

## Chemical Equation Chemistry Questions with Solutions

**Q1:** What is an Ionic Equation?

**Answer:**

Ionic equations are chemical equations where electrolytes are depicted as dissociated ions. They are frequently employed to illustrate the displacement reactions in aqueous media. Some ions participate in these processes, whereas others are not. Spectator ions do not react and are generally left out of the overall ionic equation.

**Q2:** What is Balanced Chemical Equation?

**Answer:**

A balanced equation is a chemical reaction in which the overall charge and the number of atoms for every element in the reaction are the same for both the reactants and the products. In other respect, the mass and charge on either side of the reaction are equal.

Chemical equations for mass and charge are usually balanced in aqueous solutions. On both sides of the equation, balancing for mass yields the same number and types of atoms. When the net charge on both sides of the equation is zero, the equation is said to be balanced for the charge.

**Q3:** "We need to balance a skeletal chemical equation." Give a reason to justify the statement.

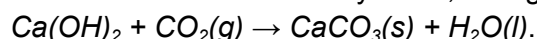
**Answer:**

Skeletal chemical equations are usually unbalanced. Because of the law of conservation of mass, we must balance the chemical equation. 'Matter can neither be generated nor destroyed,' it says. As a result, every chemical reaction must have a balanced chemical equation.

**Q4:** Why does a wall not immediately acquire a white colour when a coating of slaked lime is applied?

**Answer:**

Slaked lime is not particularly white.  $\text{CO}_2$  gas in the air reacts with calcium hydroxide to generate calcium carbonate. It's fairly white, so it gives the wall a white appearance.



**Q5:** A student burnt a metal A found in the form of ribbon. The ribbon burnt with a dazzling Flame & a white powder B is formed, which is basic. Identify A & B. Write the Balanced chemical equation.

**Answer:**

A = Mg, B = MgO.  $2Mg + O_2 \rightarrow 2MgO$

**Q6:** A balanced chemical equation is in accordance with-

- (i) Multiple proportion
- (ii) Reciprocal proportion
- (iii) Conservation of mass
- (iv) Definite proportions

**Answer:** (iii) Law of Conservation of Mass

**Q7:** Magnesium ribbon is rubbed before burning because it has a coating of

- (i) basic magnesium oxide
- (ii) basic magnesium carbonate
- (iii) basic magnesium sulphide
- (iv) basic magnesium chloride

**Answer:** (ii) basic magnesium carbonate

**Q8:** Identify the substance oxidised in the below equation.



- (i)  $MnCl_2$
- (ii) HCl
- (iii)  $MnO_2$
- (iv)  $H_2O$

**Answer:** (iii)  $MnO_2$

Explanation: In this reaction, HCl is oxidised to  $Cl_2$ , whereas  $MnO_2$  is reduced to  $MnCl_2$ .

**Q9:** A researcher adds barium hydroxide to hydrochloric acid to form a white-coloured barium chloride. Which option gives the balanced chemical equation of the reaction?

- (i)  $HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2HOH$
- (ii)  $2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2HOH$
- (iii)  $2HCl + Ba(OH)_2 \rightarrow BaH_2 + 2HCl + O_2$
- (iv)  $HCl + 2Ba(OH) \rightarrow 2BaCl_2 + 2HOH + O_2$

**Answer:** (ii)  $2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2HOH$

**Q10:** 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 instead of lead nitrate?

- (i) Lead sulphate (insoluble)
- (ii) Potassium sulphate
- (iii) Ammonium nitrate
- (iv) Lead acetate

**Answer:** (iv) Lead acetate

**Q11:** When  $\text{SO}_2$  gas is passed through saturated solution of  $\text{H}_2\text{S}$ , which of the following reaction occurs?

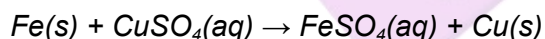
- (i)  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
- (ii)  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + 3\text{S}$
- (iii)  $\text{SO}_2 + \text{H}_2\text{S} \rightarrow \text{H}_2\text{O} + \text{S}$
- (iv)  $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{SO}_3 + \text{H}_2$

**Answer:** (i)  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$

**Q12:** With the help of an activity show that iron is more reactive than copper?

**Answer:**

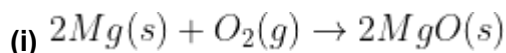
To begin, dip iron nails into an aqueous solution of  $\text{CuSO}_4$  (blue). Leave for half an hour. The solution's blue colour fades to light green. Brown deposits occur on the nails at the same time. Because iron is in the reactivity series above copper, it displaces copper from the  $\text{CuSO}_4$  solution. Copper is present in the brown deposit. The chemical equation is given below:



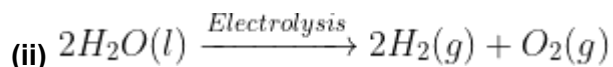
**Q13:** State the type of chemical reactions and chemical equations that take place in the following:

- (i) Magnesium wire is burnt in air.
- (ii) Electric current is passed through water.
- (iii) Ammonia and hydrogen chloride gases are mixed.

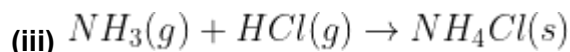
**Answer:**



Combination reaction (Redox reaction).

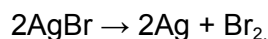


Electrical decomposition reaction.



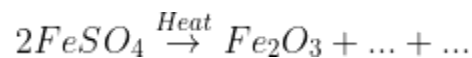
Combination reaction.

**Q14:** (i) Write the essential condition for the following reaction:



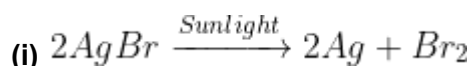
Write one application of this reaction.

(ii) Complete the following chemical equation of a chemical reaction  $2FeSO_4 \xrightarrow{\text{Heat}}$

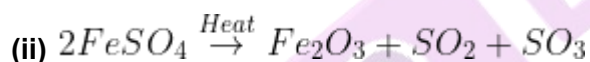


(iii) What happens when water is added to quicklime? Write the chemical equation.

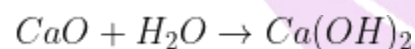
**Answer:**



In photography, this reaction is used.



(iii) With a hissing sound and a lot of heat, slaked lime is produced.



**Q15:** (a) Explain two ways by which food industries prevent rancidity.

(b) Discuss the importance of decomposition reaction in the metal industry with three points.

**Answer:**

**(a)** (i) Antioxidants can be added to foods containing fat and oil to avoid rancidity. For example, butylated hydroxyanisole is added to butter as an antioxidant.

(ii) It can also be prevented by packing foods high in fat and oil in nitrogen gas.

**(b)** (i) Sodium metal is formed when molten NaCl is electrolytically dissolved.

(ii) Electric decomposition of bauxite ore coupled with cryolite produces aluminium metal.

(iii) Thermal decomposition of carbonate ores produces metal oxide, which is reduced to metal.

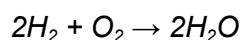
## Practise Questions on Chemical Equation

**Q1:** How to balance chemical equations?

**Answer:**

Chemical equations are symbolic depictions of chemical reactions representing reactants and products in their chemical formulae. Chemical reactions can be expressed on paper using chemical equations, which are shown below:

For the reaction of hydrogen gas and oxygen gas to generate water, as an example.



**Q2:** Identify the type of chemical reaction:

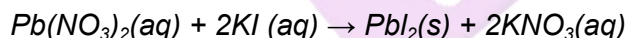
- (i)  $A \rightarrow B + C$
- (ii)  $AB + CD \rightarrow AD + CB$

**Answer:** (i) Decomposition reaction  
(ii) Double displacement reaction

**Q3:** 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 of lead iodide is formed. It is a Precipitation Reaction.



It is also known as Double Displacement reaction.

**Q4:** Aluminium is a reactive metal but is still used for packing food articles. Why?

**Answer:**

The aluminium (Al) metal appears to be extremely reactive based on its location in the activity series. It is, however, less reactive. When the metal is exposed to air or oxygen for an extended period of time, it gets transformed into its oxide, aluminium oxide ( $Al_2O_3$ ). This is deposited as a thin coating on the metal's surface. It is rather passive; that is, it does not react. As a result, aluminium is utilised to pack food items that do not spoil when wrapped with foil.

**Q5:** (a) Why is combustion reaction an oxidation reaction?

- (b) How will you test whether the gas evolved in a reaction is hydrogen?  
(c) Why does not silver evolve hydrogen on reacting with dilute sulphuric acid?

**Answer:**

(a) Combustion reaction is an oxidation reaction as it is always conducted in the presence of air or oxygen. As an example,  $CH_4(s) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$

(b) Bring a burning match stick near the tube's mouth, where hydrogen gas escapes. The gas would instantly catch fire, with a pop sound accompanying it.

(c) Silver is a less reactive metal because it is lower on the reactivity scale than hydrogen. As a result, when it reacts with dilute sulphuric acid or dilute hydrochloric acid, it does not produce hydrogen gas.

