

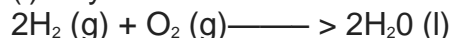
1. Why we need to balance a skeletal chemical equation.

Answer. Skeletal chemical equations are unbalanced. We need to balance chemical equations because of the law of conservation of mass. It states that 'matter can neither be created nor be destroyed'. Therefore, chemical equations must be balanced in each and every chemical reaction.

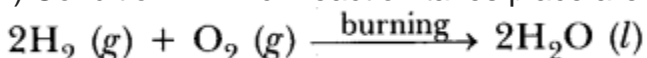
2. Giving an example list two information which make a chemical equation more useful (informative).

Answer.

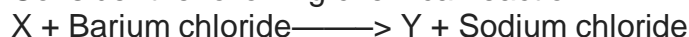
(i) Physical state of reactants must be mentioned, e.g.



(ii) Condition in which reaction takes place are written on the arrow head, e.g.



Consider the following chemical reaction



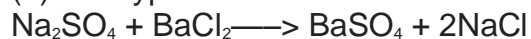
(White ppt)

(a) Identify 'X' and 'Y'

(b) The type of reaction

(a) 'X' is Na_2SO_4 and Y is BaSO_4 .

(b) The type of reaction



(White ppt)

The reaction is precipitation reaction. It is also called double displacement reaction.

4. Name the reducing agent in the following reaction:



State which is more reactive, Mn or Al and why?

Answer. 'Al' is reducing agent.

'Al' is more reactive than Mn as 'Al' displaces Mn from its oxide.

5.(i) Write a balanced chemical equation for process of photosynthesis.

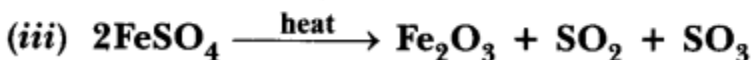
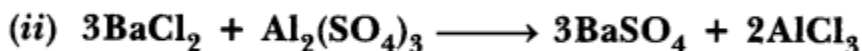
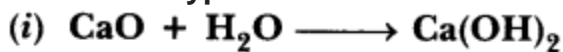
(ii) When do desert plants take up carbon dioxide and perform photosynthesis?

Answer.



(ii) In desert plants the stomata are open at night. They take CO_2 at night and it is stored in the form of acid and is used during day time for photosynthesis.

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



Answer.

(i) Combination reaction

(ii) Double displacement reaction (Precipitation reaction)

(iii) Decomposition reaction.

7. Write the chemical equation of the reaction in which the following changes have taken place with an example of each:

(i) Change in colour

(ii) Change in temperature

(iii) Formation of precipitate

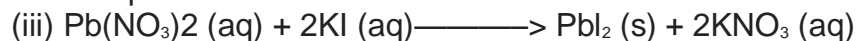
Answer.



The solution will become blue in colour and shiny silver metal will be deposited.



The temperature will increase because heat will be evolved.



Yellow ppt

Yellow precipitate of PbI_2 will be formed.

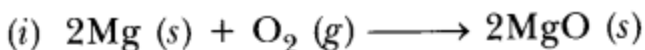
8.State the type of chemical reactions and chemical equations that take place in the following:

(i) Magnesium wire is burnt in air.

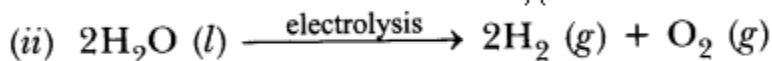
(ii) Electric current is passed through water.

(iii) Ammonia and hydrogen chloride gases are mixed.

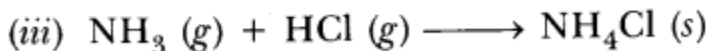
Answer.



Combination reaction (Redox reaction).

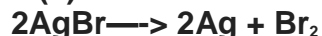


Electrical decomposition reaction.



Combination reaction.

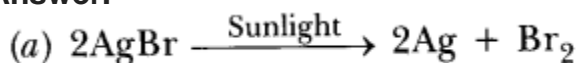
9.(a) Write the essential condition for the following reaction to take place:



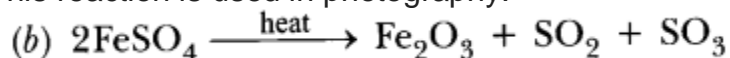
Write one application of this reaction.

(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 equation.
Answer.



This reaction is used in photography.



(c) Slaked lime is formed with hissing sound and lot of heat is involved.

10. 2g of ferrous sulphate crystals are heated in a dry boiling tube.

(i) List any two observations.

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

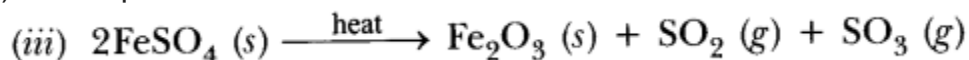
(iii) Write the chemical equation for the reaction.

Answer.

(i) • Green colour of FeSO_4 disappears and reddish brown solid is formed.

• Smell of burning sulphur.

(ii) Decomposition reaction



11. (a) Define a balanced chemical equation. Why should an equation be balanced?

(b) Write the balanced chemical equation for the following reaction:

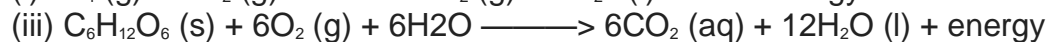
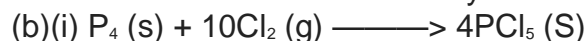
(i) Phosphorus burns in presence of chlorine to form phosphorus penta chloride.

(ii) Burning of natural gas.

(iii) The process of respiration.

Answer.

(a) Balanced chemical equation has an equal number of atoms of different elements in the reactants and products. According to law of conservation of mass, matter can neither be created nor be destroyed in a chemical reaction.



12.(a) Explain two ways by which food industries prevent rancidity.

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

Answer.

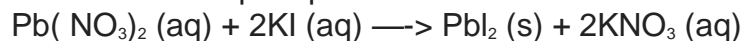
(a) (i) Rancidity can be prevented by adding antioxidants to food containing fat and oil, e.g. butylated hydroxy anisole is added to butter as antioxidant.

(ii) It can be prevented by packaging fat and oil containing foods in nitrogen gas.

- (b) (i) Molten NaCl is electrolytically decomposed to form sodium metal.
(ii) Aluminium metal is obtained by electric decomposition of bauxite ore mixed with cryolite.
(iii) Carbonate ores are thermally decomposed to give metal oxide which on reduction give metal.

13. 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 precipitation reaction.

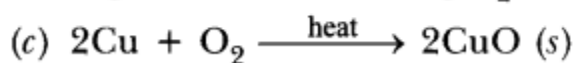


It is also called double displacement reaction.

14. Write chemical equation reactions taking place when carried out with the help of

- (a) Iron reacts with steam
(b) Magnesium reacts with dil HCl
(c) Copper is heated in air.

Answer.

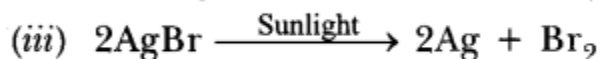
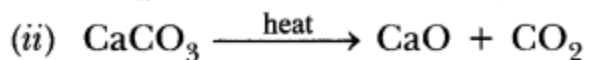
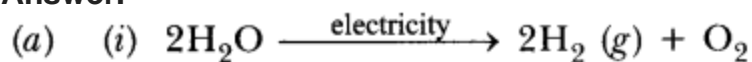


15.(a) Write one example for each of decomposition reaction carried out with help of

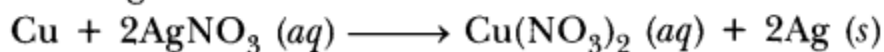
(i) Electricity (ii) Heat (iii) Light

(b) Which of the following statements is correct and why copper can displace silver from silver nitrate and silver can displace copper from copper sulphate solution.

Answer.

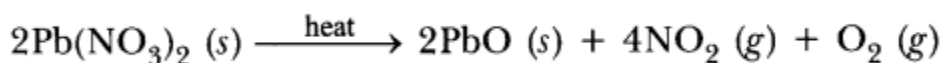


(b) Copper can displace silver from AgNO_3 because copper is more reactive than Ag



16. Which products will be obtained when lead nitrate is heated simply. Write balanced chemical equation for the reaction? State the type of chemical reaction that occur in the change.

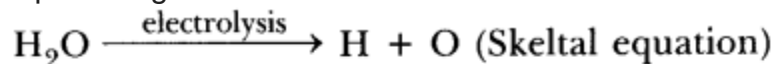
Answer. Lead monoxide, nitrogen dioxide and oxygen gas will be liberated.



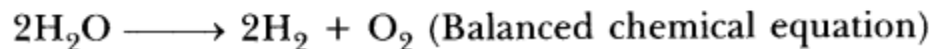
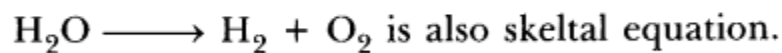
It is thermal decomposition reaction.

17. What is meant by skeltal type chemical equation? What does it represent? Using the equation for electrolytic decomposition of water, differentiate between a skeltal chemical equation and a balanced chemical equation.

Answer. The equations in which gaseous are written in atomic form instead of molecular form and equation is not balanced, are called skeltal type equation. They represent gaseous elements formed in atomic state and equation is not balanced



Hydrogen and oxygen are written in atomic forms and equation is not balanced.

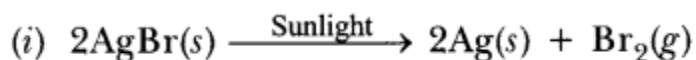


18. Write balanced chemical equations for the following reactions.

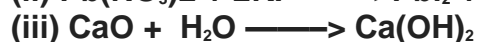
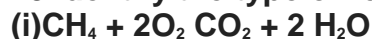
(i) Silver bromide on exposure to sunlight decomposes into silver and bromine,

(ii) Sodium metal reacts with water to form sodium hydroxide and hydrogen gas.

Answer.



19. Identify the type of reaction(s) in the following equations.



Answer.

(i) Combustion reaction and oxidation reaction.

(ii) Double displacement reaction and precipitation reaction.

(iii) Combination reaction.

(iv) Displacement reaction.

20. Write balanced equation for the reaction between magnesium and hydrochloric acid. Name the product obtained, identify the type of reaction.

Answer.



The product formed is magnesium chloride and hydrogen gas.

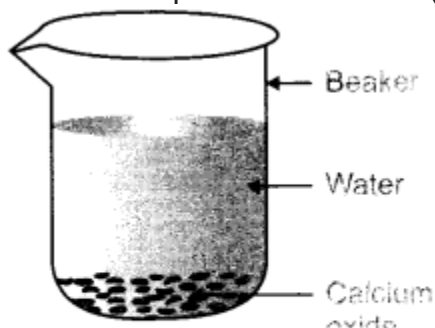
It is a displacement reaction.

21. Describe an activity to observe what happens when quick lime is added to water taken in a beaker. State two important observations and name the type of reaction taking place.

Answer.

Aim: To observe what happens when quicklime is added to water taken in a beaker.

Materials Required:- Quicklime (calcium oxide), water, beaker.



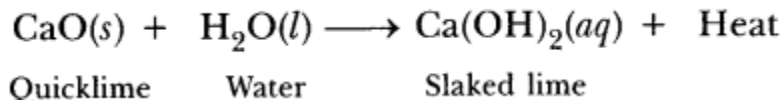
Formation of slaked lime by the reaction of quicklime with water

Procedure:

1. Take 5 g of calcium oxide in a beaker.
2. Add water to it slowly.

3. Touch the beaker.
4. Note down the observations.

Observation: Calcium oxide reacts with water vigorously to form calcium hydroxide with the evolution of heat.
Chemical Reaction:



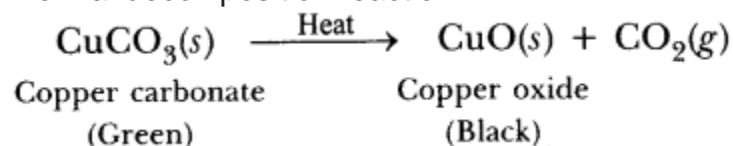
Conclusion: The reaction between CaO (Calcium oxide) and H₂O is a combination reaction. It is an exothermic process because heat is evolved.

22. What is the colour of ferrous sulphate crystals? How does this colour change after heating?

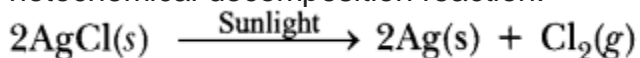
Answer. The colour of ferrous sulphate is pale green. The colour changes to reddish brown on heating due to formation of iron (III) oxide.

Give an example each for thermal decomposition and photochemical decomposition reactions. Write relevant balanced chemical equations also.

Thermal decomposition reaction:



Photochemical decomposition reaction:



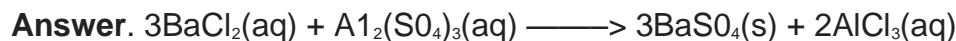
24. Why does the colour of copper sulphate solution change when an iron nail is dipped in it? Write two observations.

Answer. It is because displacement reaction takes place.

Iron displaces copper from copper sulphate solution and forms pale green coloured solution of FeSO₄ and reddish brown copper metal gets deposited.



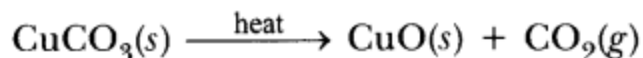
25. Translate the following statement into chemical equation and then balance it Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate. State the two types in which this reaction can be classified.



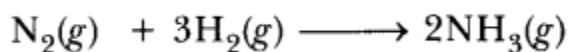
It can be classified as double displacement as well as precipitation reaction.

26. 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.

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

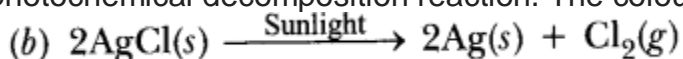


(a) Identify the type of chemical reaction that will take place and define it. How will the colour of the salt change?

Write the chemical equation of the reaction that takes place.

(c) Mention one commercial use of this salt.

Answer. (a) Photochemical decomposition reaction: Those reactions in which a compound breaks down into simple substances in presence of light are called photochemical decomposition reaction. The colour of salt will change from white to grey.



(c) Silver chloride is used in photography.

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

Answer. The process in which taste and smell of food gets spoiled is called rancidity. It happens due to oxidation.

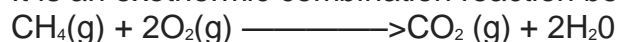
Prevention from rancidity:

- (i) Antioxidants are added to fatty acids to prevent oxidation, e.g. chips are packed in presence of nitrogen gas which prevents spoilage by oxidation.
- (ii) Food should be kept in airtight container in refrigerator.

29. 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.



It is an exothermic combination reaction because heat is evolved.



Combustion of methane is another example of exothermic combination reaction.

30. What is redox reaction? Identify the substance oxidised and the substance reduced in the following reactions.



Answer. Those reactions in which oxidation and reduction takes place simultaneously are called redox reactions.

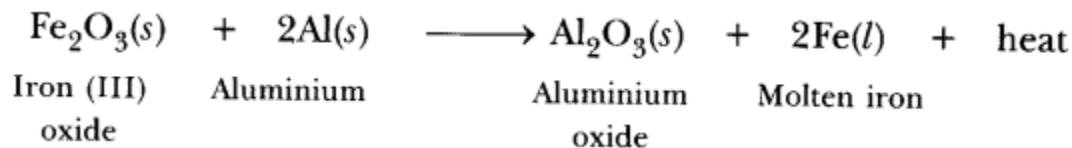
(i) PbO is getting reduced and C is getting oxidised.

(ii) MnO₂ is getting reduced and HCl is getting oxidised.

31. Write the balanced chemical equations for the following reactions and identify the type of reaction in each case.

Thermite reaction, iron (III) oxide reacts with aluminium and gives molten iron and aluminium oxide.

Answer.

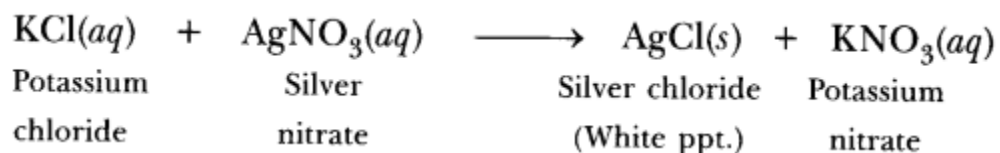


It is a displacement reaction because Al is displacing Fe from Fe₂O₃.

Molten iron is used for repairing broken railway tracks.

32. 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?

Answer.



It is a double displacement reaction. It is also a precipitation reaction as AgCl is a white precipitate.

33. State one basic difference between a physical change and a chemical change.

Answer. In physical change, no new substance is formed, whereas in a chemical change, new substance(s) is/are formed.