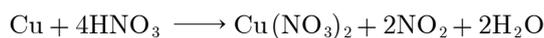




- (c) 4 and 2 (d) 7 and 1

**Ans :** (c) 4 and 2



10.  $\text{Zn} + \text{H}_2\text{SO}_4(\text{dil}) \longrightarrow \text{ZnSO}_4 + \text{H}_2 \uparrow$

Above reaction is -

- (a) decomposition reaction  
 (b) single displacement reaction  
 (c) combination reaction  
 (d) synthesis reaction

**Ans :** (b) single displacement reaction

11. The reaction in which two compounds exchange their ions to form two new compounds is -

- (a) a displacement reaction  
 (b) a decomposition reaction  
 (c) an isomerization reaction  
 (d) a double displacement reaction

**Ans :** (d) a double displacement reaction

12. A redox reaction is one in which-

- (a) both the substance are reduced  
 (b) both the substance are oxidised  
 (c) an acid is neutralised by the base  
 (d) one substance is oxidised while the other is reduced

**Ans :** (d) one substance is oxidised while the other is reduced

13. When the gases sulphur dioxide and hydrogen sulphide mix in the presence of water, the reaction is  $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$ . Here hydrogen sulphide is acting as -

- (a) an oxidising agent (b) a reducing agent  
 (c) a dehydrating agent (d) a catalyst

**Ans :** (b) a reducing agent

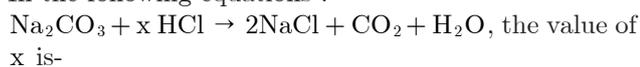
Here  $\text{H}_2\text{S}$  is oxidising in to  $\text{H}_2\text{O}$ , hence behave as a reducing agent.

14.  $\text{CuO} + \text{H}_2 \rightarrow \text{H}_2\text{O} + \text{Cu}$ , reaction is an example of -

- (a) redox reaction (b) synthesis reaction  
 (c) neutralisation (d) analysis reaction

**Ans :** (a) redox reaction

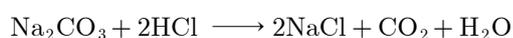
15. In the following equations :



the value of x is-

- (a) 1 (b) 2  
 (c) 3 (d) 4

**Ans :** (b) 2



16. In the equation,  $\text{NaOH} + \text{HNO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$  nitric acid is acting as-

- (a) an oxidising agent (b) an acid

- (c) a nitrating agent (d) a dehydrating agent

**Ans :** (b) an acid

The reaction represents a neutralisation reaction in which base ( $\text{NaOH}$ ) reacts with an acid ( $\text{HNO}_3$ ) to form salt ( $\text{NaNO}_3$ ) and water ( $\text{H}_2\text{O}$ ).

17.  $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$

The above reaction is an example of a-

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

**Ans :** (d) displacement reaction

18. White silver chloride in sunlight turns to-

- (a) grey (b) yellow  
 (c) remain white (d) red

**Ans :** (a) grey

White silver chloride in sunlight turns to grey.

19. Black and white photography uses-

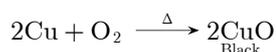
- (a) decomposition of silver chloride  
 (b) decomposition of silver bromide  
 (c) both  
 (d) none of these

**Ans :** (b) decomposition of silver bromide

20. When copper powder is heated it gets coated with-

- (a) black copper oxide (b) yellow copper oxide  
 (c) red copper oxide (d) None of these

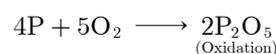
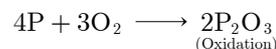
**Ans :** (a) black copper oxide



21. Combination of phosphorus and oxygen is an example of -

- (a) oxidation (b) reduction  
 (c) rancidity (d) None of these

**Ans :** (a) oxidation



22. To indicate the presence of gaseous reactant or product, we use the symbol

- (a) (Product)<sub>g</sub> or (Reactant)<sub>g</sub>  
 (b) (Product)<sub>↑</sub> or (Reactant)<sub>↑</sub>  
 (c) (Product)<sub>↓</sub> or (Reactant)<sub>↓</sub>  
 (d) Both (a) and (b)

**Ans :** (d) Both (a) and (b)

The gaseous reactants and products in any chemical reaction can be demonstrated using the symbol(g) or '↑'.

23. When  $\text{Ca}(\text{NO}_3)_2$  is heated, it gives  $\text{CaO}$ ,  $\text{NO}_2(\text{g})$  and  $\text{O}_2(\text{g})$ . The correct number of moles of  $\text{Ca}(\text{NO}_3)_2$ ,  $\text{CaO}$ ,  $\text{NO}_2(\text{g})$  and  $\text{O}_2(\text{g})$  are present in the reaction

are respectively

- (a) 2, 1, 3, 2                      (b) 2, 2, 4, 1  
 (c) 2, 2, 2, 1                      (d) 1, 2, 4, 1

**Ans :** (b) 2, 2, 4, 1

Ca(NO<sub>3</sub>)<sub>2</sub> on heating gives CaO, NO<sub>2</sub>(g) and O<sub>2</sub>(g). The balanced chemical equation is as follows:



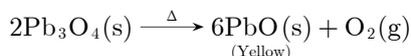
Hence, number of moles of reactant Ca(NO<sub>3</sub>)<sub>2</sub> and products CaO, NO<sub>2</sub>(g) and O<sub>2</sub>(g) are present 2, 2, 4 and 1 respectively.

**24.** Which of the following reaction is characterised by the yellow colour of product?

- (a) Zn(s) + H<sub>2</sub>SO<sub>4</sub> → ZnSO<sub>4</sub> + H<sub>2</sub>  
 (b) Na<sub>2</sub>CO<sub>3</sub> + H<sub>2</sub>SO<sub>4</sub> → Na<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O + CO<sub>2</sub>  
 (c) 2Pb<sub>3</sub>O<sub>4</sub>  $\xrightarrow{\Delta}$  6PbO(s) + O<sub>2</sub>(g)  
 (d) 2KClO<sub>3</sub>  $\xrightarrow{\Delta}$  2KCl + 3O<sub>2</sub>(g)

**Ans :** (c) 2Pb<sub>3</sub>O<sub>4</sub>  $\xrightarrow{\Delta}$  6PbO(s) + O<sub>2</sub>(g)

When red lead oxide (Pb<sub>3</sub>O<sub>4</sub>) is heated, it gives yellow colour of lead-oxide (PbO).



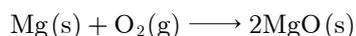
**25.** Which one of the following involve a chemical reaction?

- (a) Evaporation of water  
 (b) Storing on nitrogen gas under pressure  
 (c) Keeping petrol in a China dish in open  
 (d) Heating magnesium wire in the presence of air at high temperature

**Ans :** (d) Heating magnesium wire in the presence of air at high temperature

Only statement (d) follows a chemical reaction. Evaporation of water, storing of nitrogen gas under pressure and keeping petrol in a China dish in open does not involve a chemical reaction.

Heating magnesium wire in the presence of air at high temperature involves a chemical reaction.

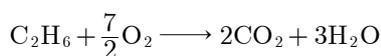


**26.** Ethane (C<sub>2</sub>H<sub>6</sub>) on complete combustion gave CO<sub>2</sub> and water. It shows that the results are in accordance with the law of conservation of mass. Then, the coefficient of oxygen is equal to

- (a) 3                                      (b) 5/2  
 (c) 2                                      (d) 7/2

**Ans :** (d) 7/2

Balanced chemical equation wrt law of conservation of mass.



The coefficient of C<sub>2</sub>H<sub>6</sub> is 1,  $\frac{7}{2}$  for O<sub>2</sub>, 2 for CO<sub>2</sub> and 3 for H<sub>2</sub>O.

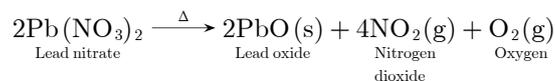
**27.** A powdered salt (X) in a dry test tube was heated that evolves brown fumes of nitrogen dioxide and a yellow residue of lead oxide is also formed. The salt (X) is

- (a) MgSO<sub>3</sub>                              (b) Pb(NO<sub>3</sub>)<sub>2</sub>

- (c) (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>                      (d) CaCO<sub>3</sub>

**Ans :** (b) Pb(NO<sub>3</sub>)<sub>2</sub>

The salt (X) is Pb(NO<sub>3</sub>)<sub>2</sub>. When it is heated, then it evolves brown fumes of nitrogen dioxide and a yellow residue of lead oxide is also formed.

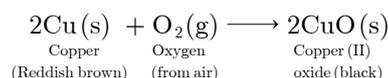


**28.** A reddish brown coloured metal used in electric wires, when powdered and heated strongly in an open China dish, its colour turns black. When hydrogen gas is passed over this black substances, it regain its original colour. Based on this information, the metal and black coloured substances are

- (a) copper and copper nitrate  
 (b) silver and silver oxide  
 (c) copper and copper oxide  
 (d) aluminium and aluminium oxide

**Ans :** (c) copper and copper oxide

The reddish brown metal is copper that changes into a black substance, which is found to be copper oxide. The reaction taking place is:

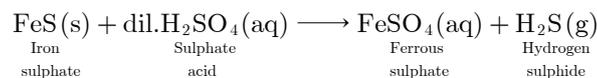


**29.** When dilute sulphuric acid is added to pieces of iron sulphide, hydrogen sulphide gas is produced and soluble ferrous sulphate is formed. The type of chemical reaction involved is

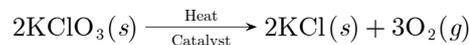
- (a) decomposition reaction  
 (b) combination reaction  
 (c) displacement reaction  
 (d) double displacement reaction

**Ans :** (d) double displacement reaction

The reactions in which two ionic compounds in the solution react by exchange of their ions to form new compounds are called double displacement reactions.



**30.** Following reaction is used for the preparation of oxygen gas in the laboratory.



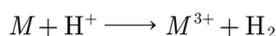
Which of the following statement (s) is (are) correct about the reaction?

- (a) It is a decomposition reaction and endothermic in nature.  
 (b) It is a combination reaction.  
 (c) It is a decomposition reaction and accompanied by the release of heat.  
 (d) It is a photochemical decomposition reaction and exothermic in nature.

**Ans :** (a) It is a decomposition reaction and endothermic in nature.

The given reaction is a decomposition reaction and takes place on absorption of heat.

31. A metal 'M' reacts with an acid according to the equation.



Which of the following is correct for metal M?

- (a) Calcium (b) Aluminium  
(c) Barium (d) Potassium

**Ans :** (c) Barium

1. Balancing of H-atoms : Multiply  $H^+$  on LHS by 2.



2. Balancing charge : Multiply  $2H^+$  by 3 and  $M^{3+}$  by 2 so that charge on each side is +6.

3. Re-balancing of H-atoms: Multiply  $H_2$  on RHS by 3



4. Balancing of M-atoms: Multiply M LHS by 2



This is the required balanced equation and the metal is aluminium (M).

## 2. FILL IN THE BLANK

1. When calcium carbonate is heated, it decomposes to from ..... and ..... gas.

**Ans :** calcium oxide, carbon dioxide

2. Precipitation reactions produce ..... salts.

**Ans :** insoluble

3. Electrolysis of water is a ..... decomposition reaction.

**Ans :** electric

4. Reactions in which energy is absorbed are known as ..... reactions.

**Ans :** endothermic

5. The new substances produce in a reaction are called as .....

**Ans :** products

6. The reaction of sodium sulphate and barium chloride results in the formation of white precipitate of .....

**Ans :** barium sulphate

7. Two different atoms or groups of atoms (ions) are exchanged in ..... reactions.

**Ans :** double displacement

8. Precipitation reactions produce ..... salts.

**Ans :** insoluble

9. Reduction is the ..... of oxygen or gain of hydrogen.

**Ans :** loss

10. The addition of oxygen to a substance is called .....

**Ans :** oxidation

11. The digestion of food in the body is an example of ..... reaction.

**Ans :** decomposition reaction

12. The addition of oxygen to a substance is called .....

**Ans :** oxidation

13. When calcium carbonate is heated, it decomposes to give ..... and .....

**Ans :** CaO (s) and CO<sub>2</sub>(g)

14. In a ..... reaction two or more substances combine to form a new single substance.

**Ans :** combination

15. Reactions in which heat is given out along with the products are called ..... reactions.

**Ans :** exothermic

16. When an element displaces another element from its compound, a ..... reaction occurs.

**Ans :** displacement

## 3. TRUE/FALSE

1. A complete chemical equation represents the reactants, products and their physical states symbolically.

**Ans :** True

2. The reaction of nitrogen and hydrogen gives ammonia. This is an example of a decomposition reaction.

**Ans :** False

3. A magnesium ribbon burns with a dazzling flame in air (oxygen) and changes into a white substance, magnesium oxide.

**Ans :** True

4. Rusting is a double decomposition reaction.

**Ans :** False

5. A chemical cannot be reversed.

**Ans :** True

6. The number of atoms of each element is conserved in any chemical reaction.

**Ans :** True

7. Oxidation is the loss of electrons from a substance.

**Ans :** True

8. The term 'aqueous' represents water as solvent.  
**Ans : True**
9. Rusting of iron and rancidity are caused due to oxidation.  
**Ans : True**
10. Reduction is the gain of electrons by a substance.  
**Ans : True**
11. The formation of Cu and H<sub>2</sub>O the reaction of copper oxide is an example of a redox reaction.  
**Ans : True**
12. Curdling of milk is a physical change.  
**Ans : False**
13. The reaction between nitrogen and hydrogen to give ammonia is an example of a combination reaction.  
**Ans : True**
14. For word-equations, we do not need to know the formulae for the chemicals involved but in symbol-equations we do.  
**Ans : True**
15. Action of heat on ferrous sulphate is an example of decomposition reaction.  
**Ans : True**

#### 4. MATCHING QUESTIONS

**DIRECTION :** Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in column I have to be matched with statements (p, q, r, s) in column II.

1.

Column I	
(A)	$C + O_2 \rightarrow CO_2$
(B)	$AgBr \xrightarrow{\text{light}} Ag + Br$
(C)	$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$
(D)	$CH_3CH_2OH \xrightarrow{Cu} CH_3CHO + H_2$

Column II	
(p)	Displacement
(q)	Combination
(r)	Decomposition
(s)	Oxidation

**Ans :** A-q, B-r, C-p, D-s

2.

Column A	
1.	Ag <sub>2</sub> S (Silver sulphide)
2.	Fe <sub>2</sub> O <sub>3</sub> · xH <sub>2</sub> O (Hydrated ferric oxide)
3.	BHT (Butylated hydroxy-toluene)
4.	CuCO <sub>3</sub> · Cu(OH) (Basic copper carbonate)

Column B	
(a)	Green coating on copper.
(b)	Black coating on silver.
(c)	Reddish brown coating on iron.
(d)	Synthetic antioxidant.

**Ans :** 1-(b), 2-(c), 3-(d), 4-(a)

#### 5. MULTIPLE MATCHING

**DIRECTION :** Following question has four statements (A, B, C and D) given in Column I and four statements (p, q, r and s) in Column II. Any given statement in Column I can have correct matching with one or more statement(s) given in Column II. Match the entries in column I with entries in column II.

1. Column II gives type of reaction mention in column I, match them correctly.

Column I		Column II	
(A)	$KClO_3 \xrightarrow{\Delta}$	(p)	O <sub>2</sub>
(B)	$ZnCO_3 \xrightarrow{\Delta}$	(q)	H <sub>2</sub> O
(C)	$H_2CO_3 \xrightarrow{\Delta}$	(r)	CO <sub>2</sub>
(D)	$C_2H_6 \xrightarrow{\Delta}$	(s)	ZnO

	A	B	C	D
(a)	p	s, r	q, r	q, r
(b)	p	q, r	s, r	r, p
(c)	q, r	s, p	p, s	r
(d)	r	q	s	p

**Ans :** (a) A-p, B-s, r, C-q, r, D-q, r

2.

Column I		Column II	
(A)	$Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$	(p)	Reduction reaction

Column I		Column II	
(B)	$Mg \longrightarrow Mg^{2+} + 2e^{-}$	(q)	displacement reaction
(C)	$Sn^{4+} + 2e^{-} \longrightarrow Sn^{2+}$	(r)	Redox reaction
(D)	$C + O_2 \longrightarrow CO_2$	(s)	Oxidation reaction

	A	B	C	D
(a)	r, p	p	q	s
(b)	r, p	s	p	s
(c)	s	p, r	q	r, q
(d)	s, p	r	q	p, s

3.

Column I (Compound)		Column II (Oxidation state)	
(A)	$[Fe(CO)_5]$	(p)	+2
(B)	$FeO, Fe_2O_3$	(q)	+6
(C)	$OF_2$	(r)	0
(D)	$K_2MnO_4$	(s)	+3

	A	B	C	D
(a)	r	p, s	p	q
(b)	p	q	s	r
(c)	q	s	p	r
(d)	r	q	s	p

## 6. ASSERTION AND REASON

**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

1. **Assertion :** Stannous chloride is a powerful oxidising agent which oxidises mercuric chloride to mercury.

**Reason :** Stannous chloride gives grey precipitate with mercuric chloride, but stannic chloride does not do so.

**Ans :** (c) If Assertion is correct but Reason is incorrect.

2. **Assertion :** Corrosion of iron is commonly known as rusting.

**Reason :** Corrosion of iron occurs in presence of water and air.

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

Corrosion occurs due to oxidation of iron.

3. **Assertion :** In a reaction.



Zn is a reductant but itself get oxidized.

**Reason :** In a redox reaction, oxidant is reduced by accepting electrons and reductant is oxidized by losing electrons.

**Ans :** (a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

4. **Assertion :** A reducing agent is a substance which can either accept electron.

**Reason :** A substance which helps in oxidation is known as reducing agent.

**Ans :** (d) If Assertion is incorrect but Reason is correct  
A reducing agent is a substance which oxidizes itself but reduces others i.e., loses electrons.

5. **Assertion :** The balancing of chemical equations is based on law of conservation of mass.

**Reason :** Total mass of reactants is equal to total mass of products.

**Ans :** (a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

6. **Assertion (A) :** Carbon dioxide turns lime water milky.  
**Reason (R) :** Carbon dioxide sullies the water.

**Ans :** (c) Assertion (A) is true but reason (R) is false.  
Carbon dioxide reacts with lime water (calcium hydroxide) to form milky precipitate of calcium carbonate.

7. **Assertion (A) :** A chemical reaction becomes faster at higher temperatures.

**Reason (R) :** At higher temperatures, molecular motion becomes more rapid.

**Ans :** (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

Both A and R are true and R is the correct explanation of (A). A chemical reaction becomes faster at higher temperatures because at high temperature, the movement of particles are greater.

8. **Assertion (A) :** Sodium metal is stored under Kerosene.  
**Reason (R) :** Metallic sodium melts when exposed to air.

**Ans :** (c) Assertion (A) is true but reason (R) is false.  
Sodium is a very reactive metal. It is kept in kerosene to prevent it from coming in contact with oxygen and moisture present. If this happens, it will react with the moisture present in air and form sodium hydroxide. This is a strongly exothermic reaction, and lot of heat is generated.

9. **Assertion (A) :** To dilute sulphuric acid, acid is added to water and not water to acid.

**Reason (R) :** Specific heat of water is quite large.

**Ans :** (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

The mixing of water to an acid is highly exothermic in nature. If water is added to an acid it produces very large amount of heat which can break the container and some times even causes burnings. So it is advised to add concentrated acid to water very slow manner.

**10. Assertion(A) :** Calcium carbonate when heated gives calcium oxide and water.

**Reason (R) :** On heating calcium carbonate, decomposition reaction takes place.

**Ans :** (d) A is false but R is true.

**11. Assertion(A) :** Brown fumes are produced when lead nitrate is heated.

**Reason (R) :** Nitrogen dioxide gas is produced as a by product due to the decomposition of lead nitrate.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

**12. 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.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

**13. Assertion(A) :** Pungent smelling gas is produced when sulphur burns in air.

**Reason (R) :** Sulphur trioxide is formed on reaction of sulphur with oxygen.

**Ans :** (c) A is true but R is false.

**14. Assertion(A) :** In a reaction of copper with oxygen, copper serves as a reducing agent.

**Reason (R) :** The substance which gains oxygen in a chemical reaction is a reducing agents.

**Ans :** (a) Both A and R are true and R is the correct explanation of A.

**15. Assertion :** The following chemical equation,



is a balanced chemical equation.

**Reason :** In a balanced chemical equation, the total number of atoms of each element may or may not equal on both side of the equation.

**Ans :** (e) Both Assertion and Reason are false.

Both Assertion and Reason are false. In a balanced chemical equation, the total number of atoms of each element are equal on both sides of the equation.

The correct balanced chemical equation is,



**16. Assertion :**  $Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$

The above chemical equation is an example of displacement reaction.

**Reason :** Aluminium being more reactive than iron, displaces Fe from its oxide.

**Ans :** (a) If both Assertion and Reason are true and

Reason is the correct explanation of Assertion.

$Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$  is a displacement reaction, Here, a highly reactive element (Al) displaces Fe from  $Fe_2O_3$ .

**17. Assertion :** In the following chemical equation,



Zinc is getting oxidised and copper oxide is getting reduced.

**Reason :** The process in which oxygen is added to a substance is called oxidation whereas the process in which oxygen is removed from a substance is called reduction.

**Ans :** (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

Because the reaction involves both oxidation and reduction in which, CuO is reduced to Cu and Zn is oxidised to ZnO.

**18. Assertion :** Quicklime reacts vigorously with water releasing a large amount of heat.

**Reason :** The above chemical reaction is an exothermic reaction.

**Ans :** (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

Because in exothermic reactions, heat is released along with the formation of products.

**19. Assertion :** Photosynthesis is considered as an endothermic reaction.

**Reason :** Energy gets released in the process of photosynthesis.

**Ans :** (c) If Assertion is true, but Reason is false.

Assertion is true but Reason is false. Photosynthesis is considered as an endothermic reaction because energy in the form of sunlight is absorbed by the green plants.

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1. Previous 15 Years Exams Chapter-wise Question Bank
2. Previous Ten Years Exam Paper (Paper-wise).
3. 20 Model Paper (All Solved).
4. NCERT Solutions

All material will be solved and free pdf. It will be provided by 30 September and will be updated regularly.