



MULTIPLE CHOICE QUESTIONS

1. When Ag is exposed to air it gets a black coating of

- (a) AgNO₃
- (b) Ag₂S
- (c) Ag₂O
- (d) Ag₂CO₃

2. Which of the reactions is used in black and white photography?

- (a) Combination Reaction
- (b) Decomposition Reaction
- (c) Displacement reaction
- (d) Oxidation reaction



3. Identify the substance oxidized in the above equation.

- (a) MnCl₂
- (b) HCl
- (c) H₂O
- (d) MnO₂

4. Zinc reacts with silver nitrate to form which compounds?

- (a) Zn (NO₃)₂ + Ag
- (b) ZnNO₃ + Ag
- (c) AgNO₃ + Zn (NO₃)₂
- (d) Ag + Zn (NO₃)₃

5. In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate?

- (a) Lead sulphate (insoluble)
- (b) Lead acetate
- (c) Ammonium nitrate
- (d) Potassium sulphate

6. The brown gas evolved on heating of copper nitrate is

- (a) O₂
- (b) NO₂
- (c) N₂
- (d) NO

7. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is:

- (a) 1: 1
- (b) 2:1
- (c) 4:1
- (d) 1:2

8. A substance 'X' is used in white-washing and is obtained by heating limestone in the absence of air. Identify 'X'.

- (a) CaOCl₂
- (b) Ca (OH)₂
- (c) CaO
- (d) CaCO₃

9. $2\text{HNO}_3 + \text{Ca (OH)}_2 \rightarrow \text{Ca (NO}_3)_2 + 2\text{H}_2\text{O}$; is an example of

- (i) displacement reaction
- (ii) double displacement reaction

(iii) neutralisation reaction

(iv) combination reaction.

(a) (i) and (ii)

(b) (ii) and (iii)

(c) (iii) and (iv)

(d) (i) and (iv)

10. A substance X which is 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. Element X is

(a) Cu

(b) Ca

(c) Na

(d) Al

ASSERTION- REASON TYPE QUESTIONS

DIRECTION: Each of these questions contains an assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(a) If both Assertion and Reason are correct and reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

Q1. Assertion (A): Photosynthesis is considered as an endothermic reaction.

Reason (R): Energy gets released in the process of photosynthesis

Q2. Assertion (A): $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$ is redox reaction.

Reason (R): MnO_2 oxidises HCl to Cl_2 and gets reduced to MnCl_2 .

Q3. Assertion (A): When HCl is added to zinc granules, a chemical reaction occurs.

Reason (R): Evolution of a gas indicates that the chemical reaction is taking place.

Q4. Assertion (A): White silver chloride turns grey in sunlight.

Reason (R): Decomposition of silver chloride in presence of sunlight takes place to form silver metal and chlorine gas.

Q5. Assertion (A): Chemical reaction changes the physical and chemical properties of a substance

Reason (R): Chemical change involves a change in the chemical composition of matter, and a new substance is formed

CASE STUDY QUESTIONS

1. A chemical reaction is a representation of chemical change in terms of symbols and formulae of reactants and products. There are various types of chemical reactions like combination, decomposition, displacement, double displacement, oxidation and reduction reactions. Reactions in which heat is released along with the formation of products are called exothermic chemical reactions. All combustion reactions are exothermic reactions.

(i) The massive force that pushes the rocket forward through space is generated due to the

- (a) combination reaction
- (b) decomposition reaction
- (c) displacement reaction
- (d) double displacement reaction

(ii) A white salt on heating decomposes to give brown fumes and yellow residue is left behind. The yellow residue left is of

- (a) lead nitrate
- (b) nitrogen oxide
- (c) lead oxide
- (d) oxygen gas

(iii) Which of the following reactions represents a combination reaction?

- (a) $\text{CaO (s)} + \text{H}_2\text{O (l)} \rightarrow \text{Ca (OH)}_2 \text{ (aq)}$
- (b) $\text{CaCO}_3 \text{ (s)} \rightarrow \text{CaO (s)} + \text{CO}_2 \text{ (g)}$
- (c) $\text{Zn(s)} + \text{CuSO}_4 \text{ (aq)} \rightarrow \text{ZnSO}_4 \text{ (aq)} + \text{Cu(s)}$
- (d) $2\text{FeSO}_4 \text{ (s)} \rightarrow \text{Fe}_2\text{O}_3 \text{ (s)} + \text{SO}_2 \text{ (g)} + \text{SO}_3 \text{ (g)}$

(iv) Complete the following statements by choosing correct type of reaction for X and Y.

Statement 1: The heating of lead nitrate is an example of 'X' reaction.

Statement 2: The burning of magnesium is an example of 'Y' reaction.

- (a) X-Combination, Y-Decomposition
- (b) X-Decomposition, Y-Combination
- (c) X-Combination, Y-Displacement
- (d) X- Displacement, Y-Decomposition

2. Those reactions in which two compounds react by an exchange of ions to form two new compounds are called double displacement reactions. A double displacement reaction usually occurs in solution and one of the products, being insoluble, precipitate out (separates as a solid). Any reaction in which an insoluble solid (called precipitate) is formed that separates from the solution is called a precipitation reaction. The reaction in which acid or acidic oxide reacts with base or basic oxide to form salt and water is called neutralisation reaction.

For example, $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2 \text{H}_2\text{O}$

(i) When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained, and the sulphuric acid so formed remains in the solution. The reaction is an example of a

- (a) combination reaction
- (b) displacement reaction
- (c) decomposition reaction
- (d) double displacement reaction

(ii) Barium chloride on reaction with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?

- (I) Displacement reaction
- (II) Precipitation reaction
- (III) Combination reaction
- (IV) Double displacement reaction

- (a) (I) only
- (b) (II) only
- (c) (III) and (IV) only
- (d) (II) and (V) only

(iii) Identify A in the following reaction.



- (a) $\text{Al}(\text{OH})_3$
- (b) Al_2O_3
- (c) AlH_3
- (d) AlN

(iv) Consider the following reaction, $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + 2\text{NaCl}$.



MULTIPLE CHOICE QUESTIONS

1. b
2. b
3. b
4. a
5. b
6. b
7. b
8. c
9. b
10. b

ASSERTION - REASON TYPE QUESTIONS

1. c
2. a
3. a
4. a
5. a

CASE STUDY QUESTIONS

1. (i) (b) The massive force that pushes the rocket forward through space is generated due to the decomposition reaction. Hydrogen peroxide decomposes and provides it with a considerable reaction force thrust.

(ii) (c) Lead nitrate decomposes to give brown fumes of nitrogen dioxide gas and yellow residue of lead oxide is left behind.

(iii) (a) A reaction in which two or more reactants combine to form a single product is known as a combination reaction.

2. (i) (d), (ii) (d), (iii) (a), (iv) (b)

1. We need to balance a chemical equation. Give reason to justify the statement.

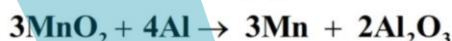
Answer:- To obey law of conservation of mass.

2. Giving an example list two information which make a chemical equation more useful (informative).

Answer:- (i) Physical state of reactants must be mentioned

(ii) Condition in which reaction takes place are written on the arrow head

3. Name the reducing agent in the following reaction:



Answer:- 'Al' is reducing agent.

4. Why should a magnesium ribbon be cleaned before burning in air ?

Answer: To remove the layer of MgO.

5. What does one mean by exothermic and endothermic reactions ? Give examples.

Answer: Exothermic reactions : heat is evolved

Example : (i) $\text{C (s)} + \text{O}_2 \text{ (g)} \rightarrow \text{CO}_2 \text{ (g)} + \text{Heat}$

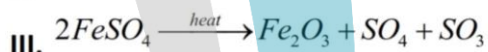
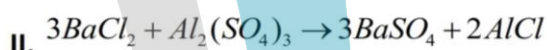
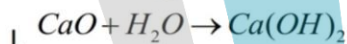
(ii) $\text{N}_2 \text{ (g)} + 3\text{H}_2 \text{ (g)} \rightarrow 2\text{NH}_3 \text{ (g)} + \text{Heat}$

Endothermic reactions : heat is absorbed

Examples : (i) $\text{C (s)} + 2\text{S (s)} \rightarrow \text{CS}_2 \text{ (l)} - \text{Heat}$

(ii) $\text{N}_2 \text{ (g)} + \text{O}_2 \text{ (g)} \rightarrow 2\text{NO (g)} - \text{Heat}$

6. Name the type of chemical reaction represented by the following equation:



Answer:- (i) Combination reaction

(ii) Double displacement reaction (Precipitation reaction)

(iii) Thermal Decomposition reaction.

7. In electrolysis of water, why is the volume of gas collected over one electrode double that of gas collected over the other electrode?

Answer:- It is because water contains hydrogen and oxygen in the ratio of 2 : 1.

8. Ferrous sulphate crystals are heated in a dry boiling tube.

(i) List any two observations.

(ii) Name the type of chemical reaction taking place.

(iii) Write the chemical equation for the reaction.

Answer:-

(i) Two observations are

(a) change in colour

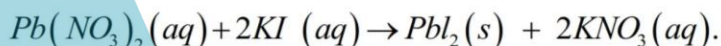
(b) Smell of burning sulphur

(ii) Decomposition reaction



9. What is observed when a solution of potassium iodide solution is added to a solution of lead nitrate? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction.

Answer:- Yellow precipitate is formed. It is precipitation reaction.



10. Which products will be obtained when lead nitrate is heated simply? Write balanced chemical equation for the reaction.

Answer:-

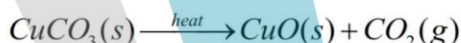


11. Why does the color of copper sulphate solution change when an iron nail is dipped in it?

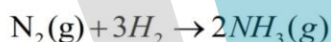
Answer. It is because displacement reaction takes place.

12. Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions.

Answer. In decomposition reaction, a compound is broken down into simpler compounds or elements, e.g.



Combination reaction is a reaction in which two or more elements or compounds combine to form a new compound, e.g.



Thus, decomposition and combination reactions are opposite to each other.

13. The following diagram displays a chemical reaction. Observe carefully and answer the following questions



- (a) Identify the type of chemical reaction that will take place and define it.
(b) How will the color of the salt change? Write the chemical equation of the reaction that takes place.
(c) Mention one commercial use of this salt.

Answer. (a) Photochemical decomposition reaction.

(b) The colour of salt will change from white to grey.

(c) in photography

14. What is rancidity? Mention any two ways by which rancidity can be prevented.

Answer. Spoilage of food containing oil.

Prevention from rancidity:-

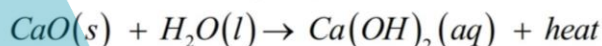
(i) Antioxidants

(ii) airtight container in refrigerator.

15. A solution of substance 'X' is used for white washing. What is the substance 'X'? State the chemical reaction of 'X' with water.

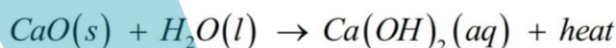
Answer.

'X' is calcium oxide (CaO).



16. **Define combination reaction. Give one example of a combination reaction which is also exothermic.**

Answer. A reaction in which two elements or compounds combine to form a single compound is called combination reaction.



17. (a) **Why is respiration considered as an exothermic reaction?**

(b) **Identify the substance that is oxidized and reduced in the following reaction.**



Answer. (a) It is because heat is evolved during respiration.

(b) Zn is getting oxidised, CuO is getting reduced.

18. **Translate the following statements into chemical equations and then balance them.**

(a) **Hydrogen gas combines with nitrogen to form ammonia.**

(b) **Hydrogen sulphide gas burns in air to give water and Sulphur dioxide.**

(c) **Barium chloride reacts with aluminum sulphate to give aluminum chloride and a precipitate of barium sulphate.**

(d) **Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.**

Answer: (a) $3\text{H}_2(g) + \text{N}_2(g) \rightarrow 2\text{NH}_3(g)$

(b) $\text{H}_2\text{S}(g) + 3\text{O}_2(g) \rightarrow \text{SO}_2(g) + 2\text{H}_2\text{O}(l)$

(c) $3\text{BaCl}_2(aq) + \text{Al}_2(\text{SO}_4)_3(aq) \rightarrow 2\text{AlCl}_3(aq) + 3\text{BaSO}_4 \downarrow(s)$

(d) $2\text{K}(s) + 2\text{H}_2\text{O}(l) \rightarrow 2\text{KOH}(aq) + \text{H}_2(g)$

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

(a) **Potassium bromide (aq) + Barium iodide (aq) → Potassium iodide (aq) + Barium**

(b) **Zinc carbonate(s) → Zinc oxide (s) + Carbon dioxide (g) bromide(s)**

(c) **Hydrogen (g) + Chloride (g) → Hydrogen chloride (g)**

(d) **Magnesium (s) + Hydrochloric acid (aq) → Magnesium chloride (aq) + Hydrogen (g)**

Answer: (a) $2\text{KBr}(aq) + \text{BaI}_2(aq) \rightarrow 2\text{KI}(aq) + \text{BaBr}_2(s)$

Type : Double displacement reaction

(b) $\text{ZnCO}_3(s) \rightarrow \text{ZnO}(s) + \text{CO}_2(g)$

Type : Decomposition reaction

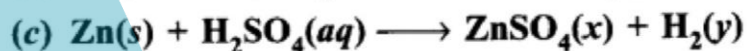
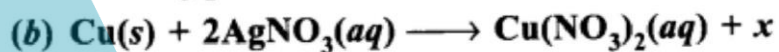
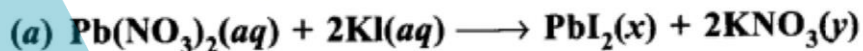
(c) $\text{H}_2(g) + \text{Cl}_2(g) \rightarrow 2\text{HCl}(g)$

Type : Combination reaction

(d) $\text{Mg}(s) + 2\text{HCl}(aq) \rightarrow \text{MgCl}_2(aq) + \text{H}_2(g)$

Type : Displacement reaction

20. Complete the missing components/variables given as x and y in the following reactions :



Answer:

