Evaporation of petrol
- Burning of liquefied petroleum gas (LPG)
- Heating of an iron rod to red hot.
- Curdling of milk
- Sublimation of solid ammonium chloride.
- Fermentation of grapes.

43) A substance X, which is an oxide of a group 2 element, is used intensively in the cement industry. This element is present in bones also. On treatment with water it forms a solution which turns red litmus blue. Identify X and also write the chemical reactions involved.

44) Zinc liberates hydrogen gas when reacted with dilute hydrochloric acid, whereas copper does not. Explain why?

45) Give the characteristic tests for the following gases

- (a) CO_2 (b) O_2 (c) H_2

- Which one is a chemical change: Rusting of iron (or) Melting of iron.
- State any two observations in an activity which may suggest that a chemical reaction has taken place. Give an example to support your answer.
- Balance the following chemical equations.
 - $\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{heat}} \text{PbO}_{(s)} + \text{NO}_{2(g)} + \text{O}_{2(g)}$
 - $\text{MnO}_2 + \text{HCl} \rightarrow \text{MnCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$
 - $\text{FeSO}_4 \xrightarrow{\text{heat}} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$
- Identify the type of chemical reaction taking place in each of the following and also give the necessary balanced chemical equation.
 - Barium Chloride solution is mixed with copper sulphate solution and a white precipitate is formed.
 - On heating copper powder in air in a china dish the surface of copper powder turns black.
 - Iron nails when dipped in blue copper sulphate solution become brownish in colour and the blue colour of copper sulphate fades away.
 - Quick lime reacts vigorously with water releasing a large amount of heat.
- Write a balanced chemical equation to represent the following reaction. Iron reacts with steam to form Iron (II, III) oxide and hydrogen gas.
- What is a combination reaction? State one example giving balanced chemical equation for the reaction.
- State any Two observations when water is added to calcium oxide.
- 2g of ferrous sulphate crystals were heated in a hard glass test tube and observations were recorded.
 - What was the successive colour change?
 - Identify the liquid droplets collected on the cooler parts of the test tube.
 - What type of odour is observed on heating ferrous sulphate crystals.
 - Name the products obtained on heating ferrous sulphate crystals.
 - What type of reaction is taking place?
- Illustrate an activity with a labelled diagram to show electrolysis of water, as an example of decomposition reaction. How will you test the gases released?
- What is observed when a solution of potassium iodide is added to a solution of lead nitrate taken in a test tube?
 - What type of reaction is this?
 - Write a balanced chemical equation to represent the above reaction.
- How is slaked lime produced? Write a use of slaked lime.
- Describe an activity to demonstrate the change that take place when white silver chloride is kept in sunlight. State the type of chemical reaction which take place.
- Give an example of a decomposition reaction. Describe an activity to illustrate such a reaction by heating.
- Justify the statement: All decomposition reactions are endothermic reactions.
- A white coloured compound is heated in a test tube, brown fumes come out and a brown residue is left behind.

- a) Name the chemical which gives brown fumes
 b) Name the compound which gives brown residue
 c) Write balanced chemical equation.
 d) Identify the type of reaction.
16. Give reason
 a) Silver chloride is stored in dark coloured bottles.
 b) Potato chip manufacturers fill the packets of chips with nitrogen gas.
 c) for preservation of food air tight containers should be used.
17. a) What are redox reactions?
 b) Why the reaction between manganese dioxide and Hydrochloric acid is a redox reaction?
 c) Identify the substance oxidised and the substance reduced in the above reaction.
18. If copper metal is heated over a flame, it develops a coating. What is the colour and composition of this coating?
19. What changes do you observe in the iron nails and colour of copper sulphate solution if the iron nails are dipped in copper sulphate solution for 15 minutes.
20. Explain corrosion with an example. List four different ways that are used to prevent corrosion.
21. A student has been collecting silver coins and copper coins. One day she observed a black coating on silver coins and green coating on copper coins. How are they formed?
22. Identify the compound which is oxidised in the following reaction: $H_2S + Br_2 \rightarrow 2HBr + S$
23. What do you mean by precipitation reaction? Explain
24. Which type of chemical reaction are represented by the following equations.
 i) $A + BC \rightarrow AC + B$
 ii) $A + B \rightarrow AB$
 iii) $PQ + RS \rightarrow PS + RQ$
 iv) $CD \rightarrow C + D$
25. What is the difference between displacement and double displacement reactions? Write equations for these reactions.
26. What is the difference between the following two reactions.
 a) $Mg + 2HCl \rightarrow MgCl_2 + H_2 \uparrow$
 b) $NaOH + HCl \rightarrow NaCl + H_2O$
27. Differentiate between photolysis and photo chemical reactions with an example each.
28. What is meant by a skeletal equation?
29. Design an activity to show a decomposition reaction in which light is used to decompose a reactant. Write chemical equation for the reaction and state its one use.
30. $X + YSO_4 \rightarrow XSO_4 + Y$
 $Y + XSO_4 \rightarrow$ No reaction of the two elements 'X' and 'Y' which more reactive and why?
31. You are given the following materials
 i) Marble chips ii) Dilute hydrochloric acid iii) Zinc granules.
 Identify the type of reaction when marble chips and zinc granules are added separately to acid taken in two test tubes. Write chemical equations in each case.
32. A metal salt MX when exposed to light splits up to form metal M and a gas X_2 . Metal 'M' is used in making ornaments where as gas X_2 is used in making bleaching powder. The salt MX is itself used in black and white photography.
 a) What do you think metal 'M' is?
 b) What could be gas X_2 ?
 c) Name the metal salt MX.
 d) Name any two salt solution which on mixing together can produce a precipitate of

salt MX.

- e) What type of chemical reaction takes place when salt MX is exposed to light? Write the equation of the reaction.
33. A strip of metal 'X' is dipped in a blue coloured salt solution YSO_4 . After sometime, a layer of metal 'Y' from the salt solution is formed on the surface of metal strip 'X'. Metal 'X' is used in galvanisation whereas metal 'Y' is used in making electric wires. Metal X and Y together form an alloy Z.
 a) What could metal 'X' be?
 b) What could metal 'Y' be?
 c) Name the metal salt YSO_4 .
 d) What type of reaction takes place when metal 'X' reacts with salt solution YSO_4 ? Write the equation of the chemical reaction involved.
 e) Name the alloy 'Z'.
34. Mohan was working in a factory. He purchased a new cycle but kept it in the open even after duty hours. After two months he found that the cycle chain and even the handles got rusted. His friend advised him to apply a coating of rust proof paint to the cycle and not to keep it in the open in future.
 i) Why was the cycle rusted?
 ii) How did the advice of the friend help Mohan?
35. When the powder of a common metal is heated in an open china dish, its colour turns black. However when hydrogen is passed over the hot black substance so formed, it regains its original colour. Based on the above information answer the following questions.
 i) What type of chemical reaction takes place in each of the given steps?
 ii) Name the metal initially taken in the powder form. Write balanced chemical equations for both reactions.
36. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of chemical reaction.
37. In the electrolysis of water
 i) Name the gas collected at the cathode and at the anode
 ii) Why is the volume of gas collected at one electrode double the other.
 iii) Why is a few drops of dil H_2SO_4 added to the water?
38. Give an example for a combination reaction which is exothermic
39. Name the phenomenon due to which the taste and smell of oily food change when kept for a long time in open. Suggest one method to prevent it.
40. Observe the given figure and answer the following questions.
 a) Write the complete balanced equation for the reaction that take place.
 b) Type of reaction involved.
 c) Colour and name of the precipitate.

