

Q1. Balance the following chemical equation:



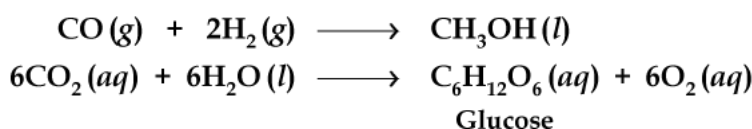
Q2. Write the equation in the symbolic form with state symbols for the following reaction:



Q3. Balance the following equation:



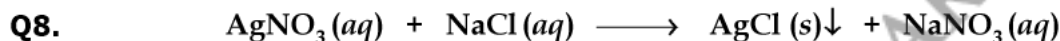
Q4. Rewrite the following equation after putting reaction conditions:



Q5. Lead nitrate on heating gives lead oxide, nitrogen oxide and oxygen. Write balanced equation with state symbols for this reaction.

Q6. Write a balanced chemical equation to represent the following reaction: Carbon monoxide reacts with hydrogen gas at 340 atm to form methyl alcohol.

Q7. 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?

Q9. Complete and balance the following equation:



Q10. What happens chemically when quick lime is added to water?

Q11. 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.

Q12. Which of the following processes represent a chemical reaction?

- (a) Grapes get fermented. (b) Lighting of an electric bulb.
(c) Passing electricity through acidulated water (c) Magnetising an iron bar.

Q13. What happens when a magnesium ribbon is ignited? Give chemical reaction.

Q14. $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$, name the type of reaction.

Q15. Tell whether heat is evolved or absorbed when quick lime is added to water.

Q16. Tell whether respiration is exothermic or endothermic. Why?

Q17. Which colour change and smell are observed when crystals of ferrous sulphate are heated? Give chemical reaction also.

- Q18.** If copper metal is heated over a flame it develops a coating. What is the colour and composition of coating?
- Q19.** 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?
- Q20.** Silver chloride on photochemical decomposition produces silver and chlorine. What is the application of this reaction?
- Q21.** Which one is a chemical change – fermentation of fruit juice or diluting fruit juice?
- Q22.** Which of the following reactions is oxidation and which is reduction?
- (a) $2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$ (b) $\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$
- Q23.** In the following reactions, which reactants undergo oxidation and which reactants undergo reduction?
- (a) $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$ (b) $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$
- Q24.** Is burning of a candle wax a physical change or a chemical change?
- Q25.** Give an example of double displacement reaction (only reaction with complete balanced equation).
- Q26.** State one basic difference between a physical change and a chemical change.
- Q27.** Potato chips manufacturers fill the packet of chips with nitrogen gas. Why?
- Q28.** What are the conditions that promote corrosion?
- Q29.** What do we mean when we say that a substance has gone rancid?
- Q30.** 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.
- Q31.** 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.
- Q32.** 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
- Or
- A white salt on heating decomposes to give brown fumes and a residue is left behind.
- (a) Name the salt.
 (b) Write the equation for the decomposition reaction.
- Q33.** What is an oxidation reaction? Identify in the following reaction:
- (a) the substance oxidized and (b) the substance reduced
- $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$
- Q34.** Translate the following statement into chemical equation and then balance it:
 "A metal in the form of ribbon burns with a dazzling white flame and changes into a white powder."
- Q35.** Give an example of decomposition reaction. Describe an activity to illustrate such a reaction by heating.

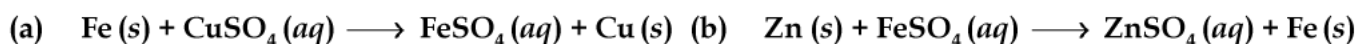
Q36. When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.

- (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?

Q37. 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?

Q38. 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?

Q39. Fill in the blanks:

- (a) The reaction, $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$ is a reaction.
- (b) The solution in water is known as solution and is denoted by

Q40. What is a redox reaction? Write down a chemical equation representing it

Q41. We know that magnesium is more reactive than copper or iron, but iron is more reactive than copper. Which of the following pots will get damaged and why?

- (a) A solution of magnesium sulphate is kept into copper pot.
- (b) A solution of copper sulphate is kept in iron pot.
- (c) A solution of magnesium sulphate is kept into iron pot.

Q42. What change will you observe if white silver chloride is placed in sunlight? Write an equation for the reaction and the type of reaction.

Q43. 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.

Q44. 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.

- (a) State the change you would observe in the colour of silver chloride. Suggest a reason for this change.
- (b) Write balanced chemical equation for the reaction taking place in this case.

Q45. A light sensitive compound 'X' of silver is used in black and white photography. On exposure to sunlight its colour changes to grey.

- (a) Identify 'X'.
- (b) Write a chemical equation to express the above change.
- (c) Identify the type of chemical reaction.

Q46. When a green compound is heated strongly, its colour changes to black and odour of burning sulphur is given out

- Name the compound.
- State the type of reaction.
- Write the chemical equation involved.

Or

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

- Write the equations involved in the above reaction.
- What type of reaction is taking place?

Q47. Give one example of each:

- Chemical reaction showing evolution of gas.
- Change in colour of a substance during chemical reaction.

Q48. 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.

Q49. 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)

Q50. Select (i) combination reaction and (ii) decomposition reaction from the following chemical equations:

- $C + O_2 \longrightarrow CO_2$
- $NaBr + AgNO_3 \longrightarrow AgBr + NaNO_3$
- $CaCO_3 \xrightarrow{\Delta} CaO + CO_2$
- $H_2S + Cl_2 \longrightarrow 2HCl + S$

Q51. "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.

Or

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 the chemical reaction.

Q52. Why do silver articles turn black and copper items turn green after sometime?

Q53. (a) When a metal 'X' is added to salt solution of a metal 'Y', following chemical reaction takes place:



- 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.

Q54. Balance the following chemical reactions:

- $KMnO_4(aq) + HCl(aq) \longrightarrow KCl(aq) + MnCl_2(aq) + Cl_2(g) + H_2O(l)$
- $CaCl_2(aq) + K_3PO_4(aq) \longrightarrow Ca_3(PO_4)_2(s) + KCl(aq)$
- $NaOH(aq) + H_2SO_4(aq) \longrightarrow Na_2SO_4(aq) + H_2O(l)$
- $K(s) + O_2(g) \longrightarrow K_2O(s)$
- $CaCO_3(s) + HCl(aq) \longrightarrow CaCl_2(s) + H_2O(l) + CO_2(g)$
- $Al(s) + HCl(aq) \longrightarrow AlCl_3(s) + Cl_2(g)$

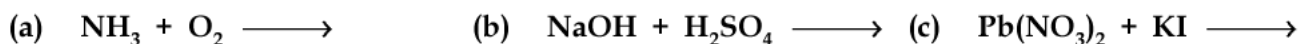
Q55. Translate the following into balanced chemical equations:

- Chlorine reacts with oxygen to form chlorine heptoxide.
- Lead nitrate reacts with sulphuric acid to form a precipitate of lead sulphate and nitric acid.
- Magnesium burns in the presence of nitrogen to form magnesium nitride.

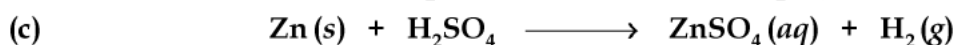
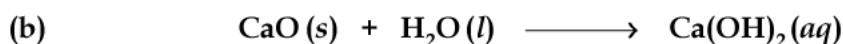
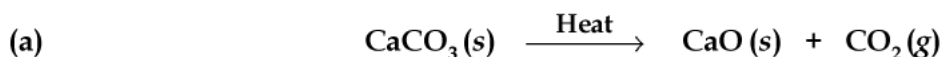
Q56. (a) A solution of a substance 'X' is used for testing carbon dioxide. What will be the reaction of 'X' with carbon dioxide? Write balanced equation for this reaction.

- How is 'X' obtained? Give chemical equation.

Q57. Complete and balance the following equations:



Q58. Name the type of chemical reaction represented by the following equations:



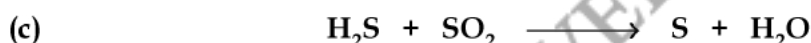
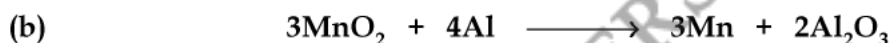
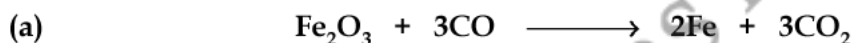
Q59. A small amount of quick lime is added to water in a beaker.

- Name and define the type of reaction that has taken place.
- Write balanced chemical equation for the above reaction. Write the chemical name of product obtained.
- State two observations that you will make in the reaction.

Q60. In the electrolysis of water:

- Name the gas collected at the cathode and the anode.
- Why is the volume of gas collected at one electrode is double of the other?
- Why are a few drops of dil. H_2SO_4 added to the water?

Q61. Name the substances oxidised and reduced, and also identify the oxidizing agents and reducing agents in the following reactions:



Q62. 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.

Q63. A, B and C are three elements which undergo chemical reaction according to the following equations:



Answer the following questions with reasons:

- Which element is the most reactive? (b) Which element is the least reactive
- What is the type of reactions listed above?

Q64. Define the following terms: (a) Corrosion, (b) Rusting, (c) Rancidity.

Q65. 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 metal present in along with a radish brown gas. Identify 'P' and 'Q'. Write balanced chemical equation for the chemical reaction. List two categories in which this reaction can be placed.

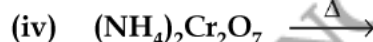
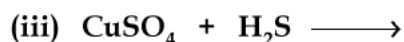
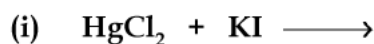
- Q66. (a)** Account for the following:
- White silver chloride turns grey in sunlight.
 - Brown coloured copper powder on heating in air turns into black coloured substance.
- (b)** What do you mean by:
- Displacement reaction?
 - Reduction reaction?
 - Combination reaction?
- Write balanced chemical equations.

- Q67. (a)** Give examples of decomposition reactions carried out with the help of
- electricity
 - radiation
- Give balanced chemical equations.
- (b)** Define displacement reaction. Which of the two is correct?
- Copper can displace silver from the solution of silver nitrate.
 - Silver can displace copper from the solution of copper nitrate.

- Q68. (a)** What colour changes 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.

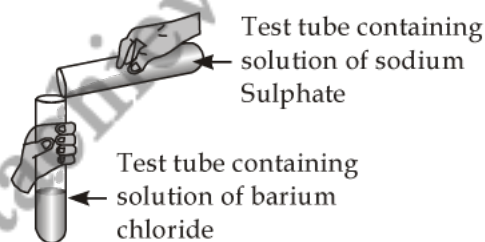
- (b)** Complete and balance the following equations:



- Q69. (a)** Define corrosion.
- (b)** What is the name given to the corrosion of iron?
- (c)** What is the colour of coating formed on silver and copper?
- (d)** What damage is caused by corrosion?
- (e)** How can we prevent corrosion?

- Q70.** 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



S1. The balanced chemical equation is:



S2. $\text{Zn}(s) + \text{H}_2\text{SO}_4(aq) \longrightarrow \text{ZnSO}_4(aq) + \text{H}_2(g)$

S3. $3\text{Fe} + 4\text{H}_2\text{O} \longrightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$

S4. $\text{CO}(g) + 2\text{H}_2(g) \xrightarrow{340 \text{ atm}} \text{CH}_3\text{OH}(l)$
 $6\text{CO}_2(aq) + 6\text{H}_2\text{O}(l) \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{C}_6\text{H}_{12}\text{O}_6(aq) + 6\text{O}_2(aq)$
 Glucose

S5. $2\text{Pb}(\text{NO}_3)_2(s) \xrightarrow{\text{Heat}} 2\text{PbO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)$

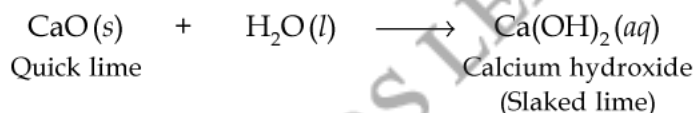
S6. $\text{CO}(g) + 2\text{H}_2(g) \xrightarrow{340 \text{ atm}} \text{CH}_3\text{OH}(l)$

S7. While balancing a chemical equation, we follow the law of conservation of mass which states : matter can neither be created nor destroyed in a chemical reaction.

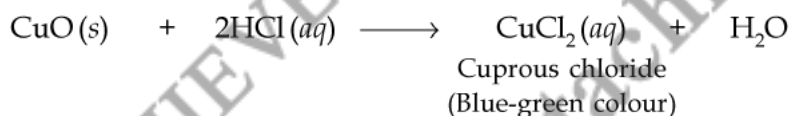
S8. The upward arrow (\uparrow) indicates that the product is a gas while the downward arrow (\downarrow) indicates that the product is insoluble and appears as precipitate.

S9. $\text{Fe}_2\text{O}_3(s) + 2\text{Al}(s) \longrightarrow \text{Al}_2\text{O}_3(s) + 2\text{Fe}(s)$

S10. Quick lime reacts vigorously with water to produce calcium hydroxide releasing a large amount of heat



S11. The new compound formed is cuprous chloride. It imparts a blue-green colour to the solution.



S12. (a) Grapes get fermented and

(c) Passing electricity through acidulated water are examples of chemical reaction.

S13. $2\text{Mg} + \text{O}_2 \longrightarrow 2\text{MgO}$

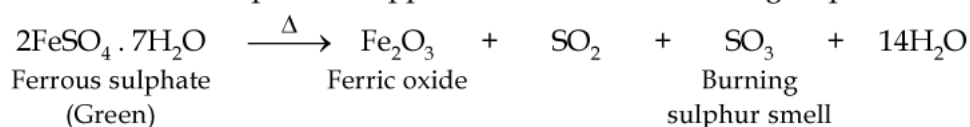
Magnesium ribbon burns with a dazzling light.

S14. It is a combination reaction.

S15. Heat is evolved, *i.e.*, solution becomes hot.

S16. Respiration is exothermic because heat is evolved due to oxidation of glucose with oxygen that we inhale from the atmosphere.

S17. Green colour of ferrous sulphate disappears and a smell of burning sulphur is noticed.



S18. We get a black coating of CuO, copper oxide.

S19. Hydrogen and oxygen gases are produced in the ratio of 2 : 1.



This reaction finds application in black and white photography.

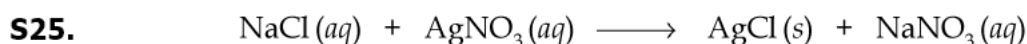
S21. Fermentation of fruit juice is a chemical change.

S22. Reaction (a) represents oxidation while reaction (b) represents reduction.

S23. (a) ZnO undergoes reduction as it loses O to change into Zn. C undergoes oxidation as it gains O to change into CO.

(b) MnO₂ undergoes reduction as it loses O. HCl undergoes oxidation as it loses H.

S24. It is a chemical change. The hydrocarbon of wax burns to produce CO₂ and H₂O.

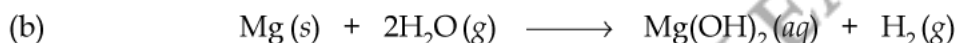
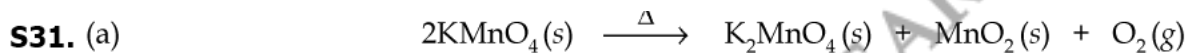
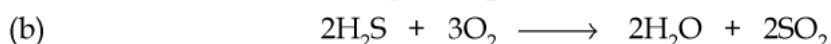


S26. No new substance is formed in a physical change while a new substance is formed in a chemical change.

S27. Flushing bags of chips with nitrogen cuts off oxygen and protects the food from rancidity.

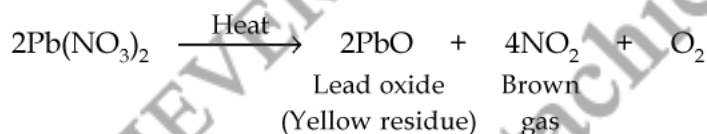
S28. Substances such as oxygen, carbon dioxide, moisture and acids promote corrosion.

S29. It means that the smell and taste of the substance have changed.



S32. The compound is lead nitrate, Pb(NO₃)₂.

The reaction involved is



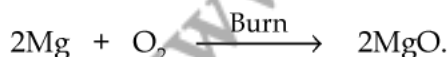
S33. Oxidation reaction is one which involves gain of oxygen or loss of hydrogen. In the reaction



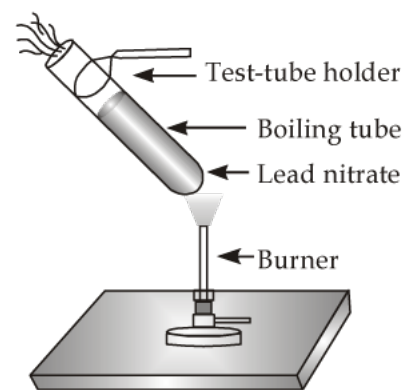
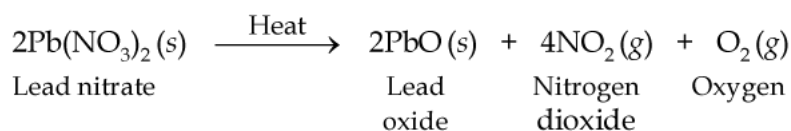
(a) C is oxidised to CO

(b) ZnO is reduced to Zn.

S34. It is the magnesium ribbon which burns with a dazzling white light and produces a white powder of MgO.



S35. An example of decomposition reaction is decomposition of lead nitrate to give lead oxide, nitrogen dioxide and oxygen on heating.



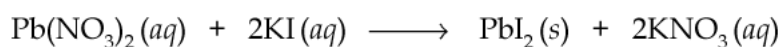
Activity:

To illustrate this reaction: Tak about 2 g lead nitrate powder in a boiling tube.

Hold the boiling tube with a pair of tongs and heat it over a flame.

We observe that brown fumes of NO_2 are emitted. This illustrates decomposition reaction by heating.

- S36.** (a) The colour of the precipitate is yellow.
 (b) The compound precipitated is lead iodide (PbI_2).
 (c) The balanced chemical equation for the reaction is:



- (d) It is a double displacement reaction.

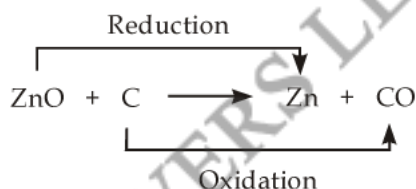
S37. (a) $2\text{FeSO}_4 \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$. (b) It is a thermal decomposition reaction.

S38. In reaction (a), Fe displaces Cu from CuSO_4 solution. Hence, Fe is more reactive than Cu. In reaction (b), Zn displaces Fe from FeSO_4 solution. Hence, Zn is more reactive than Fe. From reaction (a) and (b), we conclude that Zn is more reactive than Fe which is more reactive than Cu.

Thus, Zn is the most reactive while Cu is least reactive of the three.

S39. (a) Endothermic (b) Aqueous, (aq).

S40. A reaction in which one reactant gets oxidised while the other gets reduced is called redox reaction.



- S41.** (a) $\text{Cu} + \text{MgSO}_4 \longrightarrow$
 No reaction takes place because Cu is less reactive than Mg. Hence, Cu pot will not be damaged.
 (b) $\text{Fe} + \text{CuSO}_4 \longrightarrow \text{FeSO}_4 + \text{Cu}$
 The reaction will take place because Fe is more reactive than Cu. Hence, Fe pot will be damaged.
 (c) $\text{Fe} + \text{MgSO}_4 \longrightarrow$
 No reaction takes place because Fe is less reactive than Mg. Hence, Fe pot will not be damaged.
 Thus, out of the three cases as given above, only in reaction (b), Fe pot will be damaged.

S42. White silver chloride turns grey due to the following reaction:



Photo decomposition reaction takes place.

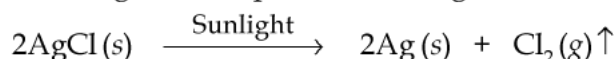
S43. (a) The chemical equation can be written as



(b) The reaction can be classified as

- (i) Double displacement. (ii) Precipitation.

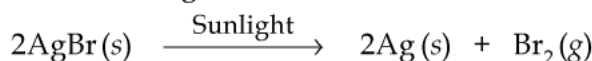
S44. Silver chloride on exposure to sunlight decomposes according to the following equation:



That is why silver chloride is kept in dark coloured bottles.

S45. (a) The compound X is silver bromide, AgBr.

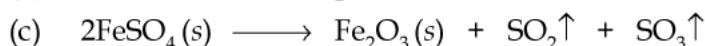
(b) The chemical equation for the change is



(c) It is a photochemical decomposition reaction.

S46. (a) The green compound is FeSO₄.

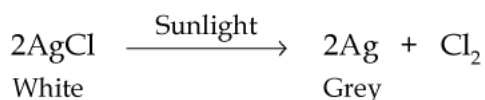
(b) It is thermal decomposition reaction.



S47. (a) Evolution of gas



(b) Change in colour



S48. (a) Combination reaction

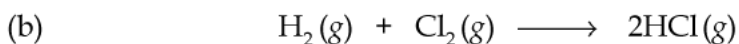
(b) Exothermic reaction

(c) Precipitation reaction

(d) Endothermic reaction



It is a double decomposition and precipitation type of reaction.



It is a photochemical combination type of reaction.

S50. (i) Reaction (a) is combination reaction.

(ii) Reaction (c) is decomposition reaction.

S51. (a) The chemical equation involved in the reaction can be written as



(b) Two types associated with the reaction are

(i) Double displacement reaction

(ii) Precipitation reaction.

S52. Silver articles turn black and copper items turn green after sometime.

This is because these metals are attacked by moisture, acids etc. present in the atmosphere. The black colour on silver is due to the formation of Ag₂S and the green colour on copper items is due to the formation of CuCO₃.

S53. The following inference is drawn from the reaction.

(a) Metal X is more reactive than metal Y.

(b) A more reactive metal (which is higher on the reactivity series) displaces a less reactive metal (which is lower on the reactivity series). It is a displacement reaction.

- S54.** (a) $2\text{KMnO}_4(aq) + 16\text{HCl}(aq) \longrightarrow 2\text{KCl}(aq) + 2\text{MnCl}_2(aq) + 5\text{Cl}_2(g) + 8\text{H}_2\text{O}(l)$
(b) $3\text{CaCl}_2(aq) + 2\text{K}_3\text{PO}_4(aq) \longrightarrow \text{Ca}_3(\text{PO}_4)_2(s) + 6\text{KCl}(aq)$
(c) $\text{NaOH}(aq) + \text{H}_2\text{SO}_4(aq) \longrightarrow \text{Na}_2\text{SO}_4(aq) + \text{H}_2\text{O}(l)$ (Already balanced)
(d) $4\text{K}(s) + \text{O}_2(g) \longrightarrow 2\text{K}_2\text{O}(s)$
(e) $\text{CaCO}_3(s) + 2\text{HCl}(aq) \longrightarrow \text{CaCl}_2(s) + \text{H}_2\text{O}(l) + \text{CO}_2(g)$
(f) $2\text{Al}(s) + 6\text{HCl}(aq) \longrightarrow 2\text{AlCl}_3(s) + 3\text{H}_2(g)$

- S55.** (a) $2\text{Cl}_2(g) + 7\text{O}_2(g) \longrightarrow 2\text{Cl}_2\text{O}_7(s)$
(b) $\text{Pb}(\text{NO}_3)_2(aq) + \text{H}_2\text{SO}_4(aq) \longrightarrow \text{PbSO}_4(s) + 2\text{HNO}_3(aq)$
(c) $3\text{Mg}(s) + \text{N}_2(g) \xrightarrow{\Delta} \text{Mg}_3\text{N}_2(s)$

- S56.** (a) 'X' is calcium hydroxide or slaked lime.

'X' reacts with carbon dioxide to form calcium carbonate which appears as a white precipitate. The balanced equation for this reaction is:



- (b) 'X' i.e., calcium hydroxide is obtained by adding water to quick lime (CaO) as per the following equation:



- S57.** (a) $4\text{NH}_3 + 5\text{O}_2 \longrightarrow 4\text{NO} + 6\text{H}_2\text{O}$
(b) $2\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$
(c) $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \longrightarrow \text{PbI}_2 + 2\text{KNO}_3$

- S58.** (a) $\text{CaCO}_3(s) \xrightarrow{\text{Heat}} \text{CaO}(s) + \text{CO}_2(g)$

This is a decomposition reaction.

- (b) $\text{CaO}(s) + \text{H}_2\text{O}(l) \longrightarrow \text{Ca}(\text{OH})_2(aq)$

This is a combination reaction.

- (c) $\text{Zn}(s) + \text{H}_2\text{SO}_4 \longrightarrow \text{ZnSO}_4(aq) + \text{H}_2(g)$

This is a displacement reaction.

- S59.** (a) It is a combination reaction.

When two or more reactants combine to give a single product, it is termed as combination reaction.

- (b) $\text{CaO}(s) + \text{H}_2\text{O}(l) \longrightarrow \text{Ca}(\text{OH})_2(aq)$
Calcium oxide Calcium hydroxide

- (c) (i) Quick lime reacts vigorously with water producing calcium hydroxide.
(ii) A large amount of heat is produced.

- S60.** (a) The following gases are collected:

At Cathode : Hydrogen. At Anode : Oxygen.

- (b) H : O = 2 : 1

- (c) Pure water does not conduct electricity. A few drops of dil. H_2SO_4 are added to make water conducting.

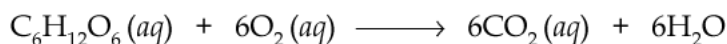
- S61.** (a)
$$\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$$

 Fe_2O_3 is reduced because oxygen has been reduced and CO is oxidised because O has been added to it. Fe_2O_3 has acted as oxidizing agent and CO has acted as reducing agent.
- (b)
$$3\text{MnO}_2 + 4\text{Al} \longrightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$$

 MnO_2 is reduced because O has been removed from it to give Mn. Al has been oxidised because O has been added to it to obtain Al_2O_3 . MnO_2 is the oxidising agent while Al is reducing agent.
- (c)
$$2\text{H}_2\text{S} + \text{SO}_2 \longrightarrow 3\text{S} + 2\text{H}_2\text{O}$$

 $2\text{H}_2\text{S}$ has lost H to change into S. Thus, it has been oxidised. SO_2 has lost O to change into S. Thus, it has been reduced. H_2S has acted as reducing agent while SO_2 has acted as oxidizing agent.

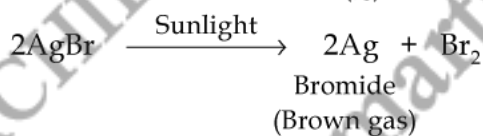
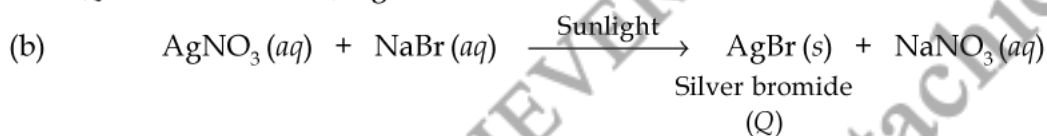
- S62.** (a) The carbohydrates that we take in our food are oxidised to carbon dioxide and water.



Carbon of carbohydrate and oxygen combine to form CO_2 .

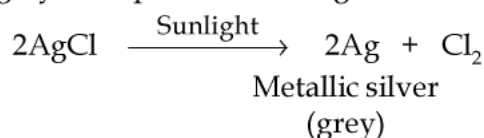
- (b) It is an exothermic combination reaction.
- (c) Decomposition of vegetable matter into compost is another example of this type of reaction.
- S63.** (a) B is the most reactive element.
 B displaces both A and C from their solutions.
- (b) C is the least reactive element.
 C is displaced both by A and B.
- (c) The reactions given above are all displacement reactions.
- S64.** (a) **Corrosion:** When a metal is attacked by substances around it such as moisture, acids, etc., it is said to corrode and this process is called corrosion.
- (b) **Rusting:** Corrosion of iron is given the special name rusting. When exposed to moist air for a long time, iron acquires a coating of brown flaky substance called rust.
- (c) **Rancidity:** When oils and fats are exposed to air for a long time, they are oxidized. Their smell and taste change. This phenomenon is called rancidity.

- S65.** (a) P is silver nitrate, AgNO_3 .
 Q is silver bromide, AgBr .

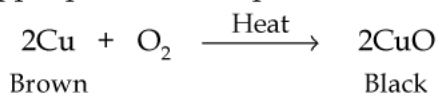


- (c) Decomposition of silver bromide can be put under two categories:
 (i) Decomposition reaction. (ii) Photochemical reaction.

- S66.** (a) (i) Silver chloride turns grey on exposure to Sunlight because of the following reaction:



- (ii) Oxidation of copper powder takes place. The oxide formed has a black colour.



- (b) (i) **Displacement reaction:** A reaction in which a more reactive metal displace a less reactive metal from its salt solution is called *displacement reaction*. For example,



- (ii) **Reduction reaction:** A reaction in which hydrogen is added or oxygen is removed is called *reduction reaction*. For example,

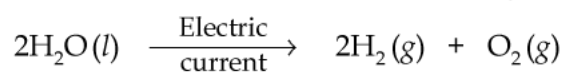


In this reaction reduction of ZnO to Zn has taken place.

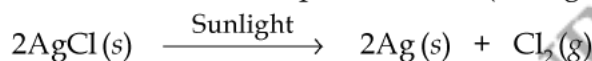
- (iii) **Combination reaction:** A reaction in which two or more reactants combine to give a single product is called *combination reaction*. For example,



- S67.** (a) Decomposition reaction carried out with the help of electricity.



Decomposition reaction carried with the help of radiation (Sunlight).



- (b) A reaction in which an element displaces another is called displacement reaction. For example, Zn displaces Cu from a solution of CuSO₄.



Out of the two options (i) and (ii), (i) is correct because Cu is more reactive than Ag.



- S68.** (a) (i) Blue colour of copper sulphate disappears.



- (ii) Green colour of cupric chloride disappears.



- (b) (i) $\text{HgCl}_2(aq) + 2\text{KI}(aq) \longrightarrow \text{HgI}_2(aq) + 2\text{KCl}(aq)$

- (ii) $2\text{Al}(s) + \text{Cr}_2\text{O}_3(s) \xrightarrow{\Delta} \text{Al}_2\text{O}_3(s) + 2\text{Cr}(l)$

- (iii) $\text{CuSO}_4(aq) + \text{H}_2\text{S}(g) \longrightarrow \text{CuS}(s) + \text{H}_2\text{SO}_4(aq)$

- (iv) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7(s) \xrightarrow{\Delta} \text{N}_2(g) + 4\text{H}_2\text{O}(g) + \text{Cr}_2\text{O}_3(s)$

- S69.** (a) Surface of a metal reacts with atmospheric oxygen, moisture and carbon dioxide to form a coating on the surface. This phenomenon is called *corrosion*.

- (b) When the metal involved is iron, the phenomenon of corrosion may be called rusting.

- (c) Silver forms a black coating and copper forms a green coating on the surface when exposed to the atmosphere for a long time.

- (d) Corrosion weakens the metal. A great deal of damage is caused to car bodies, bridges, iron railings and ships.

- (e) Corrosion can be prevented by coating metal surface with paint.

S70. (a) The complete balanced equation is



- (b) It is a double displacement reaction.
(c) A precipitate of barium sulphate, BaSO_4 is formed in the reaction.
(d) Colour of the precipitate formed is white.

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