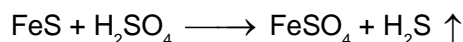
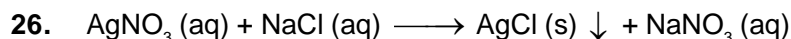


CLASS X SCIENCE CHEMICAL REACTIONS & EQUATIONS–ASSIGNMENT

VERY SHORT ANSWER TYPE QUESTIONS (ONE MARK EACH)

1. What happens chemically when quick lime is added to water?
2. On adding dilute hydrochloric acid to copper oxide powder, the solution formed is blue-green. Predict the new compound formed which imparts a blue-green colour to the solution.
3. Why is respiration considered an exothermic process?
4. What happens when a magnesium ribbon is ignited? Give chemical reaction.
5. Potato chips manufacturers fill the packet of chips with nitrogen gas. Why?
6. Write the equation in the symbolic form with state symbols for the following reaction :
Zinc + Sulphuric acid \longrightarrow Zinc sulphate + Hydrogen
7. Balance the following equation : $\text{Fe} + \text{H}_2\text{O} \longrightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$.
8. Why do we rub magnesium ribbon with a sand-paper before igniting?
9. $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$, name the type of reaction.
10. Tell whether heat is evolved or absorbed when quick lime is added to water.
11. Which colour change and smell are observed when crystals of ferrous sulphate are heated? Give chemical reaction also.
12. Lead nitrate on heating gives lead oxide, nitrogen oxide and oxygen. Write balanced equation with state symbols for this reaction.
13. If copper metal is heated over a flame it develops a coating. What is the colour and composition of coating?
14. Hydrogen and oxygen gases are produced at the cathode and anode respectively in the electrolysis of acidulated water. What is the ratio of the volumes of hydrogen and oxygen gases?
15. Silver chloride on photochemical decomposition produces silver and chlorine. What is the application of this reaction?
16. What are exothermic and endothermic reactions?
17. Write a balanced chemical equation to represent the following reaction : Carbon monoxide reacts with hydrogen gas at 340 atm to form methyl alcohol.
18. Which one is a chemical change – fermentation of fruit juice or diluting fruit juice?
19. Which of the following reactions is oxidation and which is reduction?
a. $2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$ b. $\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$
20. In the following reactions, which reactants undergo oxidation and which reactants undergo reduction?
a. $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$ b. $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$
21. What are the conditions that promote corrosion?
22. What do we mean when we say that a substance has gone rancid?
23. Is burning of a candle wax a physical change or a chemical change?
24. State one basic difference between a physical change and a chemical change.
25. Name and state the law which is kept in mind when we balance a chemical equation.

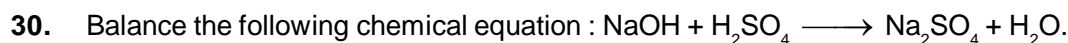


Consider the above mentioned two chemical equations with two different kinds of arrows (\uparrow) and (\downarrow) along with products. What do these two different arrows indicate?



28. Define oxidation and reduction.

29. Give an example of double displacement reaction (only reaction with complete balance equation).



SHORT ANSWER TYPE QUESTIONS (TWO MARKS EACH)

1. What is an oxidation reaction? Identify in the following reaction :

a. the substance oxidised and



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

3. When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.

a. What is the colour of this precipitate?

b. Name the compound precipitated?

c. Write the balanced chemical equation for this reaction.

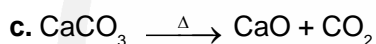
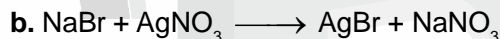
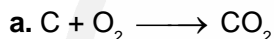
d. What type of reaction is this?

4. A small amount of ferrous sulphate were heated in a hard glass test tube.

a. Write the equations involved in the reaction.

b. What type of reaction is taking place?

5. Select (i) combination reaction and (ii) decomposition reaction from the following chemical equations :



6. Consider the following displacement reactions :



State, out of three metals Zn, Cu and Fe which is the least reactive and which is the most reactive?

7. Write balanced equation for each of the following :

a. Chlorine gas burns in hydrogen gas to give hydrogen chloride

b. Hydrogen sulphide burns in air to give water and sulphur oxide

8. Translate the following statements into balanced chemical equations :

a. Potassium permanganate on heating gives potassium manganate, manganese dioxide and oxygen.

b. Magnesium reacts with steam to form magnesium hydroxide and hydrogen gas.

9. What is a redox reaction? Write down a chemical equation representing it.

10. Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.

a. Translate the above statement into a chemical equation.

b. State two types in which this reaction can be classified.

11. When a green compound is heated strongly, its colour changes to black and odour of burning sulphur is given out.

a. Name the compound

b. State the type of reaction

c. Write the chemical equation involved

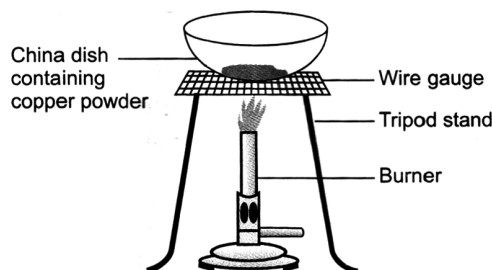
12. A white compound on heating decomposes to give brown fumes and a yellow residue is left behind. Name the compound. Write the chemical equation of the reaction stating its type.

13. A light sensitive compound 'X' of silver is used in black and white photography. On exposure to sunlight its colour changes to grey.
- Identify 'X'.
 - Write a chemical equation to express the above change.
 - Identify the type of chemical reaction.
14. Why do we store silver chloride in dark coloured bottles? Explain in brief.

OR

A small quantity of silver chloride is kept in the sunlight in a china dish for about half an hour.

- State the change you would observe in the colour of silver chloride. Suggest a reason for this change.
 - Write balanced chemical equation for the reaction taking place in this case.
15. Identify the type of each of the following reactions :
- A reaction in which a single product is formed from two or more reactants.
 - The reaction mixture becomes warm.
 - An insoluble substance is formed.
 - External surface of the container in which reaction takes place becomes freezing cold.
16. "A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed."
- Translate the above statement into a chemical equation.
 - State two types for this reaction.
17. Solutions of lead nitrate and potassium iodide are mixed in a test tube.
- Write the chemical equation involved in a balanced form.
 - What is the colour of the precipitate? Name the precipitate.
18. "Oxidation and reduction processes occur simultaneously." Justify this statement with the help of an example.
19. Write the balanced equations for the following reactions and identify the type of reaction in each case :
- Potassium bromide + Barium iodide \longrightarrow Potassium iodide + Barium bromide.
 - Hydrogen (g) + Chlorine (Cl₂) \longrightarrow Hydrogen chloride (g)
20. a. When a metal 'X' is added to salt solution of a metal 'Y', following chemical reaction takes place :
- $$\text{Metal 'X' + Salt solution of 'Y' } \longrightarrow \text{Salt solution of 'X' + Metal 'Y'}$$
- b. Mention the inference you draw regarding the reactivity of metal 'X' and 'Y' and also about the type of reaction. State the reason of your conclusions.
21. Give one example of each :
- Chemical reaction showing evolution of gas.
 - Change in colour of a substance during chemical reaction.
22. Why do silver articles turn black and copper items turn green after sometime?
23. Reverse of the following chemical reaction is not possible : $\text{Zn(s) + CuSO}_4\text{(aq)} \longrightarrow \text{ZnSO}_4\text{(aq) + Cu (s)}$
Justify this statement with reason.
24. Write balanced chemical equation for the following reactions and also name the type of chemical reaction in each case :
- Magnesium ribbon is burnt in air.
 - Lime stone is heated.
25. Look at the figure gives below and answer the following questions :



- a. State the colour of the reactant and the product of the chemical reaction.
 - b. Write the chemical equation involved in this process.
 - c. Can we convert the product obtained back to reactant? Write the reaction involved.
26. Balance the following chemical equations :
- a. $\text{Mg} + \text{N}_2 \longrightarrow \text{Mg}_3\text{N}_2$ b. $\text{Al} + \text{Cl}_2 \longrightarrow \text{AlCl}_3$
27. The blue colour of copper sulphate solution starts fading when zinc rod is dipped in it. State reason for this change and also write chemical equation for the reaction involved.
28. Why do fire flies glow at night?

SHORT ANSWER TYPE QUESTIONS (THREE MARKS EACH)

1. Name the type of chemical reaction represented by the following equations :
- a. $\text{CaCO}_3(\text{s}) \xrightarrow{\text{Heat}} \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
 - b. $\text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{l}) \longrightarrow \text{Ca}(\text{OH})_2(\text{aq})$
 - c. $\text{Zn}(\text{s}) + \text{H}_2\text{SO}_4 \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{H}_2(\text{g})$
2. Name the substances oxidised and reduced, and also identify the oxidising agents and reducing agents in the following reactions :
- a. $\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$
 - b. $3\text{MnO}_2 + 4\text{Al} \longrightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$
 - c. $\text{H}_2\text{S} + \text{SO}_2 \longrightarrow \text{S} + \text{H}_2\text{O}$
3. A, B and C are three elements which undergo chemical reaction according to the following equations :
- $$\text{A}_2\text{O}_3 + 2\text{B} \longrightarrow \text{B}_2\text{O}_3 + 2\text{A}$$
- $$3\text{CSO}_4 + 2\text{B} \longrightarrow \text{B}_2(\text{SO}_4)_3 + 3\text{C}$$
- $$3\text{CO} + 2\text{A} \longrightarrow \text{A}_2\text{O}_3 + 3\text{C}$$

Answer the following questions with reasons :

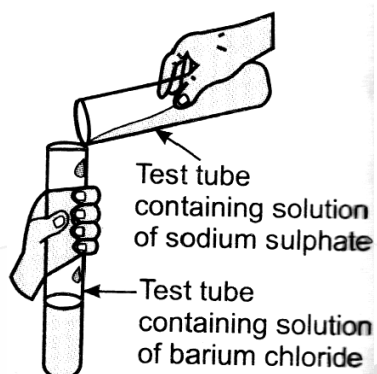
- a. Which element is the most reactive?
 - b. Which element is the least reactive?
 - c. What is the type of reactions listed above?
4. a. A solution of a substance 'X' is used for testing carbon dioxide. What will be the reaction of 'X' with carbon dioxide? Write balanced equation for this reaction.
- b. How is 'X' obtained? Give chemical equation.
5. A small amount of quick lime is added to water in a beaker.
- a. Name and define the type of reaction that has taken place.
 - b. Write balanced chemical equation for the above reaction. Write the chemical name of product obtained.
 - c. State two observations that you will make in reaction.
6. In the electrolysis of water :
- a. Name the gas collected at the cathode and the anode.
 - b. Why is the volume of gas collected at one electrode is double of the other?
 - c. Why are a few drops of dil. H_2SO_4 added to the water?
7. Write balanced chemical equation for the reactions that take place during respiration. Identify the type of combination reaction that takes place during this process and justify the name. Give one more example of this type of reaction.
8. An aqueous solution of metal nitrate 'P' reacts with sodium bromide solution to form yellow precipitate compound 'Q' which is used in photography. 'Q' on exposure to sunlight undergoes decomposition reaction to form metals present in along with a reddish brown gas. Identify 'P' and 'Q'. Write balanced chemical equation for the chemical reaction. List two categories in which this reaction can be placed.

9. Complete and balance the following equations :
- a. $\text{NH}_3 + \text{O}_2 \longrightarrow$ b. $\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow$ c. $\text{Pb}(\text{NO}_3)_2 + \text{KI} \longrightarrow$
10. State reason for the following :
- Potato chips manufacturers usually flush bags of chips with nitrogen gas.
 - Iron articles lose their shine gradually.
 - Foods should be kept in air-tight containers.
11. a. Write the essential condition for the following reaction to take place : $2\text{AgBr} \longrightarrow 2\text{Ag} + \text{Br}_2$
Write one application of this reaction.
- b. Complete the following chemical equation of a chemical reaction :
- $$2\text{FeSO}_4 \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3 + \dots + \dots$$
- c. What happens when water is added to quick lime? Write chemical equations.
12. Take 3 g of barium hydroxide in a test tube, now add about 2g of ammonium chloride and mix the contents with the help of a glass rod. Now touch the test tube from outside.
- What do you feel on touching the test tube?
 - State the inference about the type of reaction occurred.
 - Write the balanced chemical equation of the reaction involved.
13. Write chemical equations for the reactions taking place when :
- magnesium reacts with dilute HNO_3
 - sodium reacts with water
 - zinc reacts with dilute hydrochloric acid
14. You must have tasted or smelt the fat containing food material left for a long time. Such foods taste and smell bad. What is the reason for this? Name the phenomenon responsible for it. List two measures for its preventions.
15. Classify the following chemical reactions as exothermic or endothermic:
- Water is added to quick lime
 - Dilute sulphuric acid is added to zinc granules
 - When ammonium chloride is dissolved in water in a test tube it becomes cold
 - The decomposition of vegetable matter into compost
 - Electrolysis of water
 - Silver chloride turns grey in the presence of sunlight to form silver metal
16. Write the balanced chemical equations for the following reactions :
- Sodium carbonate on reaction with hydrochloric acid in equal molar concentrations gives sodium chloride and sodium hydrogencarbonate.
 - Sodium hydrogen carbonate on reaction with hydrochloric acid gives sodium chloride, water and liberates carbon dioxide.
 - Copper sulphate on treatment with potassium iodide precipitates cuprous iodide (Cu_2I_2), liberates I_2 gas and also forms potassium sulphuric.

LONG ANSWER TYPE QUESTIONS (FIVE MARKS EACH)

1. a. What colour change do you observe when :
- you add Zn to a solution of copper sulphate?
 - you add Pb to a solution of cupric chloride?
- Write balanced equations.
- b. Complete and balance the following equations :
- $\text{HgCl}_2 + \text{KI} \longrightarrow$
 - $\text{Al} + \text{Cr}_2\text{O}_3 \longrightarrow$
 - $\text{CuSO}_4 + \text{H}_2\text{S} \longrightarrow$
 - $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \xrightarrow{\Delta}$

2. i. Account for the following :
- White silver chloride turns grey in sunlight.
 - Brown coloured copper powder on heating in air turns into black coloured substance
- ii. What do you mean by :
- Displacement reaction?
 - Reduction reaction?
 - Combination reaction?
- Write balanced chemical equations.
3. Observe the given figure and answer the following questions :



- Write the complete balanced reaction
 - What is the type of reaction involved?
 - Is there any precipitate formed?
 - If any precipitate is formed, write the colour of the precipitate.
4. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed.
- Write a balanced chemical equation of the reaction.
 - Identify the brown gas X evolved.
 - Identify the type of reaction.
 - What could be the pH range of aqueous solution of the gas X?
5. a. Can we stir silver nitrate solution with a copper spoon? Why or why not? Support your answer with reason.
 b. Why a brown coating is formed on the iron rod when iron rod is kept dipped in copper sulphate solution for sometime? What change will be observed in the colour of the solution?
 c. A green coating develops on the copper vessel in the rainy season. Why?
6. a. Illustrate an activity along with a labelled diagram, to show that a change in the state of matter and change in temperature takes place during a chemical reaction.
 b. Write balanced chemical equations for the following reactions :
- Natural gas burns and combines with oxygen to produce carbon dioxide and water.
 - Ferrous sulphate crystals on heating break up into ferric oxide, sulphur dioxide and sulphur trioxide.
7. a. Balance the following chemical equations :
- $\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
 - $\text{PbO} + \text{C} \longrightarrow \text{Pb} + \text{CO}_2$
 - $\text{Fe}_2\text{O}_3 + \text{Al} \longrightarrow \text{Al}_2\text{O}_3 + \text{Fe} + \text{Heat}$
- b. Write the balanced chemical equations for the following reactions :
- Barium chloride + Potassium sulphate \longrightarrow Barium sulphate + Potassium chloride
 - Zinc + Silver nitrate \longrightarrow Zinc nitrate + Silver