

## Section A

- Write the answer of the following questions. [Each carries 1 Mark] [15]
- In a redox reaction, the substance which is reduced is called ..... agent.
  - The common method to balance chemical equations is called ..... method.
  - Chemically, rust is .....
  - ..... is used in making of cement.
  - When  $\text{CO}_2$  is passed through limewater it .....
  - In a chemical equation, either reactant or product, the solution made in what is called aqueous ?  
(A) Alcohol (B) Ether (C) Water (D) Air
  - Element X gets converted into red and brown colour affected with moistured air and new compound Y is formed, what will be compound X and Y ?  
(A) X = Fe, Y =  $\text{Fe}_2\text{O}_3$  (B) X = Ag, Y =  $\text{Ag}_2\text{S}$  (C) X = Cu, Y =  $\text{CuO}$  (D) X = Al, Y =  $\text{Al}_2\text{O}_3$
  - Silver articles are kept in open for long time, due to formation of which substance it becomes black ?  
(A)  $\text{H}_2\text{S}$  (B) AgS (C)  $\text{AgSO}_4$  (D)  $\text{Ag}_2\text{S}$
  - From which of the following is heat energy exerted ?  
(A) Electrolysis of water (B) Dilution of  $\text{NH}_4\text{Cl}$  in water  
(C) Burning of LPG (D) Decomposition of AgBr in presence of sunlight
  - Chemically, rusting is .....  
(A) Hydrated ferrous oxide (B) Ferric oxide (C) Hydrated ferric oxide (D) None of these
  - Silver chloride is insoluble in water.
  - If a substance loses oxygen during chemical reactions so it is said to be reduced.
  - Making of fertilizer from vegetable matter, it is an example of exothermic reaction.
  - The balanced equation of chemical reaction is called skeletal chemical equation for that reaction.
  - In a chemical equation along with chemical formulae of either reactant or product, their physical states are also indicated.

## Section B

- Write the answer of the following questions. [Each carries 2 Marks] [22]
- In which situations of daily life chemical changes are observed ? Why ?
  - Take about 2 g barium hydroxide in a test tube. Add 1 g of ammonium chloride and mix with the help of a glass rod. Touch the bottom of the test tube with your palm. What do you feel ? Is this an exothermic or endothermic reaction ?
  - What is corrosion ? Explain its effects and give its examples.
  - Explain what is meant by spoiling of anything ?
  - Study the following reactions and mention that which chemical reaction will take place ? giving proper reason for it.  
(i)  $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$  (ii)  $\text{Fe(s)} + \text{ZnSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Zn(s)}$

21. When silver nitrate and sodium chloride solutions are mixed whose precipitate arise ? Give its type.
22. Give one-one example of endothermic and exothermic reaction.
23. What do you mean by a precipitation reaction ? Explain by giving examples.
24. A solution of a substance 'X' is used for whitewashing.
  - (i) Name the substance 'X' and write its formula.
  - (ii) Write the reaction of the substance 'X' named in (i) above with water.
25. Explain the following in terms of gain or loss of oxygen with two examples each.
  - (a) Oxidation
  - (b) Reduction
26. Why is respiration considered an exothermic reaction ? Explain.

**Section C**

- Write the answer of the following questions. [Each carries 3 Marks] [15]
27. By burning magnesium ribbon in air it gets converted into magnesium oxide. How can it be written in the form of chemical equation ? Explain.
  28. Explain electrolysis of water by an experiment.
  29. Write chemical equation occurring in the following reaction and give its type.
    - (i) Burning of magnesium wire in air.
    - (ii) To pass electric current in water.
    - (iii) To mix Ammonia and Hydrogen chloride gases.
  30. Consider the following three reaction.  

$$\text{Al}_2\text{O}_3 + 2\text{B} \rightarrow \text{B}_2\text{O}_3 + 2\text{A}$$

$$3\text{CSO}_4 + 2\text{B} \rightarrow \text{B}_2(\text{SO}_4)_3 + 3\text{C}$$

$$3\text{CO} + 2\text{A} \rightarrow \text{A}_2\text{O}_3 + 3\text{C}$$
 On the basis of following information answer the following questions –
    - (i) Which element is the most active ?
    - (ii) Which element is the least active ?
    - (iii) Which type of reaction is included in given question ?
  31. Balance the following chemical equations.
    - (a)  $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$
    - (b)  $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
    - (c)  $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
    - (d)  $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$

**Section D**

- Write the answer of the following questions. [Each carries 4 Marks] [8]
32. Translate the following statements into chemical equations and then balance them.
    - (a) Hydrogen gas combines with nitrogen to form ammonia.
    - (b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.
    - (c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.
    - (d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.
  33. Explain the displacement reaction on the basis of experiment of iron nails immersed in the solution of  $\text{CuSO}_4$ .

**OPEN STUDENT FOUNDATION****CHAPTER:1****STD 10 : SCIENCE****Date : 21/02/24****IMPORTANT QUESTION DAY 1****Section [ A ] : 1 Marks Questions**

No	Ans	Chap	Sec	Que	Universal_Queld
1.	-	Chap 1	S4	3	QP23P11B1012_P1C1S4Q3
2.	-	Chap 1	S4	8	QP23P11B1012_P1C1S4Q8
3.	-	Chap 1	S4	28	QP23P11B1012_P1C1S4Q28
4.	-	Chap 1	S4	17	QP23P11B1012_P1C1S4Q17
5.	-	Chap 1	S4	26	QP23P11B1012_P1C1S4Q26
6.	C	Chap 1	S6	3	QP23P11B1012_P1C1S6Q3
7.	A	Chap 1	S6	40	QP23P11B1012_P1C1S6Q40
8.	D	Chap 1	S6	33	QP23P11B1012_P1C1S6Q33
9.	C	Chap 1	S6	37	QP23P11B1012_P1C1S6Q37
10.	C	Chap 1	S6	29	QP23P11B1012_P1C1S6Q29
11.	-	Chap 1	S5	3	QP23P11B1012_P1C1S5Q3
12.	-	Chap 1	S5	16	QP23P11B1012_P1C1S5Q16
13.	-	Chap 1	S5	10	QP23P11B1012_P1C1S5Q10
14.	-	Chap 1	S5	5	QP23P11B1012_P1C1S5Q5
15.	-	Chap 1	S5	8	QP23P11B1012_P1C1S5Q8

**Section [ B ] : 2 Marks Questions**

No	Ans	Chap	Sec	Que	Universal_Queld
16.	-	Chap 1	S1	1	QP23P11B1012_P1C1S1Q1
17.	-	Chap 1	S1	12	QP23P11B1012_P1C1S1Q12
18.	-	Chap 1	S1	16	QP23P11B1012_P1C1S1Q16
19.	-	Chap 1	S1	17	QP23P11B1012_P1C1S1Q17
20.	-	Chap 1	S2	5	QP23P11B1012_P1C1S2Q5
21.	-	Chap 1	S2	8	QP23P11B1012_P1C1S2Q8
22.	-	Chap 1	S2	10	QP23P11B1012_P1C1S2Q10
23.	-	Chap 1	S3	15	QP23P11B1012_P1C1S3Q15
24.	-	Chap 1	S8	2.1	QP23P11B1012_P1C1S8Q2.1
25.	-	Chap 1	S3	16	QP23P11B1012_P1C1S3Q16
26.	-	Chap 1	S3	10	QP23P11B1012_P1C1S3Q10

**Section [ C ] : 3 Marks Questions**

No	Ans	Chap	Sec	Que	Universal_Queld
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27.	-	Chap 1	S1	3R	QP23P11B1012_P1C1S1Q3R
28.	-	Chap 1	S1	10R	QP23P11B1012_P1C1S1Q10R
29.	-	Chap 1	S2	7	QP23P11B1012_P1C1S2Q7
30.	-	Chap 1	S2	9	QP23P11B1012_P1C1S2Q9
31.	-	Chap 1	S3	6	QP23P11B1012_P1C1S3Q6

Section [ D ] : 4 Marks Questions

No	Ans	Chap	Sec	Que	Universal_Queld
32.	-	Chap 1	S3	5	QP23P11B1012_P1C1S3Q5
33.	-	Chap 1	S1	13R	QP23P11B1012_P1C1S1Q13R

# OPEN STUDENT FOUNDATION

CHAPTER:1

## STD 10 : SCIENCE IMPORTANT QUESTION DAY 1

Date : 21/02/24

### Section A

● Write the answer of the following questions. [Each carries 1 Mark] [15]

- In a redox reaction, the substance which is reduced is called ..... agent.  
➡ Oxidation
- The common method to balance chemical equations is called ..... method.  
➡ Hit and Trial
- Chemically, rust is .....  
➡  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
- ..... is used in making of cement.  
➡ Calcium oxide quicklime
- When  $\text{CO}_2$  is passed through limewater it .....  
➡ turns milky (makes a thin layer of  $\text{CaCO}_3$ )
- In a chemical equation, either reactant or product, the solution made in what is called aqueous ?  
(A) Alcohol                      (B) Ether                      (C) Water                      (D) Air  
Ans. (C) Water
- Element X gets converted into red and brown colour affected with moistured air and new compound Y is formed, what will be compound X and Y ?  
(A)  $\text{X} = \text{Fe}$ ,  $\text{Y} = \text{Fe}_2\text{O}_3$       (B)  $\text{X} = \text{Ag}$ ,  $\text{Y} = \text{Ag}_2\text{S}$       (C)  $\text{X} = \text{Cu}$ ,  $\text{Y} = \text{CuO}$       (D)  $\text{X} = \text{Al}$ ,  $\text{Y} = \text{Al}_2\text{O}_3$   
Ans. (A)  $\text{X} = \text{Fe}$ ,  $\text{Y} = \text{Fe}_2\text{O}_3$
- Silver articles are kept in open for long time, due to formation of which substance it becomes black ?  
(A)  $\text{H}_2\text{S}$                       (B)  $\text{AgS}$                       (C)  $\text{AgSO}_4$                       (D)  $\text{Ag}_2\text{S}$   
Ans. (D)  $\text{Ag}_2\text{S}$
- From which of the following is heat energy exerted ?  
(A) Electrolysis of water                      (B) Dilution of  $\text{NH}_4\text{Cl}$  in water  
(C) Burning of LPG                      (D) Decomposition of  $\text{AgBr}$  in presence of sunlight  
Ans. (C) Burning of LPG
- Chemically, rusting is .....  
(A) Hydrated ferrous oxide      (B) Ferric oxide                      (C) Hydrated ferric oxide      (D) None of these  
Ans. (C) Hydrated ferric oxide
- Silver chloride is insoluble in water.  
➡ True
- If a substance loses oxygen during chemical reactions so it is said to be reduced.  
➡ True
- Making of fertilizer from vegetable matter, it is an example of exothermic reaction.  
➡ True
- The balanced equation of chemical reaction is called skeletal chemical equation for that reaction.

➤ False

15. In a chemical equation along with chemical formulae of either reactant or product, their physical states are also indicated.

➤ True

### Section B

● Write the answer of the following questions. [Each carries 2 Marks]

[22]

16. In which situations of daily life chemical changes are observed ? Why ?

➤ Generally in following situations of daily life changes are observed. Because in all the given situations the nature and identity of the initial substances have somewhat changed means chemical change is responsible for the change in the situations and identity of the substance.

➤ Whenever chemical change occurs we can say that a chemical reaction has taken place.

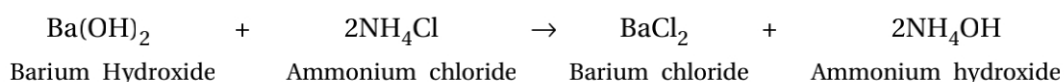
➤ **Various Situations :**

- Milk is left at room temperature during summers.
- An Iron tawa/pan/nail is left exposed to humid atmosphere.
- Grapes get fermented.
- Food is cooked.
- Food gets digested in our body.
- We respire.

17. Take about 2 g barium hydroxide in a test tube. Add 1 g of ammonium chloride and mix with the help of a glass rod. Touch the bottom of the test tube with your palm. What do you feel ? Is this an exothermic or endothermic reaction ?

➤ In the given activity, by taking barium hydroxide  $\text{Ba}(\text{OH})_2$  in test tube and adding  $\text{NH}_4\text{Cl}$  into it then mixing it with glass rod, bringing palm in contact with test tube at that time generally test tube is seen little bit cool because the reaction occurring in test tube is an endothermic reaction. As a result heat is absorbed from it and test tube becomes cool.

➤ The chemical reaction occurring in a test tube can be written in the form of equation.



➤ Endothermic Reaction.

18. What is corrosion ? Explain its effects and give its examples.

➤ Generally Iron articles are shiny when new, but get coated with a reddish brown powder when left for some time. This process is commonly known as rusting of Iron.

➤ Some other metals also get tarnished in this manner. Coating is formed on copper and silver.

➤ When a metal is attacked by substances around it such as moisture, acid etc. it is said to be corrode and this process is called corrosion.

➤ E.g., The black coating on silver and the green coating on copper are other examples of corrosion.

➤ **Effects :**

- (1) Corrosion causes damage to car bodies, bridge, iron railings, ships and to all objects made of metals.
- (2) Corrosion of iron is a serious problem. Every year an enormous amount of money is spent to



replace damaged iron.

19. Explain what is meant by spoiling of anything ?

- ➡ When fats and oils are oxidised, they become rancid and their smell and taste changes.
- ➡ Usually, substances which prevent oxidation (antioxidants) are added to foods containing fats and oil.
- ➡ Keeping food in air tight containers helps to slow down oxidation.
- ➡ Chips manufacturers usually flush bags of chips with gas such as nitrogen to prevent the chips from getting oxidised. (Nitrogen Packing)

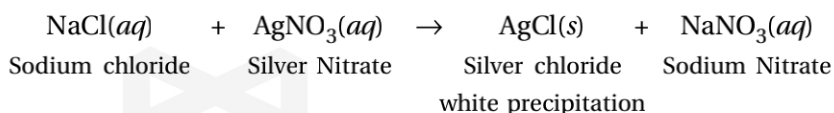
20. Study the following reactions and mention that which chemical reaction will take place ? giving proper reason for it.



- ➡ (i) Zinc is more active than copper so it can displace Cu from  $\text{CuSO}_4$ . So this reaction will be possible.
- ➡ (ii) Iron is less active than zinc. So it can not displace Zn from  $\text{ZnSO}_4$ . So this process will not be possible.

21. When silver nitrate and sodium chloride solutions are mixed whose precipitate arise ? Give its type.

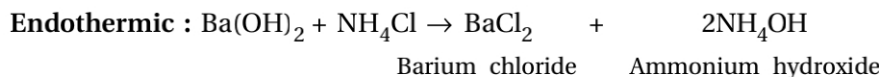
- ➡ White precipitates of silver chloride are formed like,



- ➡ It is a double displacement and precipitation reaction.

22. Give one-one example of endothermic and exothermic reaction.

- ➡ **Exothermic** : To add water in CaO.



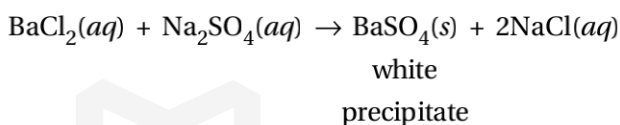
- ➡ The reaction of Barium hydroxide with  $\text{NH}_4\text{Cl}$ .

23. What do you mean by a precipitation reaction ? Explain by giving examples.

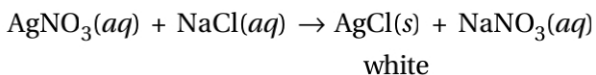
- ➡ **Precipitation Reaction** : A substance which is insoluble in water is formed. This insoluble substance formed is known as a precipitate. Any reaction that produces a precipitate can be called a precipitation reaction.

E.g.,

- (i) When aqueous solution of barium chloride is added to aqueous solution of sodium sulphate at that time white precipitate of barium sulphate is formed as per below.



- (ii) When aqueous solution of silver nitrate is added to aqueous solution of sodium chloride, white precipitates insoluble in water of silver chloride are formed.



precipitate

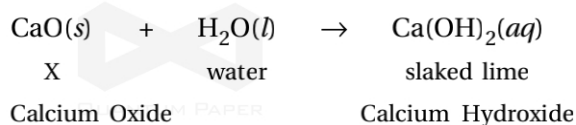
24. A solution of a substance 'X' is used for whitewashing.

(i) Name the substance 'X' and write its formula.

(ii) Write the reaction of the substance 'X' named in (i) above with water.

⇒ (i) Substance X is calcium oxide or quicklime and its formula is CaO.

⇒ (ii) Reaction of Quicklime with water –

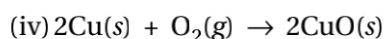
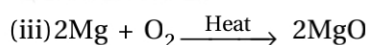
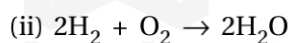
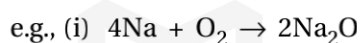


25. Explain the following in terms of gain or loss of oxygen with two examples each.

(a) Oxidation

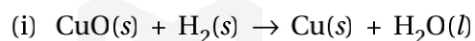
(b) Reduction

⇒ (a) **Oxidation** : If a substance gains oxygen or loses hydrogen it is said to be oxidised.

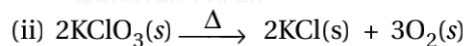


⇒ (b) **Reduction** : If a substance loses oxygen during a reaction or gains hydrogen, it is said to be reduced.

E.g.,

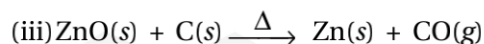


CuO loses oxygen and makes Cu.

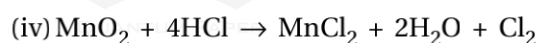


Potassium chlorate                  Potassium chloride

By losing oxygen  $\text{KClO}_3$  makes KCl.



ZnO loses oxygen and makes Zn.

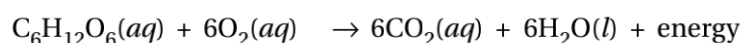


26. Why is respiration considered an exothermic reaction ? Explain.

⇒ All type of organisms need energy to stay alive. This energy is obtained from the food we eat.

⇒ During digestion, food is broken down into simples substances and is further broken down to form glucose.

⇒ This glucose combines with oxygen in the cells of our body and provides energy.



⇒ Thus heat is produced during above reaction is called exothermic reaction.

### Section C

● Write the answer of the following questions. [Each carries 3 Marks]

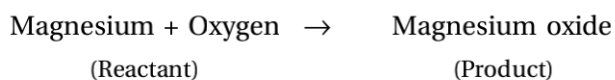
[15]

27. By burning magnesium ribbon in air it gets converted into magnesium oxide. How can it be written in



the form of chemical equation ? Explain.

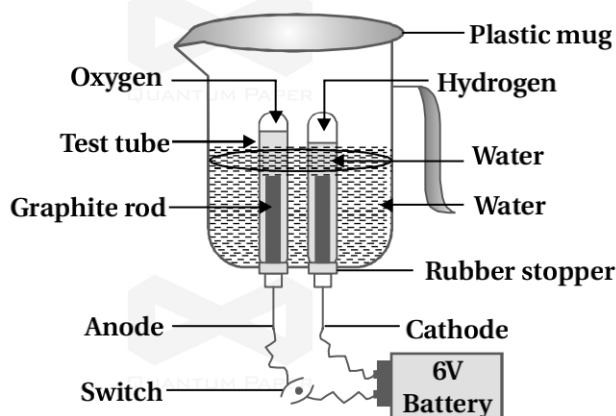
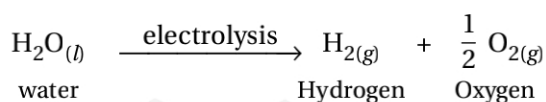
- ➡ When a magnesium ribbon is burnt in oxygen it gets converted into magnesium oxide. This description of a chemical reaction in a sentence form is quite long. It can be written in a shorter form.
- ➡ The simplest way to do this is to write in the form of a word equation.
- ➡ The word reaction for burning of magnesium ribbon in air can be written as follows :



- ➡ Magnesium and oxygen are the reactants. The new substance is magnesium oxide formed during the reaction as a product.
- ➡ A word equation shows change of reactants to products through an arrow placed between them.
- ➡ The reactants are written on left hand side (LHS) with a plus sign (+) between them. Similarly products are written on the right hand side (RHS) with a plus sign (+) between them.
- ➡ The arrowhead points towards the products and shows the direction of the reaction.

28. Explain electrolysis of water by an experiment.

- ➡ Electrolysis of water can be explained by the following examples.
- ➡ First of all take a plastic mug. Drill two holes at its base and fit rubber stoppers in these holes.
- ➡ Insert carbon electrodes into a rubber cork.
- ➡ Now connect these electrodes to 6 volt battery.
- ➡ Fill the mug with water such that the electrodes are immersed and add a few drops of dilute sulphuric acid to the water.
- ➡ Take two test tubes filled with water and invert them over the two carbon electrodes.
- ➡ Switch on the current and leave the apparatus undisturbed for some time.
- ➡ **Observation :** You will observe that formation of bubbles displace water in the test tubes.



Electrolysis of water

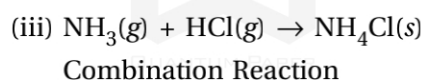
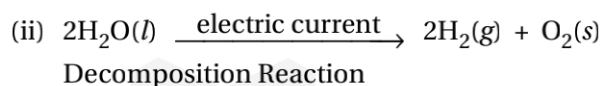
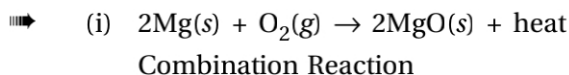
- ➡ The volume of gas collected in both the test tubes is the same.
- ➡ Once the test tubes are filled with the respective gases, remove them carefully. Gases are tested one by one by bringing a burning candle close to the mouth of the test tube.
- ➡ When both the gases of the test tubes are tested by burning, they burn, it means both these combustibles

are Hydrogen and oxygen gases.

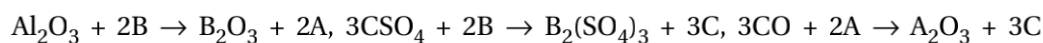
- ➡ This means hydrogen is present in one test tube and oxygen is present in second test tube.
- ➡ Thus it can be said that Electrolysis of decomposition of water take place in Hydrogen and Oxygen.

29. Write chemical equation occurring in the following reaction and give its type.

- (i) Burning of magnesium wire in air.
- (ii) To pass electric current in water.
- (iii) To mix Ammonia and Hydrogen chloride gases.

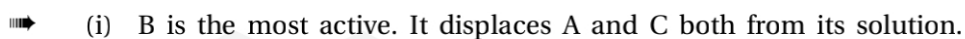


30. Consider the following three reaction.



On the basis of following information answer the following questions –

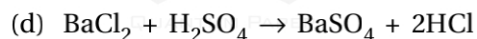
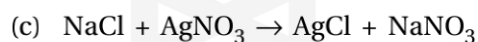
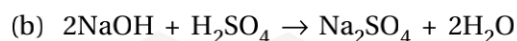
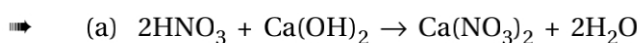
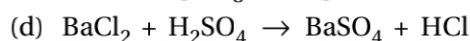
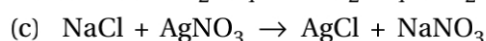
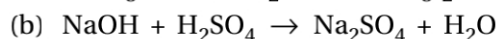
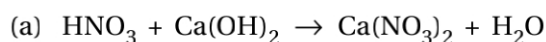
- (i) Which element is the most active ?
- (ii) Which element is the least active ?
- (iii) Which type of reaction is included in given question ?



(ii) C is the least active and it is displaced by both A and B.

(iii) In a given question displacement reaction is included.

31. Balance the following chemical equations.



#### Section D

● Write the answer of the following questions. [Each carries 4 Marks]

[8]

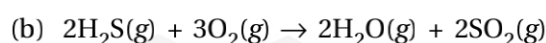
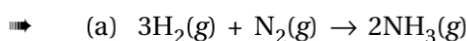
32. Translate the following statements into chemical equations and then balance them.

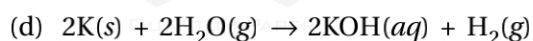
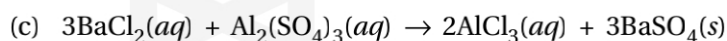
(a) Hydrogen gas combines with nitrogen to form ammonia.

(b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.

(c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.

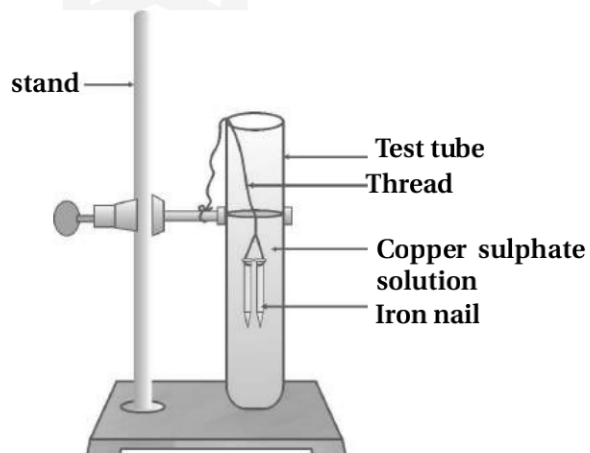
(d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.





33. Explain the displacement reaction on the basis of experiment of iron nails immersed in the solution of  $\text{CuSO}_4$ .

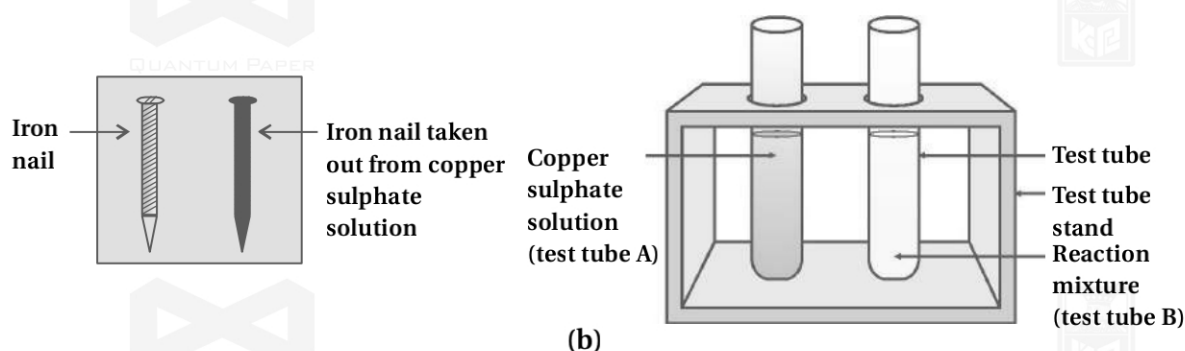
➡ To get the understanding of displacement reaction, the experiment of effect of  $\text{CuSO}_4$  solution on iron nails is done. It is as follows :



(a)

#### (a) Iron nails dipped in copper sulphate solution

- ➡ First of all take three iron nails and clean them by rubbing with sand paper.
- ➡ Take two test tubes marked as (A) and (B).
- ➡ Now 10 ml copper sulphate is taken in both test tubes. Tie two iron nails with a thread and immerse them carefully in the copper sulphate solution in test tube B for about 20 minutes.
- ➡ Keep one iron nail aside for comparison.
- ➡ After 20 minute, take out the iron nails from the copper sulphate solution.
- ➡ Now as shown in following figure (b), compare the intensity of the colour of copper sulphate solutions in the test tubes (A) & (B).
- ➡ Also compare the colour of the iron nails clipped in the copper sulphate solution with the one kept aside.



(b)

#### (b) Iron nails and copper sulphate solutions compared before and after the experiment

- ➡ **Observation :** It can be seen in the observation of the given experiment that the colour of iron nail kept in test tube (B) becomes brown and the blue colour of copper sulphate solution fades.
- ➡ Because during this experiment Iron (Fe) atoms displace Cu from solution of copper sulphate ( $\text{CuSO}_4$ ). Therefore, (Cu) removed from solution of  $\text{CuSO}_4$  get deposited on iron nails. As a result iron nails become brown and blue colour of copper sulphate fades.

- ➡ Following reaction takes place in the experiment.



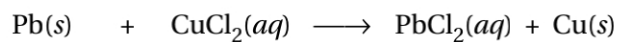
(Copper sulphate)                      (Iron sulphate)

- ➡ In this reaction iron displaces or removes copper from the solution of copper sulphate. This reaction is called displacement reaction.

- ➡ The other examples of displacement reaction are as follows :



(copper sulphate)                      (zinc sulphate)



(copper chloride)                      (lead chloride)

- ➡ Zinc and lead are more reactive than copper, so they displace copper from its compounds.