

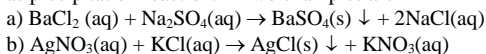
## SCIENCE

### CHEMICAL Reactions and EQUATIONS

#### TYPES OF CHEMICAL REACTIONS

8. When is a chemical reaction categorized as a precipitation reaction? Explain with two examples.

Ans:- When two aqueous solutions are mixed, and a new substance is formed with precipitation, this is categorized as precipitation reaction. Two examples are -



These are also called double displacement reaction.

9. Explain, why?

- Respiration is an exothermic reaction,
- All decomposition reactions are endothermic reactions
- When blue salt of copper sulphate is heated it becomes colourless.

Ans:- a) During respiration, food is converted into glucose which oxidizes with liberation of energy.

b) Decomposition reactions take place when heat is supplied in the form of heat, light or electricity.

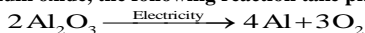
c) Copper sulphate ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) is blue in colour. On heating it loses water of crystallization and gives colourless copper sulphate ( $\text{CuSO}_4$ ).

10. State the chemical change that takes place when lime stone is heated strongly.

Ans:- Limestone ( $\text{CaCO}_3$ ) decomposes on heating with evolution of  $\text{CO}_2$ .



11. When electric current is passed through molten aluminium oxide, the following reaction take place:



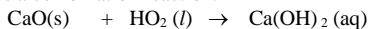
Name the type of reaction. To what use such reactions are made in Industry?

Ans:- This is a decomposition reaction. Such reactions are used to extract metals from their naturally occurring compounds like oxides or chlorides.

12. When we white-wash the walls, then first calcium oxide (oxide) is made to react with water to form calcium hydroxide. The calcium hydroxide is then applied to the walls, which slowly reacts with the carbon dioxide gas present in air to form a thin shining layer on the walls. Explain the reactions giving type of reaction in each case.

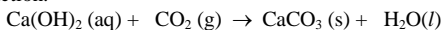
Ans:- i) Lime water or calcium hydroxide forms when calcium oxide combines with water.

This is a combination reaction.



Calcium oxide      Water                      Calcium hydroxide

ii) Calcium hydroxide combines slowly with carbon dioxide present in air to form a white layer of calcium carbonate on the wall. This is again a combination reaction.



13. Write a balance equations for the following mentioning the type of reaction involved. (Combination reaction)

- Aluminium + Bromine  $\rightarrow$  Aluminium bromide
- Calcium carbonate  $\rightarrow$  Calcium Oxide + Carbon dioxide
- Silver Chloride  $\rightarrow$  Silver + Chlorine

Ans:- (i)  $2\text{Al} + 3\text{Br}_2 \rightarrow 2\text{AlBr}_3$  (Combination reaction)

(ii)  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$  (Decomposition reaction)

(iii)  $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$  (Decomposition reaction)

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

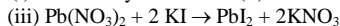
(i) What is the colour of this precipitate?

(ii) Name the compound precipitated.

(iii) Write a balanced chemical equation for this reaction.

(iv) What type of reaction is this?

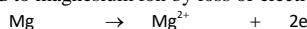
Ans:- (i) Brownish yellow                      (ii) Lead iodide.



(iv) Double displacement reaction.

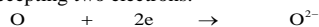
15. State the electronic concept of oxidation and reduction?

Ans:- (i) **Oxidation** – An oxidation reaction is one in which electrons are released or lost. Magnesium atom is oxidized to magnesium ion by loss of electrons.



Magnesium atom      Magnesium ion      Electrons

(ii) **Reduction** – A reaction in which electrons are accepted is called a reduction. Oxygen atom is reduced to oxide ion by accepting two electrons.



Oxygen atom      Electrons      Oxide ion

16. Define the terms:

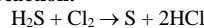
(i) Oxidizing agent and

(ii) Reducing agent

Ans:- (i) **Oxidising agent:** It is that substance which in a reaction – a) gives up oxygen or any electropositive element, b) accepts hydrogen or any electro negative element or c) accepts electrons.

(ii) **Reducing agent:** it is that substance which in a reaction – a) gives up hydrogen or any electropositive element, b) accepts oxygen or any electronegative element (or) c) releases electrons.

In the following reaction:



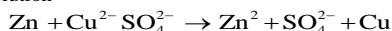
Chloride accepts hydrogen from  $\text{H}_2\text{S}$ , thus oxidizing it and is called oxidizing agent. It also accepts electron.

OR

Hydrogen sulphide is reducing agent as it gives up hydrogen to chlorine. Here  $\text{H}_2$  releases electron.

In a chemical reaction oxidizing agent is reduced and the reducing agent is oxidized.

In the reaction between zinc and copper sulphate solution



Zn reduces  $\text{Cu}^{2+}$  to Cu, itself being oxidized to  $\text{Zn}^{2+}$  or Zn acts as an reducing agent.

17. What is a redox reaction?

Ans:- A chemical reaction in which one substance is oxidized and the other is reduced is called a redox reaction. All oxidation-reduction reactions are redox reactions. In a chemical reaction, a substance gets oxidized only when another substance is present, which gets reduced.

18. State some reactions of oxidation that is observed in the everyday life.

Ans:- Some examples of oxidation reactions observed in the everyday life are –

- Shiny iron articles on exposure to air get coated with a brownish layer.
- Copper articles on exposure to air get coated with a greenish layer.
- Silver articles on exposure become black.
- Fats and oils in food left for long time get oxidized.

(Contd.....)