

SAMPLE QUESTIONS



Question 1.

**Write a balanced equation for the following reaction :
Methane burns in oxygen to form carbon dioxide and water ?**

Answer



number of various atoms in reactants and products :

	reactants	products
No. of C atoms :	1	1
No. of H atoms :	4	2
No. of O atoms :	2	3

To have 4 hydrogen atoms on the right side, we multiply H₂O by 2 and write 2H₂O



There are 2 oxygen atoms on the left side but 4 on the right side. To have 4 oxygen atoms on the left side, we multiply O₂ by 2 and write 2O₂



This chemical equation contains an equal number of various types of atoms in the reactants and products, so this is a balanced equation.

Question 2

**Convert the following information in the form of a balanced chemical equation :
On adding an aqueous solution of sodium hydroxide to an aqueous solution of copper sulphate, copper hydroxide is precipitated and sodium sulphate remains in solution?**

Answer

copper sulphate reacts with sodium hydroxide to form copper hydroxide and sodium sulphate



	reactants	products
No. of Cu atoms :	1	1
No. of S atoms :	1	1
No. of O atoms :	5	6
No. of Na atoms :	1	2
No. of H atoms :	1	2

There are 5 oxygen atoms on left side but 6 oxygen atoms on the right side. To have 6 oxygen atoms on the left side, we multiply NaOH by 2 and write 2NaOH.



This equation contains an equal number of various types of atoms on both the sides, so this is a balanced equation

Question 3

**Write a balanced chemical equation with state symbols for the following reaction :
Heated iron metal reacts with steam to form iron (II, III) oxide, (Fe₃O₄) and
hydrogen ?**

Answer



Fe and H₂O are reactants whereas Fe₃O₄ and H₂ are the products.

	reactants	products
No. of Fe atoms :	1	3
No. of H atoms :	2	2
No. of O atoms :	1	4

to have 3 iron atoms on the left side, we multiply Fe by 3 and write it as 3Fe.



There is only 1 oxygen atom on the left side but 4 oxygen atoms on the right side. So, to have 4 oxygen atoms on the left side, we multiply H₂O by 4 and write it as 4H₂O.



to get 8 hydrogen atoms on the right side, we multiply H₂ by 4 and write it as 4H₂



chemical equation contains an equal number of Fe, H and O atoms in the reactants and products, so this is a balanced equation.

Question 4

**Write the balanced equation for the following chemical reaction :
Hydrogen + Chlorine \longrightarrow Hydrogen chloride?**

Answer



there are two hydrogen atoms and two chlorine atoms on the left side but only one hydrogen atom and one chlorine atom on the right side.

to have two hydrogen atoms and two chlorine atoms on the right side, we have to multiply HCl by 2 and write it as 2HCl.



This is a balanced equation because it contains an equal number of hydrogen atoms and chlorine atoms in the reactants and products.

Question 5

Write the balanced chemical equation for the following reaction :

Sodium metal reacts with water to give sodium hydroxide and hydrogen?

Answer



multiply H₂O by 2 and NaOH also by 2 so as to have an equal number of H atoms (4 each) on both the sides



one Na atom on left side but two Na atoms on the right side. So, let us take 2Na atoms on the left side.



This equation contains an equal number of sodium, hydrogen and oxygen atoms on both the sides, so this is a balanced chemical equation.

Question 6

**Write a balanced chemical equation for the following chemical reaction :
Magnesium burns in oxygen to form magnesium oxide?**

Answer



there are 2 oxygen atoms on left side but only 1 oxygen atom on the right side. So, to have 2 oxygen atoms on the right side



1 magnesium atom on left side but 2 magnesium atoms on the right side. To have 2 magnesium atoms on the left side



This equation contains an equal number of Mg atoms and O atoms on both the sides, so this is a balanced equation.

Question 7.

State whether the following statement is true or false :

A chemical equation can be balanced easily by altering the formula of a reactant or product?

Question 8.

What is wrong with the following chemical equation ?



Correct and balance it?

Question 9.

Translate the following statements into chemical equations and then balance the equations :

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

(b) Phosphorus burns in oxygen to give phosphorus pentoxide.

(c) Carbon di sulphide burns in air to give carbon dioxide and Sulphur dioxide.

(d) Aluminum metal replaces iron from ferric oxide, Fe_2O_3 , giving aluminum oxide and iron.

(e) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate.

Question 11.

Correct and balance the following equations :



Question 12.

Balance the following equations :



Question 13.

What is a chemical equation ? Explain with the help of an example.

Balance the following chemical equations :



Question 14.

a) What is a balanced chemical equation ? Why should chemical equations be balanced ?

(b) Aluminum burns in chlorine to form aluminum chloride (AlCl₃). Write a balanced chemical equation for this reaction

Question 15.

Write the balanced equations for the following reactions, and add the state symbols :

Magnesium carbonate reacts with hydrochloric acid to produce magnesium chloride, carbon dioxide and water.

Sodium hydroxide reacts with sulphuric acid to produce sodium sulphate and water.

Question 16.

Translate the following statement into chemical equation and then balance it :

Barium chloride solution reacts with aluminum sulphate solution to form a precipitate of barium sulphate and aluminum chloride solution

Question 17.

What is meant by a chemical reaction ? Explain with the help of an example. Give one example each of a chemical reaction characterized by : (i) evolution of a gas (ii) change in color (iii) formation of a precipitate (iv) change in temperature (v) change in state.

Question 18

A solution of substance X is used for white-washing. Name the substance X and write its formula. (i) Write the reaction of substance X with water.

Answer

(i) The substance whose solution in water we use for white-washing is calcium oxide . So, the substance X is calcium oxide. Its formula is CaO.



Question 19

Why is double the amount of a gas collected in one of the test-tubes in the electrolysis of water experiment ? Name this gas.

Answer

The gas which is collected in double the amount in the electrolysis of water experiment is hydrogen. This is because water (H_2O) contains 2 parts of hydrogen element .

Question 20

What happens when dilute hydrochloric acid is added to iron filings ? Tick the correct answer :

- (a) Hydrogen gas and iron chloride are produced.**
- (b) Chlorine gas and iron hydroxide are produced.**
- (c) No reaction takes place.**
- (d) Iron salt and water are produced.**

Answer

- (a) Hydrogen gas and iron chloride are produced.**

Question 21



The above reaction is an example of :

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

Answer

(d) displacement reaction.

Question 22

Below are given two chemical reactions :



Which is combination reaction and which is displacement reaction

Answer

(i) In the first reaction, potassium bromide solution reacts with chlorine solution to form potassium chloride solution and bromine. So, in this reaction, chlorine is displacing bromine from potassium bromide to form potassium chloride and bromine is set free. Thus, it is a displacement reaction.

(ii) In the second reaction, iron combines with Sulphur to form iron (II) sulphide. So, it is a combination Reaction

Question 23

Identify the substance that is oxidized and the substance that is reduced in the following reaction :



Answer

(i) Here sodium (Na) is changing into sodium oxide (Na₂O). This is the addition of oxygen to sodium. Now, addition of oxygen is called oxidation. So, the substance oxidized is sodium (Na).

(ii) In this reaction, oxygen (O₂) is changing into sodium oxide (Na₂O). This is the addition of a metal (sodium, Na) to oxygen. So, the substance reduced is oxygen (O₂)

Question 24

Which of the statements about the reaction below are incorrect ?



- (a) Lead is getting reduced.
- (b) Carbon dioxide is getting oxidized.
- (c) Carbon is getting oxidized.
- (d) Lead oxide is getting reduced

Answer

- (a) Lead is getting reduced.
- (b) Carbon dioxide is getting oxidized

Question 25

A shiny brown coloured element X on heating in air becomes black in colour. Name the element X and the black coloured compound formed.

Answer

- (i) The shiny brown coloured element X is copper metal (Cu).
- (ii) When copper metal is heated in air, it forms a black coloured compound copper oxide.

Question 26

Name the various types of chemical reactions.

Question 27

Why does the colour of copper sulphate solution change when an iron nail is kept immersed in it ?

Question 28

State an important use of decomposition reactions.

Question 29

What are anti-oxidants ? Why are they added to fat and oil containing foods ?

Question 30

What type of chemical reactions take place when :

- (a) a magnesium wire is burnt in air ?**
- (b) lime-stone is heated ?**
- (c) silver bromide is exposed to sunlight ?**
- (d) electricity is passed through water ?**
- (e) ammonia and hydrogen chloride are mixed ?**

Question 31

What type of reactions are represented by the following equations ?



Question 32

What is an oxidation reaction ? Identify in the following reaction

(i) the substance oxidized, and



Question 33

(a) Define a combination reaction.

(b) Give one example of a combination reaction which is also exothermic.

(c) Give one example of a combination reaction which is also endothermic.

Question 34

(a) What is the difference between displacement and double displacement reactions ? Write equations for these reactions.

(b) What do you mean by a precipitation reaction ? Explain giving an example

Question 35

(a) What happens when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride ?

(b) Write the balanced chemical equation for the reaction which takes place.

(c) State the physical conditions of reactants in which the reaction will not take place.

(d) Name the type of chemical reaction which occurs.

(e) Give one example of another reaction which is of the same type as the above reaction.