

Short type questions

25) What is oxidation reaction identify the following reaction I) the substance oxidised ,ii) the substance is reduced



Ans: In a chemical reaction the addition or gain of oxygen to a substance is takes place is called oxidation reaction

Or

The chemical reaction in which removal of hydrogen from a substance is takes place is called oxidation process.

The oxidation is also explained in term of metal and non metal

The reaction in which addition of non metallic element or removal of metallic element is takes place is called oxidation reaction

- The substance which get oxidised is known as reducing agent.
- The oxidation process have damaging effect on metal as well as food

The effect of oxidation on food is studied as Rancidity

The effect of oxidation on metal is studied as corrosion

- Let us consider the following reaction



The compound ZnO is changed to Zn. The removal of oxygen is takes place from ZnO to form Zn. As well as oxidation number of Oxygen atom is decreases from ZnO to Zn .by the definitely the removal of oxygen atom is called as reduction

ZnO is reduced

The element C is changed to CO . The gain of oxygen is takes place from ZnO and convert carbon to CO .the oxidation number of Carbon is increases from C to CO .By the definition addition of Oxygen is oxidation .oxidation takes place on Carbon

Hence C (carbon) is oxidised

26) a) What is redox reaction explained with an example

Ans : The reaction in which the oxidation and Reduction process takes place simultaneously is known as redox reaction.

The term Redox in which red : stand for reduction

Ox : Ox stands for oxidation

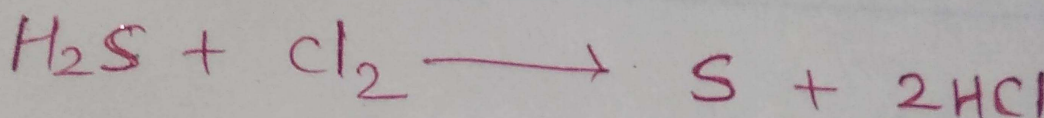
- In redox reaction the substance which is oxidised is called as reducing agent
- The substance which is reduced is called as oxidising agent

Example: when Hydrogen sulphide reacts with chlorine , then sulphur and hydrogen chloride are formed.

Word equation is:

Hydrogen sulphide + chlorine \longrightarrow Sulphur + Hydrochloric acid

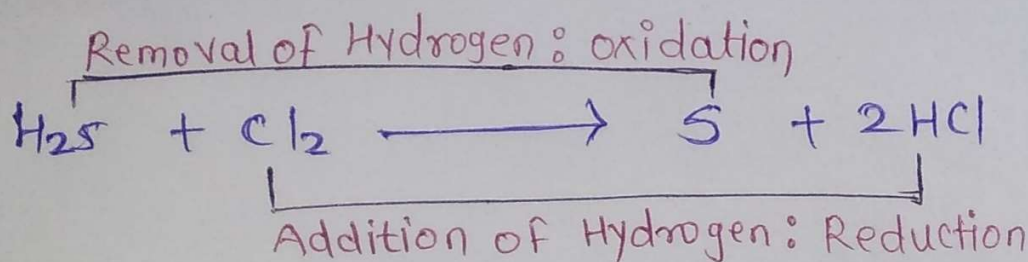
Chemical equation of above reaction is



H_2S is get converted to sulphur. Hydrogen is remove from H_2S to form sulphur (S) . Removal of hydrogen is called oxidation. Oxidation takes place on H_2S . **Hence H_2S is oxidised .**

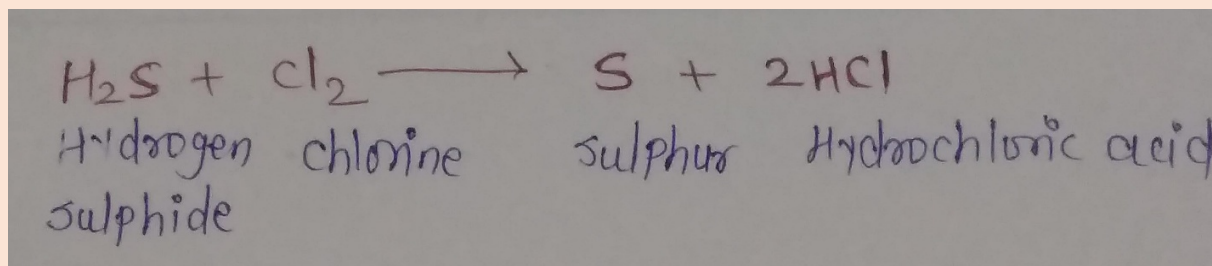
Chlorine (Cl_2) is change to hydrochloric acid (HCl) . Addition of hydrogen at carbon molecule to form hydrochloric acid (HCl) . addition of hydrogen is reduction . Reduction takes place on Cl_2 . **Hence Cl_2 is reduced.**

In above reaction oxidation and Reduction process takes place simultaneously .it



is represented by follow

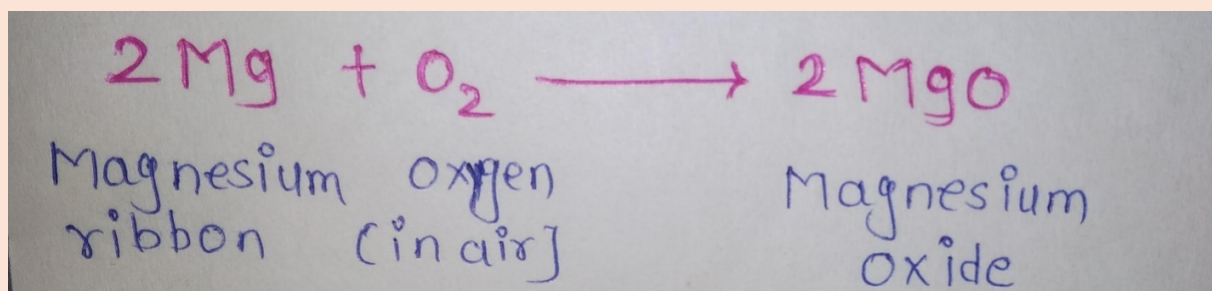
In above reaction H_2S is oxidised i.e. removal of hydrogen hence H_2S is reducing agent . And chlorine (Cl_2) is reduced i.e. addition of H is takes place hence Cl_2 is oxidising agent .



Redox reaction is

b) When a magnesium ribbon is burn in air with dazzling flame and form white ash , is Magnesium oxidised or reduced? Why ?

Ans : when a magnesium ribbon is burn in a dazzling flame the white ash of



magnesium oxide is formed

In above reaction Magnesium is oxidised .

When the reaction is takes place the magnesium atom accept of oxygen atom in air . It changes to Magnesium oxide. It change its oxidation state from 0 to 2 the increase of oxidation state is takes place .by definition the substance which accept the oxygen is oxidised .here magnesium accept oxygen hence Magnesium is oxidised.

C) In the reaction represented by the equation



Ans : The above reaction is redox reaction in which oxidation and reduction takes place simultaneously

i) The substance which is oxidised :

HCl is oxidised .HCl is changes to Cl_2 . Hydrochloric acid remove hydrogen to form Cl_2 molecule .the oxidation number of Cl is increase -1 to 0 . By the definition the removal of hydrogen is oxidation. The substance at which oxidation takes place is called oxidised substance.

HCl is oxidised.

ii) Name the oxidising agent : The substance which is reduced is known as oxidising agent .the compound MnO_2 is oxidised. Hence MnO_2 is oxidising agent .

iii) The substance which is reduced : MnO_2 is reduced. MnO_2 is changes to. MnCl_2 the removal of oxygen atom is takes place from MnO_2 to form MnCl_2 . The oxidation state of Mn is decreases +4 to +2 . At MnO_2 it is +4 and at MnCl_2 it is +2. By the definition the removal of oxygen or decrease in oxidation state (gain of Electron) is known as reduction the substance at which reduction takes place is known as reduced substance

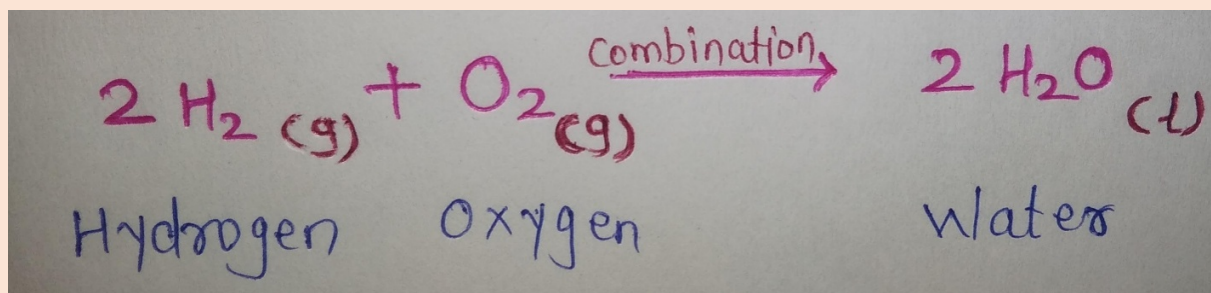
Hence **MnO_2 is reduced.**

iv) Reducing agent : The substance which is oxidised is known as reducing agent .**HCl is reducing agent.**

27) a) Define a Combination Reaction

Ans : The combination reaction in which two or more substance is combine to form a single substance are called as combination reaction .

Mostly combination reaction is Exothermic

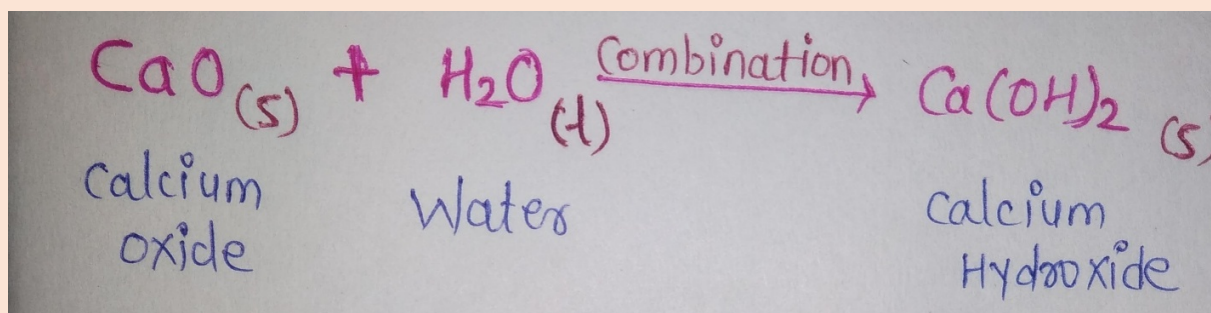


Example : 1) When hydrogen burns in air to form water

In above reaction hydrogen and water is two element combine to form a new compound water

- The reaction in which two or more compound can combine to form new compound can combined to form a new compound is called combination reaction

Example : Calcium Oxide (lime) react with water to form calcium hydroxide (



slacked lime)

In above reaction two compound calcium oxide and water is combined to form a new compound calcium hydroxide

- The reaction in which a element react with a compound to form a new compound

Example: Sulphur dioxide reacts with oxygen to form sulphur trioxide

In above reaction oxygen element and sulphur dioxide compound is combine to form a new compound sulphur trioxide.

amount of heat is absorbed during the process.

In above reaction two substance nitrogen (N_2) and hydrogen (H_2) is combined and form a new compound Ammonia .

Large amount of heat is absorbed. When heat is absorb is known as endothermic process.

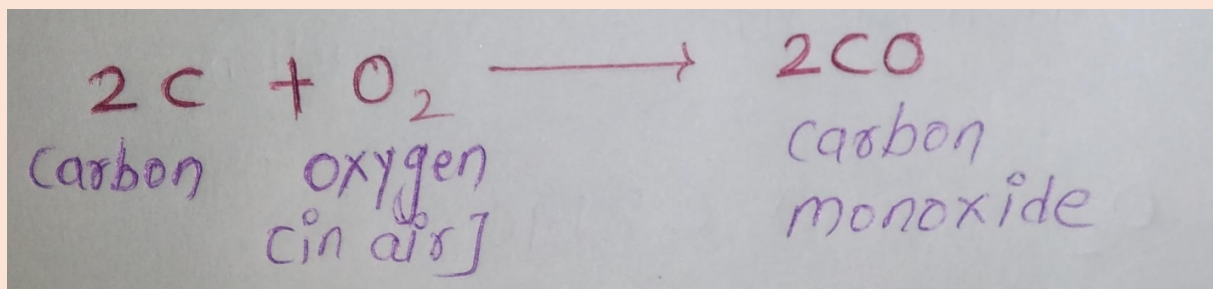
Formation of Ammonia from nitrogen and hydrogen is a combination reaction with an endothermic form .

28) a) Give an example of an oxidation reaction

Ans : The reaction in which addition of oxygen (accept of oxygen) or removal of hydrogen is takes place is called oxidation reaction.

Or

The addition of non metallic element of removal of metallic element is called oxidation . Simply means that electron is released is called oxidation



Example : When carbon is burn in air to form carbon monoxide

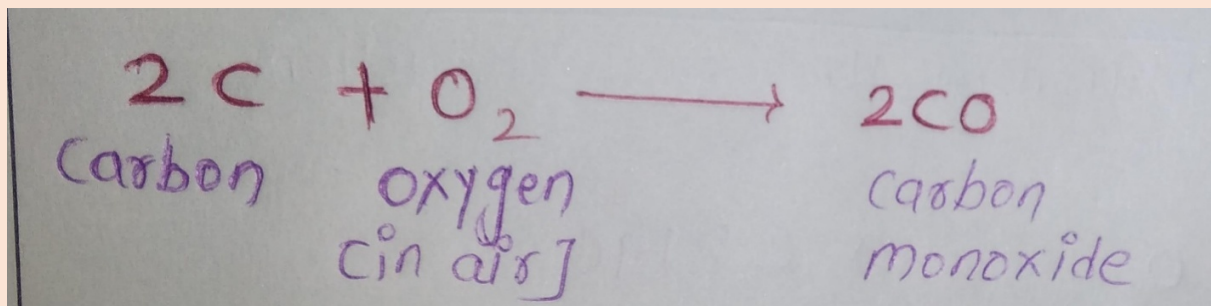
In the above mentioned reaction, carbon is change to carbon monoxide (CO) . Addition of oxygen at carbon to form carbon monoxide . Oxidation state of carbon is increase to carbon monoxide . addition of oxygen is oxidation reaction . Above process is oxidation.

b) Is oxidation is an exothermic and endothermic reaction ?

Ans : Oxidation reaction may be endothermic or exothermic . But mostly oxidation is exothermic.

In most of oxidation reaction heat is released throughout the process .hence oxidation reaction is exothermic

Example : When carbon is burn in air to form carbon monoxide and heat is



released .

It is oxidation reaction . Heat is evolved it is exothermic.

C) Explained by giving example , how oxidation and reduction proceed side by side

Ans : The reaction in which oxidation and reduction is takes place at a time Is called as redox reaction.

The process in which addition of oxygen or removal of hydrogen or lose of electron is takes place is called oxidation.

The process in which removal of oxygen or addition of hydrogen or removal of electron takes place is called reduction.

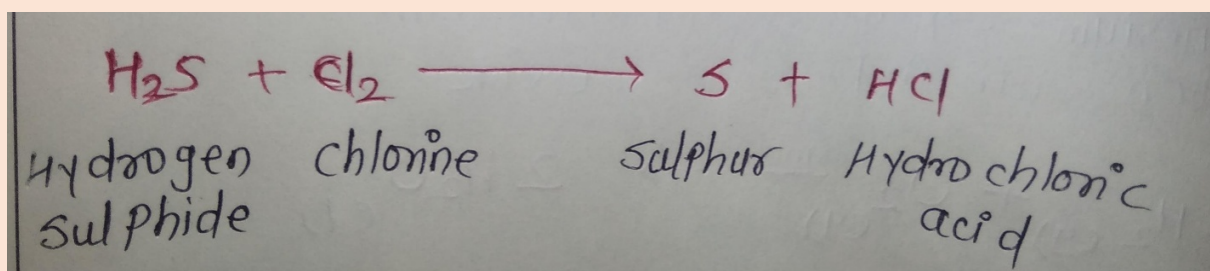
The substance which is oxidised is known as reducing agent.

The substance which is reduced is known as oxidising agent.

In redox reaction oxidation and reduction are takes place side by side because of the reducing agent cause oxidation and oxidising agent cause reduction

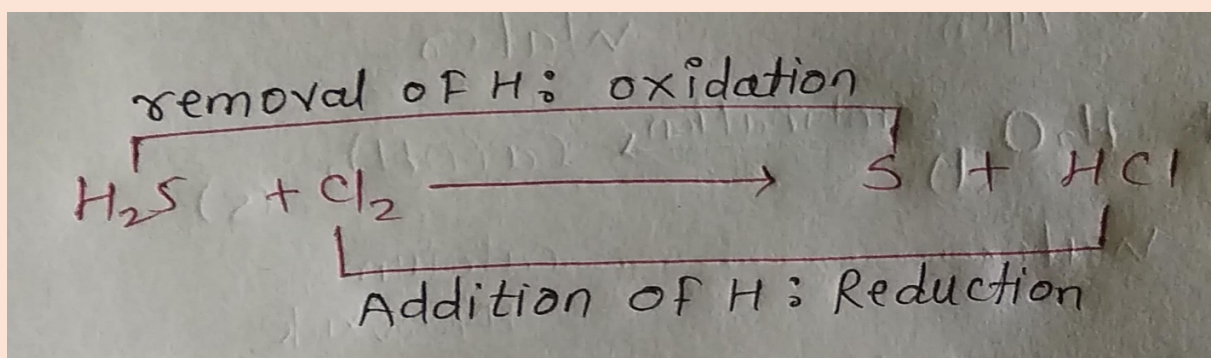
It is explained by fallowing example

- When hydrogen sulphide reacts with chlorine then sulphur and Hydrochloric acid is formed.



H₂S is changed to sulphur removal of hydrogen is takes place here and oxidation process occurred . H₂S act as a reducing agent because it is oxidised Cl₂ Chlorine is change to Hydrochloric acid . Here addition of hydrogen is take place . reduction process is occurs .Cl₂ is act as oxidation agent because it is oxidised H₂S

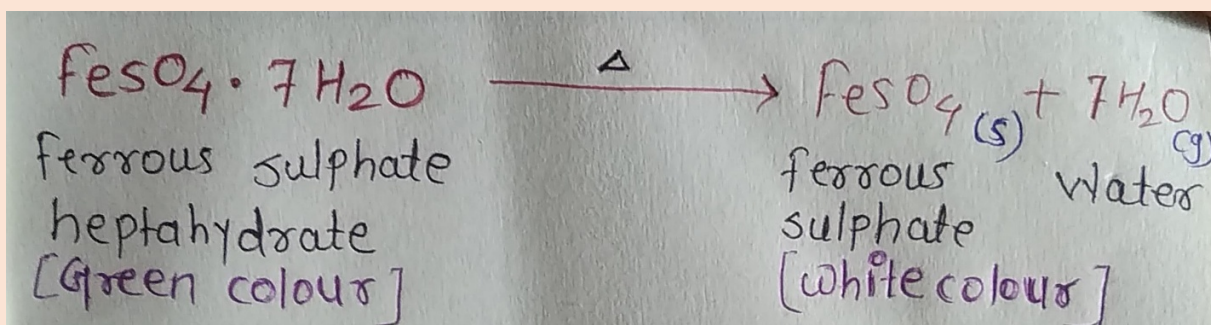
It is represented by fallow.



29) What is the colour of ferrous sulphate crystal ? How does the colour changes after heating?

Ans : The colour of ferrous sulphate is **light green** The ferrous sulphate crystal are present in the form ferrous sulphate heptahydrate (FeSO₄ . 7H₂O) . It contain 7 water molecule . After heating this 7 water molecule is firstly remove to form Ferrous sulphate FeSO₄ . It is white in colour .

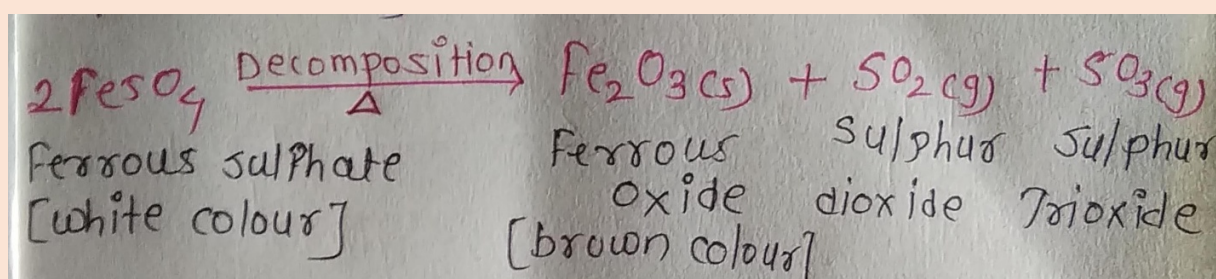
After heating the light green ferrous sulphate is changes to white colour



b) Name the product formed on strongly heating ferrous sulphate crystal ? What type of chemical reaction is occurs in this change ?

Ans : On light heating the green colour ferrous heptahydrate ($\text{FeSO}_4 \cdot \text{H}_2\text{O}$) is changed to white colour of ferrous sulphate (FeSO_4). This ferrous sulphate is strongly heated to form ferrous oxide (Fe_2O_3), Sulphur dioxide (SO_2) and sulphur trioxide (SO_3). the white colour of ferrous sulphate is changes to brown colour of ferric oxide .

It is decomposition reaction . Ferrous sulphate is decomposed . It is shown by following equation .



30) What is the decomposition reaction ? Give an example of Decomposition reaction ? Describe an activity to elustrate such a reaction by heating

Ans - A chemical reaction in which a compound spits or decomposed into two or more simpler substance is called a decomposition reaction

Simply we called the decomposition reaction means breaking of compound into other substances

Decomposition is carried out by applying heat, electricity or light .that is provide energy to break the compound into two or more substance .

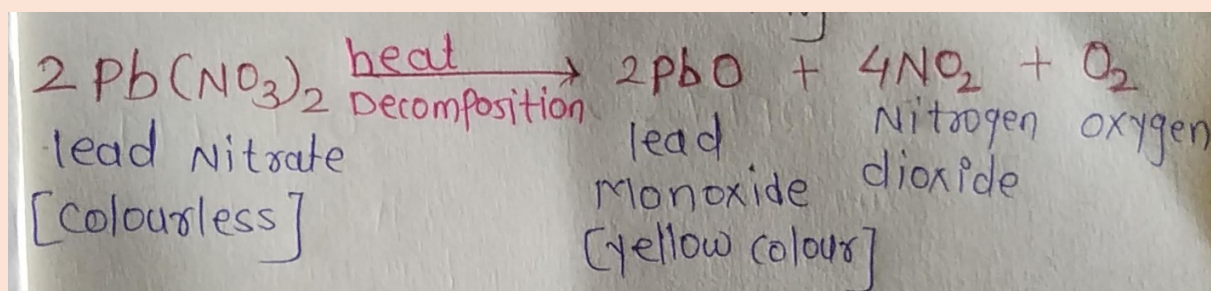
Decomposition is opposite of combination reaction

When heat is use to breaking is called Thermal decomposition

When electricity is use to breaking is called electrically decomposition

When light is use to breaking is called light decomposition

Example : when lead nitrate is heated strongly it is split down to form yellow colour lead monoxide (PbO). Nitrogen oxide fumes (NO₂) and oxygen gas



Above decomposition reaction the colourless substance is change to colour substance with brown fumes of nitrogen dioxide .

It is Thermal decomposition reaction.

Activity perform in laboratory .:

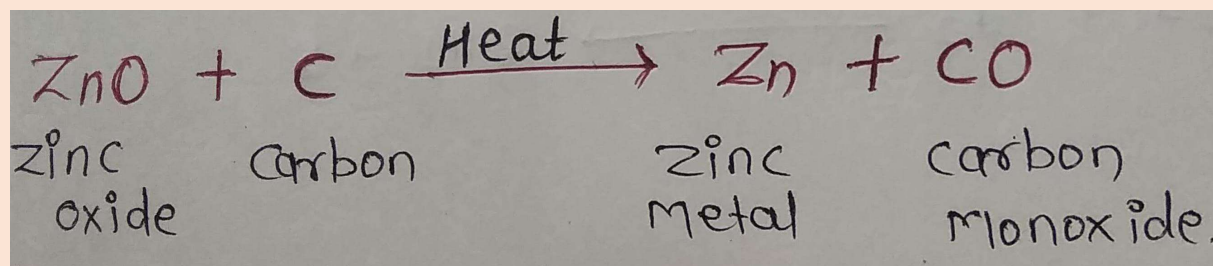
- 1) Take 2 gram of colourless lead nitrate powder in a boiling test tube
- 2) Hold the test tube by test tube holder and heat it on burner
- 3) Brown colour of nitrogen dioxide gas is formed which is evolved by filling the test tube
- 4) When the test tube mouth hold on burner it catches fire it indicate the evolution of O₂
- 5) In test tube the yellow colour solid is left i. e. Lead monoxide .

31) Zinc oxide reacts with carbon on heating to form zinc metal and carbon monoxide . Write a balanced chemical equation for this reaction .Name i) the substance oxidised ii) the substance reduced

Ans : Zinc oxide reacts with carbon on heating to form zinc metal and carbon monoxide .

Word equation of above reaction is

Zinc oxide + carbon \longrightarrow zinc + carbon monoxide



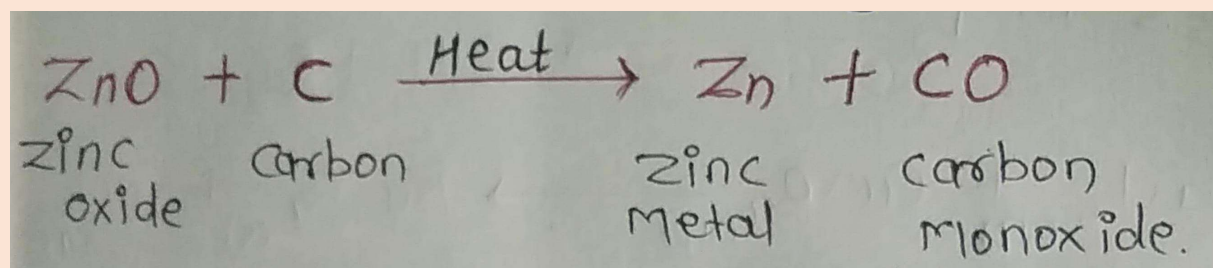
Chemical equation of above reaction is

- Balancing chemical equation

Count the number of atom present in both the sides

Name of the atoms	Reactant side	Product side
Carbon	1	1
Zinc	1	1
Oxygen	1	1

In which the same number of atom is present on both the sides . Hence balanced

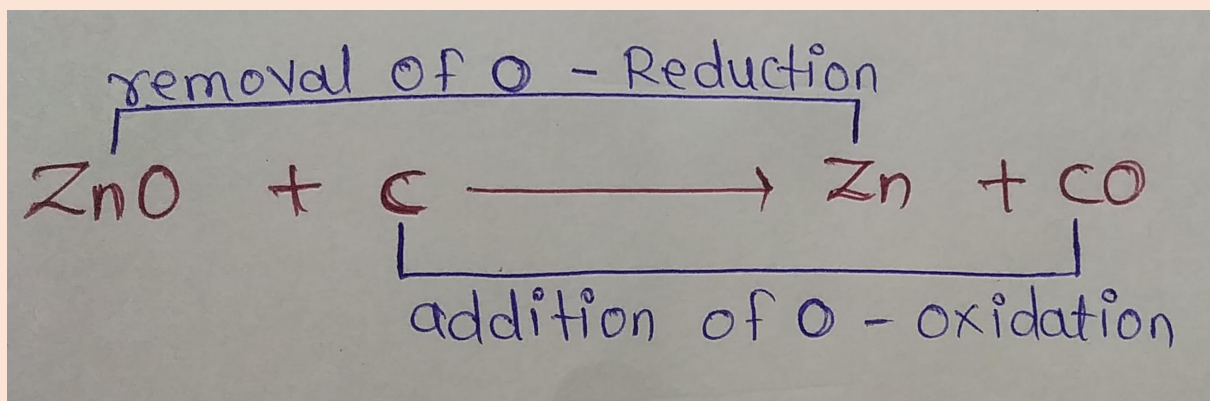


chemical equation is

- In the above reaction ZnO is changes to Zn . Oxygen is removed from zinc oxide to form zinc metal . From defination , the removal of oxygen from a compound is called reduction . Henced **ZnO is reduced.**

- Also in this reaction, carbon (C) changes to carbon monoxide (CO). Oxygen is added to the carbon molecule to form carbon monoxide. By definition, addition of an oxygen atom to a compound is an oxidation process. Hence **Carbon (C)** is oxidised.

Representation of oxidation and reduction is as follows



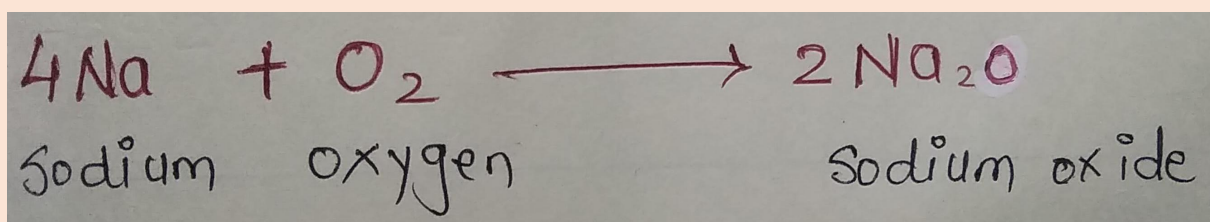
Above reaction clearly shows that **ZnO is reduced and C is oxidised**

32) Give one example of an oxidation – reduction reaction which is also

a) A combination reaction :

When sodium metal reacts with oxygen in air to form sodium oxide.

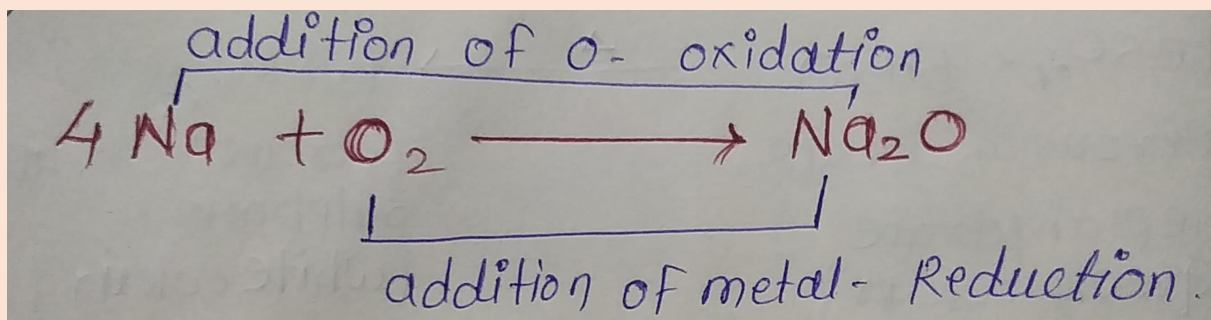
It is a combination reaction in which two substances, sodium and oxygen, are combined to form a single new substance, sodium oxide.



Chemical equation of reaction is

In the above reaction, sodium metal (Na) changes to sodium oxide (Na_2O). Sodium metal accepts oxygen to form sodium oxide (Na_2O). Addition of oxygen takes place. It is an oxidation process. **Na is oxidised**

Oxygen (O_2) changes to sodium oxide. Here, addition of metal takes place by definition. Addition of metal is reduction. It is a reduction process. **O_2 is Reduced**.



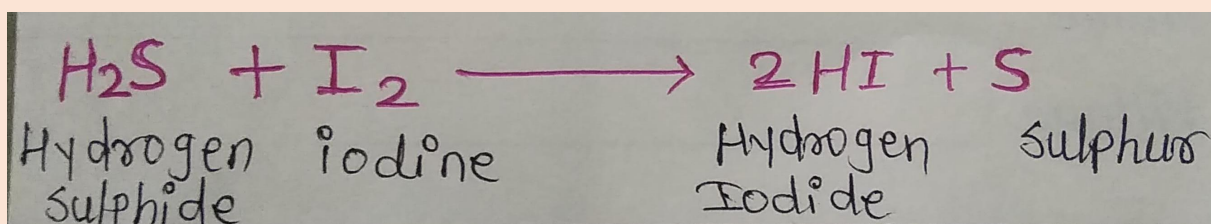
Representation of oxidation and reduction is given below

The substance which is oxidised is an reducing agent – **Na is reducing agent**

The substance which is reduced is an reducing agent – **O₂ is oxidising agent** .

b) A Displacement Reaction .:

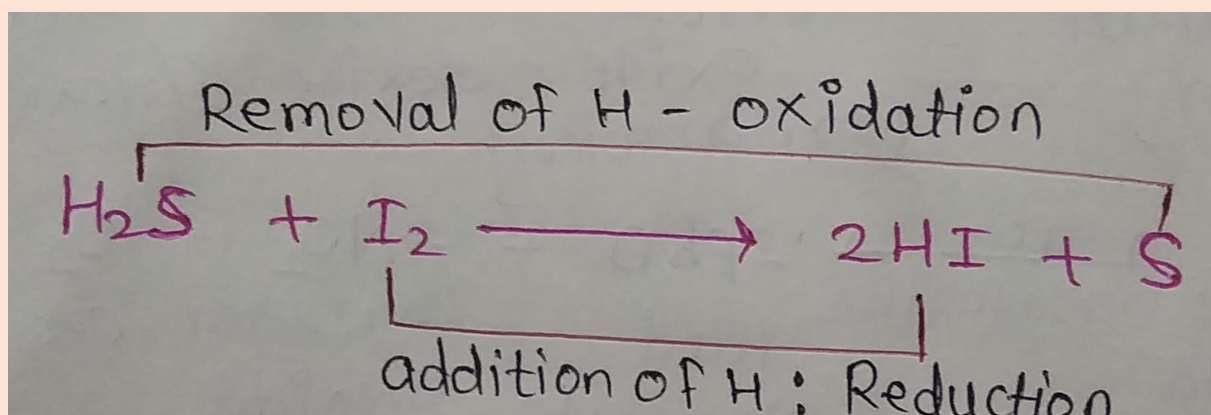
When hydrogen sulphide is reacts with iodine to form hydrogen iodide and



sulphur .

This is displacement reaction in which iodine is more reactive than sulphur .iodine replace sulphur atom to form Hydrogen sulphide to form hydrogen and sulphur

- In above reaction H₂S (Hydrogen Sulphide) is changes to HI (hydrogen iodide) removal of hydrogen takes place . It is oxidation reaction. **H₂S isoxidised and H₂S is reducing agent**
- Iodine (I₂) is changes to hydrogen iodide . Addition of hydrogen takes place . It is reduction . **I₂ is reduced and I₂ is oxidising agent** .



It is represented by follow

33) a) What is the difference between the displacement and double displacement reaction . Describe an activity to illustrate such a reaction by heating .

Ans :

Displacement reaction	Double displacement reaction
The reaction in which one element takes place each other element to form new compound is called displacement reaction	The reaction in which the compound react by an exchange of ions to form New compound is known as double displacement reaction
In displacement reaction high reactive element displace the low reactive element to form new compound	In double displacement reaction exchange if atoms or ions takes placed form a new compound
In displacement reaction after forming a new compound colour changes takes place	Double displacement reaction mostly occurs in solution hence one of the product is insoluble . Precipitate is formed in reaction
It is slow process	It is fast process

<p>It is a single displacement process Only high reactive metal displace less reactive metal</p>	<p>It is double displacement process .in which exchange of ions between both the reactant molecule</p>
<p>Example :</p> <p>1) Iron metal reacts with dilute hydrochloric acid to form iron chloride and hydrogen gas</p> $\text{Fe} + 2\text{HCl} \longrightarrow \text{FeCl}_2 + \text{H}_2$ <p>Iron is more reactive than hydrogen . Iron displace hydrogen to form iron chloride and hydrogen gas It is single displacement only iron displace hydrogen</p> <p>2) Chlorine gas reacts with potassium iodide solution to form potassium chloride and iodine</p> $\text{Cl}_2 + 2\text{KI} \longrightarrow 2\text{KCl} + \text{I}_2$ <p>It is displacement reaction . In which Chlorine is more reactive than iodine .only chlorine displace iodine to form potassium chloride</p>	<p>Example :</p> <p>1) When hydrogen sulphide gas is passed through a copper sulphate solution black colour precipitated of aluminium hydroxide is formed with aluminium chloride</p> $\text{AlCl}_3 + 3\text{NH}_4\text{OH} \longrightarrow \text{Al}(\text{OH})_3 + \text{Al}(\text{OH})_2 + 3\text{NH}_4\text{Cl}$ <p>In the above reaction exchange of ions between two compound to form new compound</p> <p>2) When sodium hydroxide solution is added in hydrochloric acid to form sodium chloride and water</p> $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$ <p>In above mentioned reaction the exchange of ions takes place within two molecule form a new compound</p> <ul style="list-style-type: none"> • Double displacement reaction <p>Also form in acid and bases to form salt and water</p>

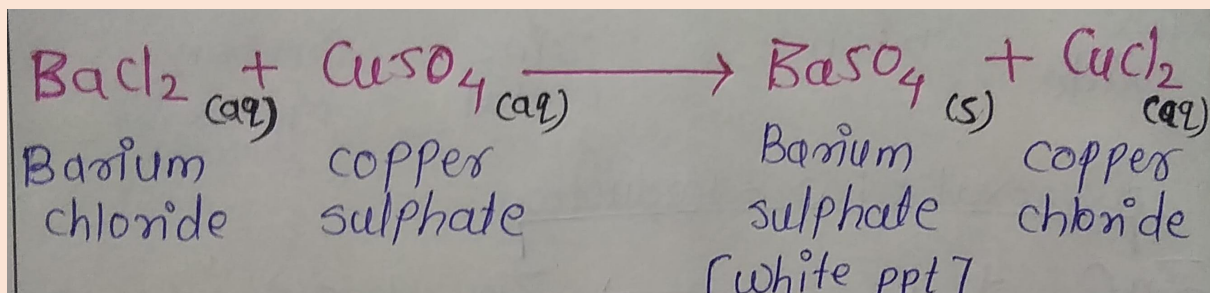
b) What do you mean by precipitated reaction ? Explain with example.

Ans : The reaction in which insoluble solid is form after completion of reaction is known as precipitation reaction.

Precipitation reaction generally occurs when two aqueous solution and solid is react with each other or gas is passed through a solution

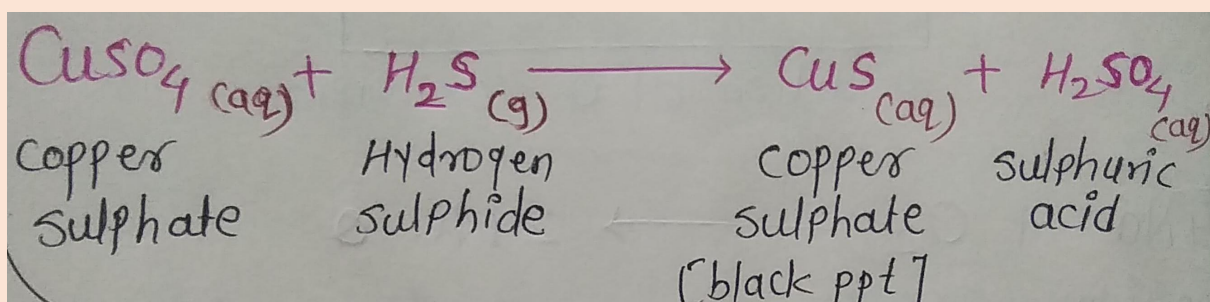
- Generally precipitation reaction is an double displacement reaction
- In precipitation reaction ppt is formed which may be coloured or colourless

- Precipitation occurs because of cation of one aqueous solution and anions of 2nd aqueous solution is combine to form insoluble ionic solid .
 - Example : When two aqueous solution is combined and form precipitated
- 1) When barium chloride solution is added to copper sulphate solution then a white precipitated of barium sulphate is produced with copper chloride solution



In this reaction two aqueous solution is combined and form a insoluble solid of barium sulphate

- When aqueous solution reacts with gas to form precipitated
- 1) When hydrogen sulphide gas is passed through copper sulphate solution

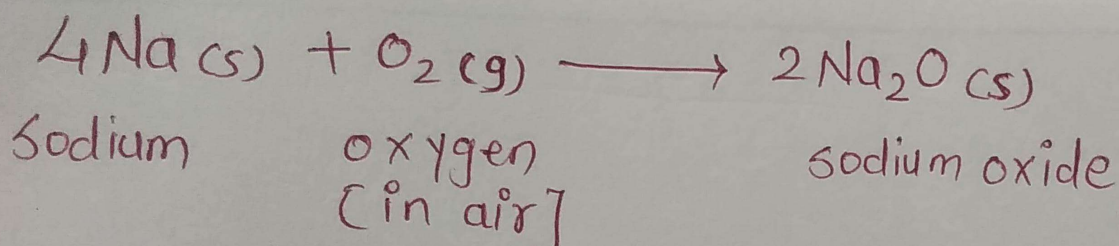


then a black precipitated of copper sulphate is formed with sulphuric acid .
In this reaction gas is passed from solution to form black colour ppt of CuS

34) a) Explained the following term in the gain or loss of oxygen with one example each

1) Oxidation : the oxidation reaction in which addition of oxygen is occurs

- In which atom or molecule is accept the oxygen
- After the addition of oxygen oxidation state is increases of atoms or molecules .

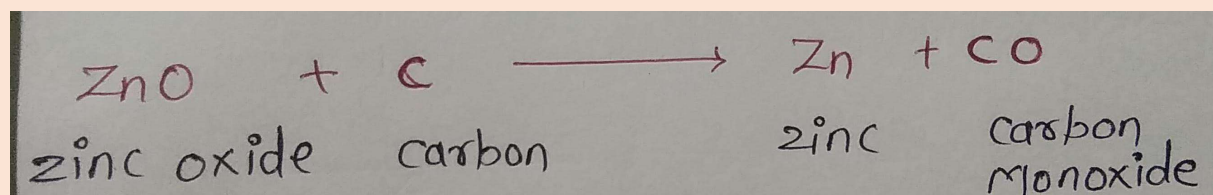


e.g. Sodium reacts with Oxygen in air to form Sodium Oxide

II) Reduction : the reaction in which removal of oxygen from a substance is called reduction

- In which atom or molecule is released oxygen
- After the removal of oxygen from a compound The oxidation state is decreases

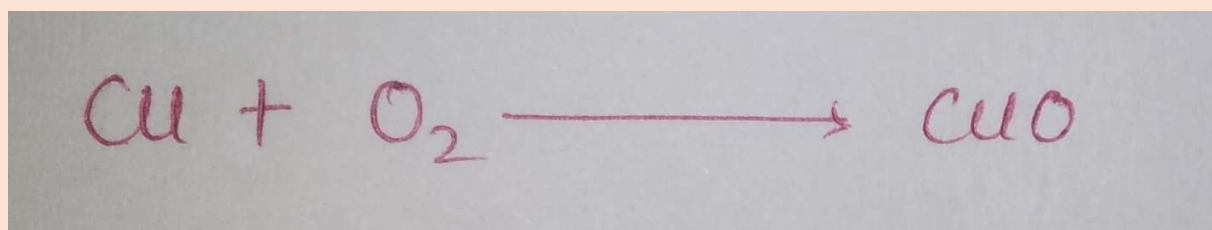
e.g. Zinc Oxide reacts with carbon to form zinc metal and carbon monoxide



b) When copper powder is heated strongly in air , it form a copper oxide .write a balanced chemical equation for this reaction . Name , i) substance oxidised ii) substance Reduced

Ans .: Word equation of above reaction is

Copper + oxygen \longrightarrow copper oxide



The chemical equation of reaction is

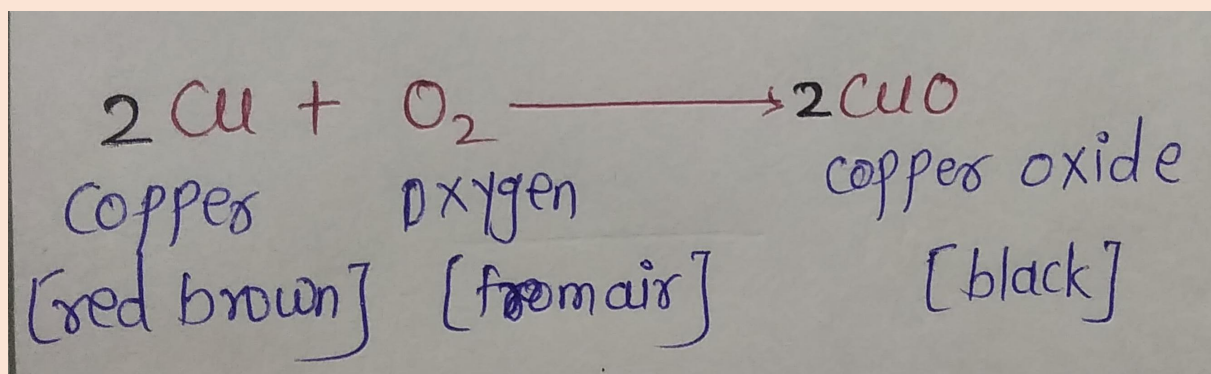
Balancing chemical equation

Count the number of atom present on both the sides

Name of substance	Reactant side	Product side
Copper	1	1
Oxygen	2	1

At left hand side 1 copper atom and 2 oxygen atom is present and at right hand side 1 copper atom and 1 oxygen atom is present

To equal the copper and oxygen atom .multiply Cu by 2 and write it 2 Cu .again multiply CuO by 2 and write it 2 CuO



The balanced chemical equation is

In above reaction copper changes to copper oxide . Copper accept the oxygen and form copper oxide . Addition of oxygen is oxidation .hence copper (Cu) is oxidised

Oxygen (O₂) is changes to Copper oxide (CuO) . Oxygen accept copper metal .addition of metal is reduction .hence Oxygen (O₂) is reduced .

The **Copper (Cu) is oxidised and oxygen (O₂) is reduced**

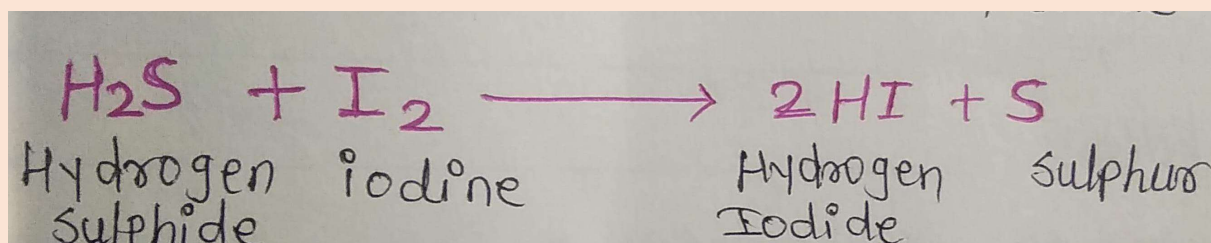
35) a) Define the following term of gain or loss of hydrogen with one example of each

1) Oxidation : the reaction in which loss of hydrogen takes palce is called oxidation reaction.

Or removal of electropositive element is called oxidation reaction

Oxidation number of atom is increases

Example : When hydrogen sulphide is reacts with iodine to form hydrogen iodide



and sulphur .

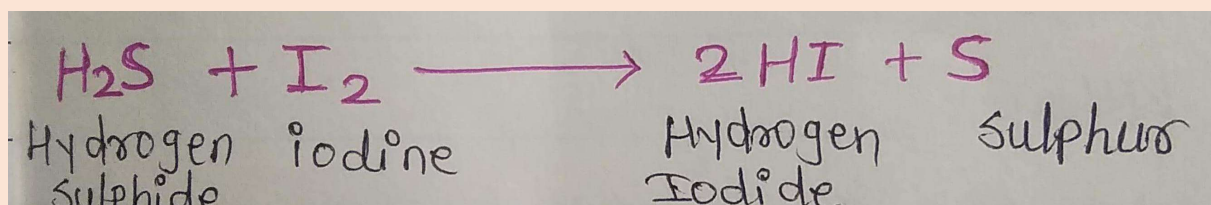
In above reaction H₂S (Hydrogen Sulphide) is changes to HI (hydrogen iodide) removal of hydrogen takes place . It is oxidation reaction .H₂S is oxidised and H₂S is reducing agent

II) Reduction: the reaction in which addition of hydrogen takes palce is called reduction reaction

Or addition of electropositive element is called oxidation reaction

Oxidation number of atom is decreases

Example : When hydrogen sulphide is reacts with iodine to form hydrogen iodide and sulphur .



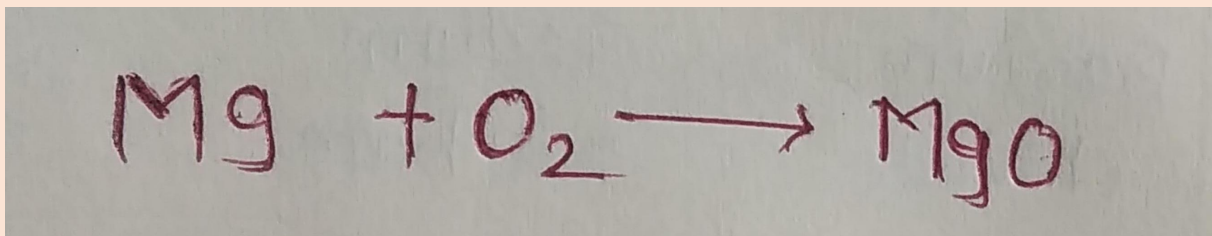
Iodine (I₂) is changes to hydrogen iodide . Addition of hydrogen takes place . It is reduction .

b) When a magnesium ribbon is heated, it burns in air to form magnesium oxide, write a balanced chemical equation. Name i) substance oxidised ii) substance Reduced

Ans : The word equation of above reaction is

Magnesium + oxygen \longrightarrow magnesium oxide

Balanced chemical equation :

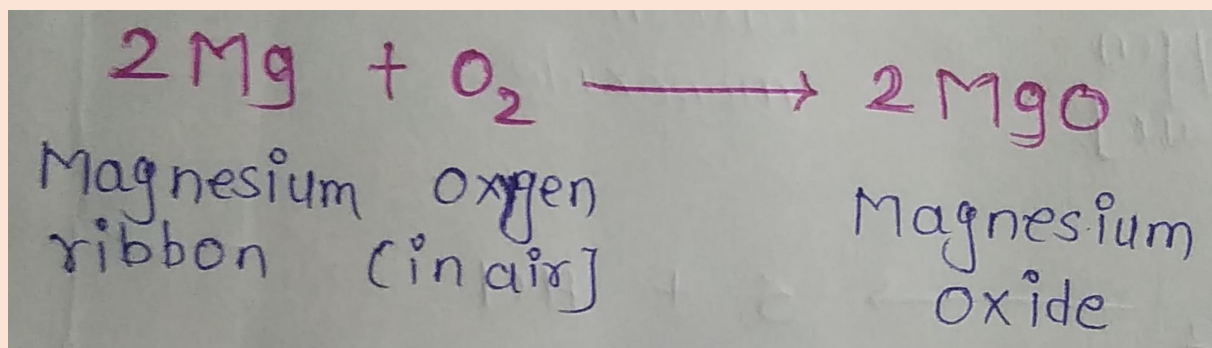


Count the number of atom

<u>Name of the atoms</u>	<u>Reactant side</u>	<u>Product side</u>
Magnesium	<u>1</u>	<u>1</u>
Oxygen	<u>2</u>	<u>1</u>

At reactant side 1 magnesium atom and 2 oxygen atom is present and at product side 1 magnesium atom and 1 oxygen atom is present. To balance the atom on both the sides , multiply Mg by 2 and write it 2 Mg . And multiply MgO by 2 and write it 2 MgO

The balanced chemical equation is



In above chemical reaction magnesium is change to magnesium oxide . Oxygen atom is added at magnesium atom to form magnesium oxide . By definition addition of oxygen is oxidation .hence oxidation occurs at magnesium . Hence magnesium (Mg) is oxidised

Oxygen is change to magnesium oxide. Addition of Magnesium metal is takes place at oxygen atom . addition of metal is reduction at oxygen atom reduction is takes place .hence Oxygen (O₂) Is reduced

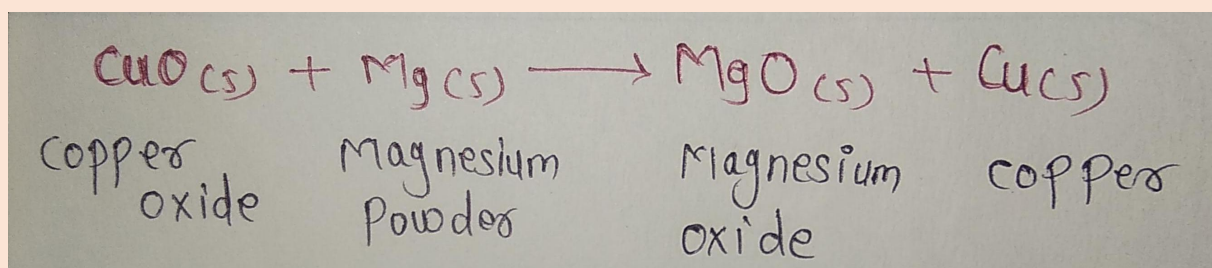
Magnesium (Mg) atom is oxidised and Oxygen (O₂) is reduced

36) What is mean by a) Displacement reaction , and b) Double displacement reaction ? Explain with the help of one example of each .

Ans - a) Displacement reaction :: The reaction in which one element is takes place other elements is called displacement reaction

- In displacement reaction highly reactive element replace a less reactive element
- It is a slow reaction
- It is a single displacement reaction in which only one substance is replaced other substances
- Displacement reaction is takes place mostly in aqueous solution With solids
- At Mostly reaction colour changes is takes place

Example: 1) When Copper Oxide is heated with magnesium powder the

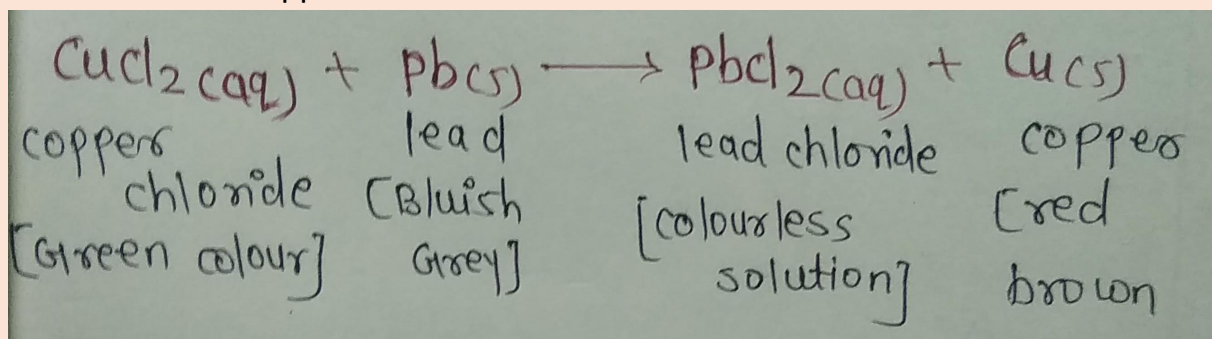


magnesium oxide and Copper is formed

Magnesium is more reactive than copper

- 2) When strip of lead is placed in a solution of copper chloride then lead chloride solution and copper metal are formed .

Colour of copper chloride is faded due to formation of lead chloride .



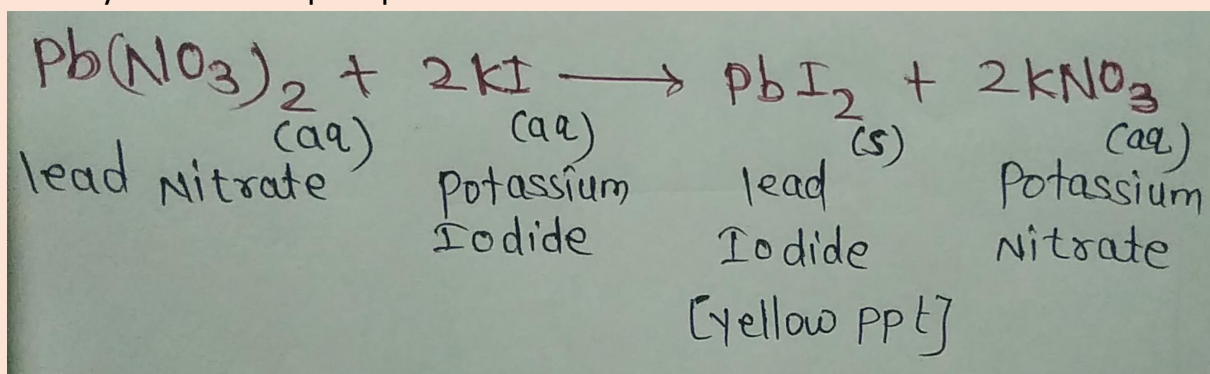
Redish brown layer form on lead strip . Lead is more reactive than copper

b) Double Displacement Reaction : The reaction in which two compound reacts by an exchange of ions to form two new compound are called double displacement reaction

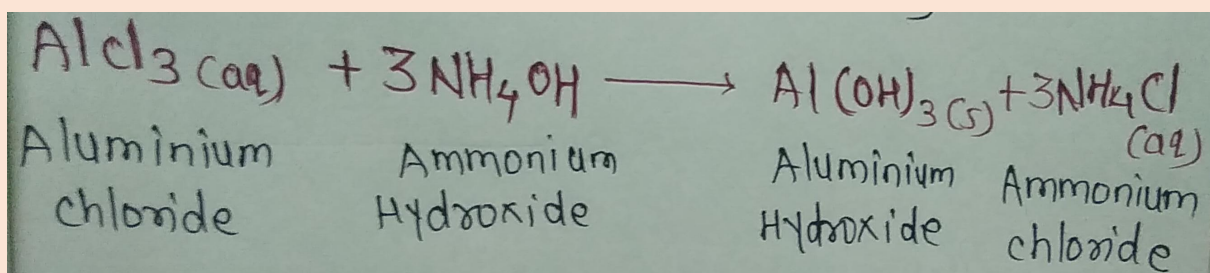
- In which exchange of cation and anions is takes place
- In double displacement insoluble solid i.e. precipitated is formed
- It is fast reaction
- It is double displacement in which two substance is replaced by exchanging their ions or atoms
- Double displacement reaction is generally occurs in aqueous solution

Example :

- 1) When potassium iodide solution is added to lead solution then formed a yellow colour precipitated of lead iodide with Potassium nitrate



- 2) When hydrogen gas is passed from white precipitated of aluminium



hydroxide with ammonium chloride solution

37) a) Why are decomposition reaction called opposite of combination reaction? Explain with equation of this reaction

Ans - The combination reaction in which two or more substance is combined with each other and formed a new compound

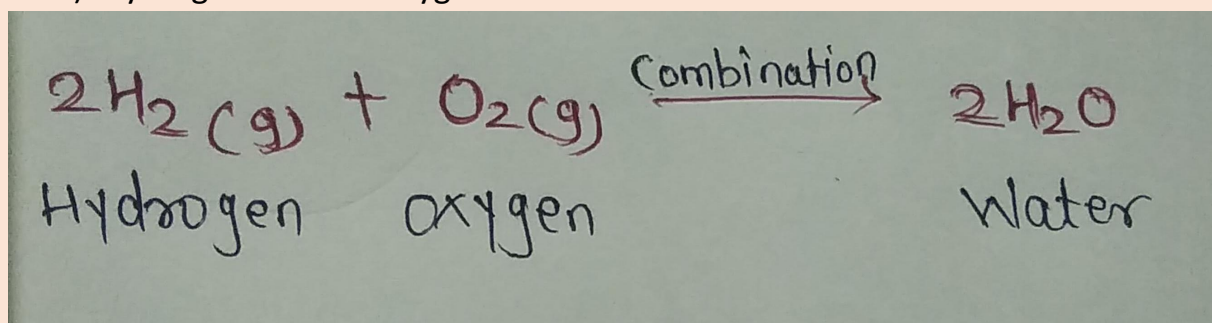
The decomposition reaction in which one substance is split into two or more similar substance .

Combination means addition of two or more substance form a new substance

Decomposition means breakdown of one substance into two or more substance .that why said that decomposition reaction is opposite of combination reaction

Example :: Combination reaction

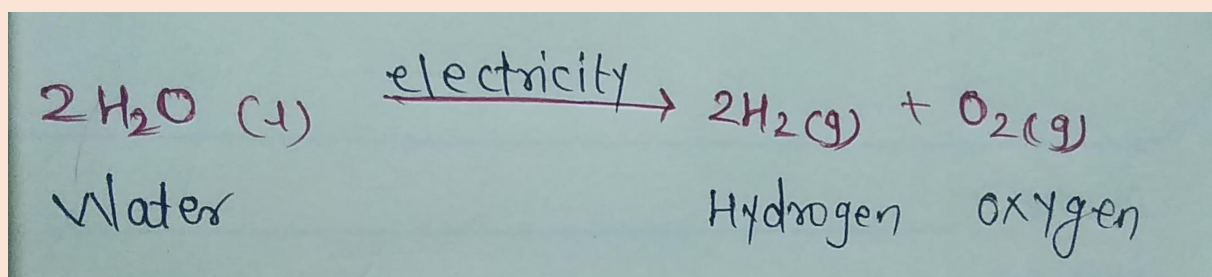
1) Hydrogen burns in oxygen to form water



Decomposition reaction

1) Electrolysis of water

When electric current is passed through acidified water . It



decomposed to give hydrogen and oxygen atom

Above reaction clearly show that opposite of reaction

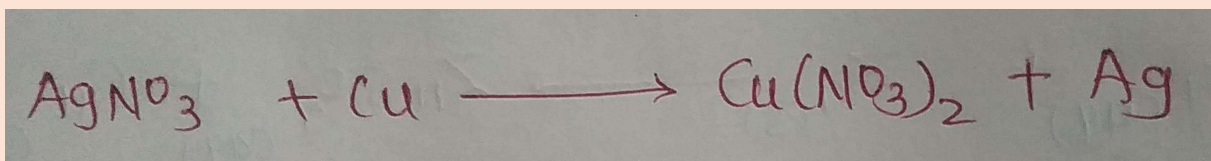
b) Express the following fact in the form of balanced chemical equation

When a strip of copper metal place in a solution silver nitrate , metallic silver is precipitated and a solution containing copper nitrate is formed

Ans : Word equation of above reaction is

Silver nitrate + copper \longrightarrow copper nitrate + silver

After writing the formulae in the word equation , the chemical equation is becomes as



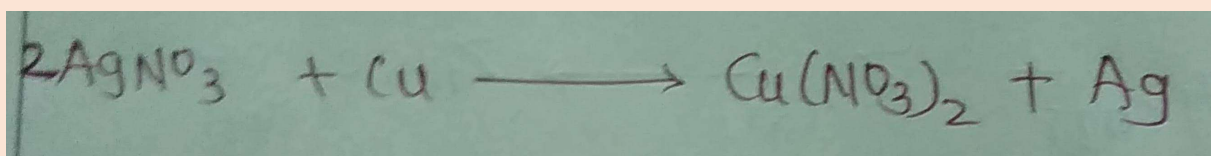
Balancing chemical equation :

Count the number of atom present at both the sides

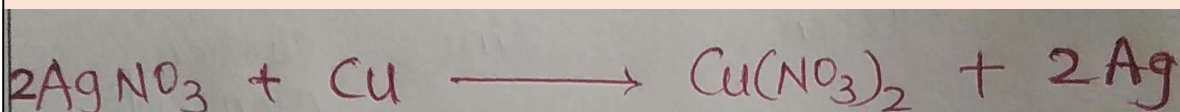
Name of the atoms	Reactant side	Product side
Silver	1	1
Nitrogen	1	2
Oxygen	3	6
Copper	1	1

At left hand side 1 silver atom,1 Nitrogen atom , 3 oxygen atom and 1 copper atom is present .at right hand side 1 silver atom ,2 Nitrogen atom , 6 oxygen atom and 1 copper atom is present

To equal the nitrogen and oxygen atom ,multiply AgNO_3 by 2 and write it 2AgNO_3



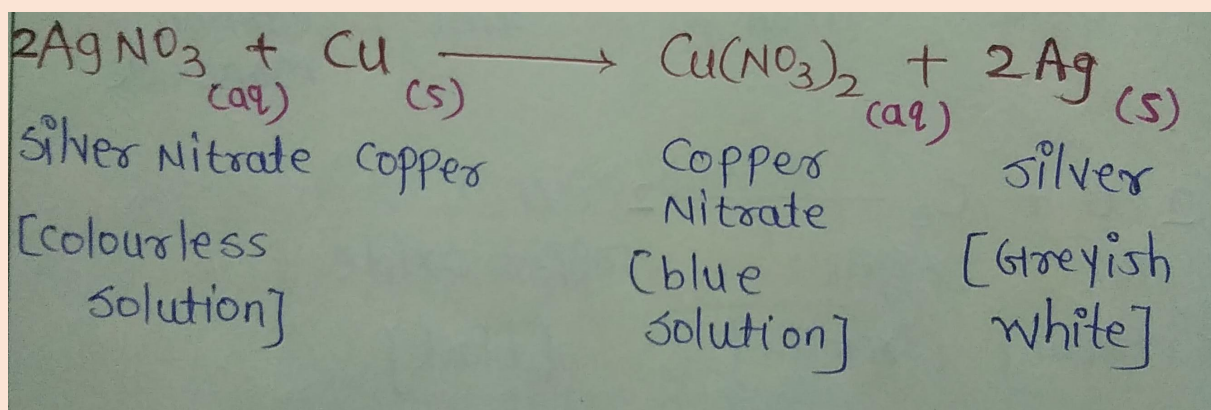
After count the atoms at left hand side equal number of atom is present except silver . 2 silver atom is present at left hand side and 1 silver atom is present at



right hand side . To equal the silver atom , multiply Ag by 2 and write it 2 Ag

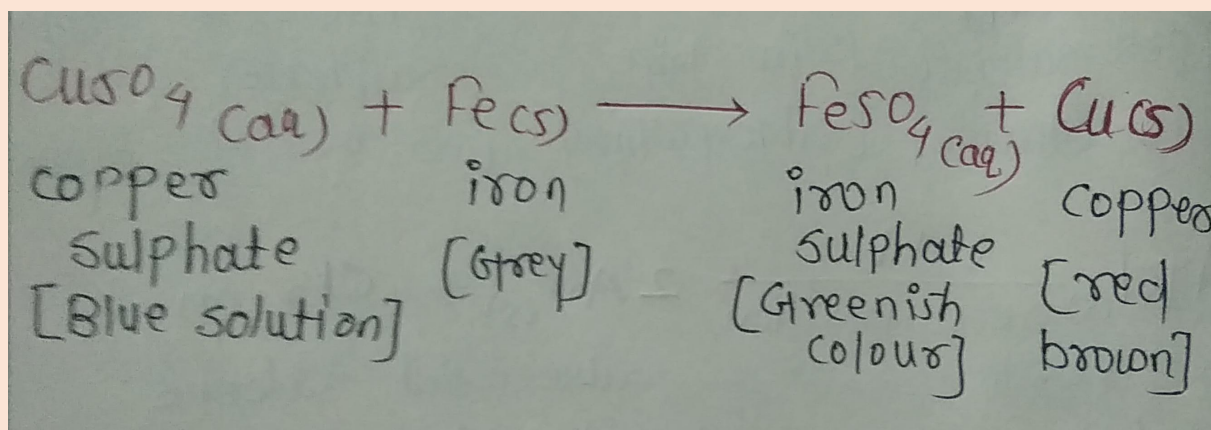
Again count the number of atom present at both the sides , equal number of atom is present on both the sides

Balance chemical equation is



38) a) What's happened when a piece of iron metal is placed in copper sulphate solution ? Name the type of reaction involved

Ans : When a piece of iron metal is placed in copper sulphate solution iron



sulphate solution and copper formed

In this reaction iron is more reactive than copper hence it replace copper from copper sulphate solution and after displacement deep blue colour of copper sulphate solution is change to light green colour of iron sulphate solution with red brown coating of copper on iron metal

It is a **displacement reaction** . In which iron displace copper

b) Write the balanced chemical equation with the state symbol of following reaction

Barium chloride solution is react with the sodium sulphate solution to give insoluble barium sulphate and a solution of sodium chloride .

Ans -. Word equation of above reaction is .

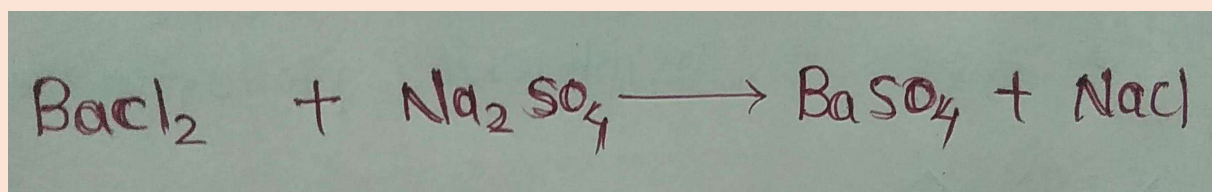
Barium chloride + sodium sulphate \longrightarrow barium sulphate + sodium chloride

Chemical formula of barium chloride is BaCl_2

Chemical formula of sodium sulphate is Na_2SO_4

Chemical formula of barium sulphate is BaSO_4

Chemical formula of sodium chloride is NaCl



Afetr addition the formulae Chemical equation of above reaction is

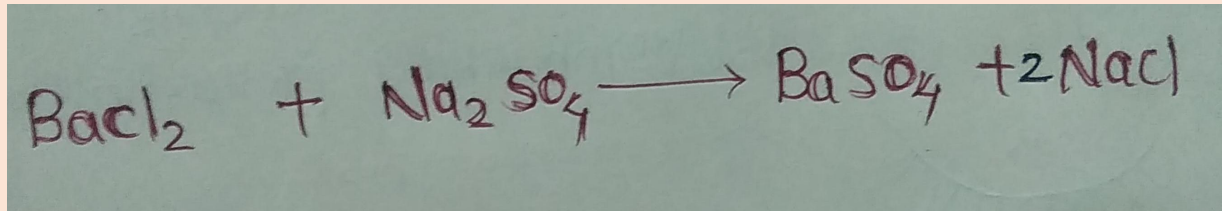
Balancing chemical equation

Count the number of atom present on both the sides

Name of element	Reactant side	Product side
Barium	1	1
Sodium	2	1
Chlorine	2	1
Sulphur	1	1

Oxygen	4	4
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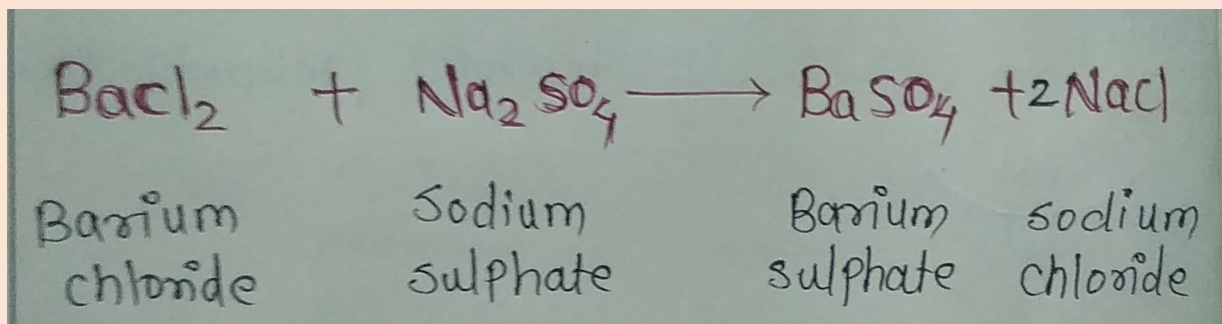
At reactant side 1 Barium atom, 2 sodium atom , 2 chlorine atom , 1 sulphur atom and 4 oxygen atom is present .at product side 1 Barium atom,1 sodium atom ,1 chlorine atom , 1 sulphur atom and 4 oxygen atom is present



To equal the sodium and chlorine atom , multiply NaCl by 2 and write it 2 NaCl

Again count the number of atom

Equal number of atom is present on both the sides



Balanced chemical equation is

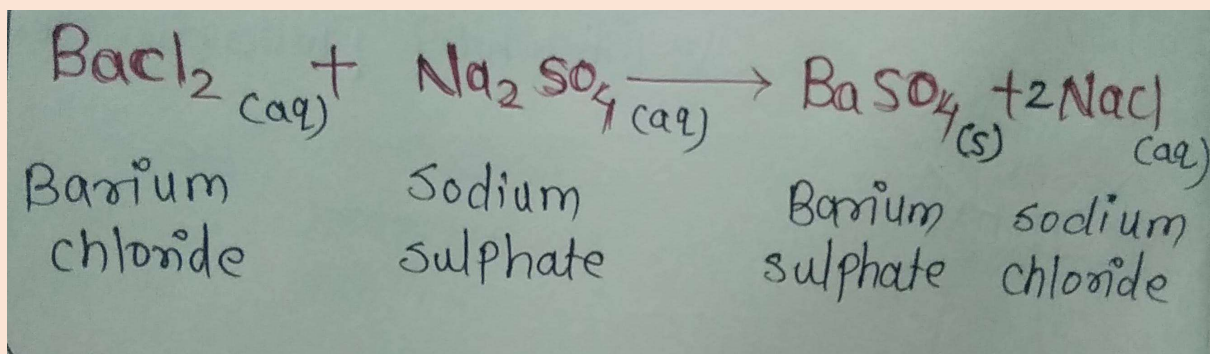
State of compound

The barium Chloride is present in aqueous solution , it write as $\text{BaCl}_{2(aq)}$

Sodium sulphate solution is present in aqueous solution it write as $\text{Na}_2\text{SO}_{4(aq)}$

Barium sulphate is present in insoluble solid form it written as $\text{BaSO}_{4(s)}$

Sodium chloride is present in aqueous solution form it written as $\text{NaCl}_{(aq)}$



After writing the state symbol the chemical equation becomes as

39) In the chemical reaction represented by the following equation



- I) **Name the substance oxidised**
- II) **Name the substance reduced**
- III) **Name the oxidising agent**
- IV) **Name the reducing agent**

Ans : I) **Name the substance oxidised :** H_2 is changes to H_2O .hydrogen accept the oxygen from carbon dioxide to form water . addition of oxygen is oxidation. The substance at which oxidation takes place which is oxidised . **H_2 is oxidised**

II) **Name the substance which is reduced :** CuO is changes to Cu . Removal of oxygen from CuO to from. Cu matal .removal of oxygen is called reduction reaction .tha substance at which reduction takes place which is reduced . **CuO is reduced**

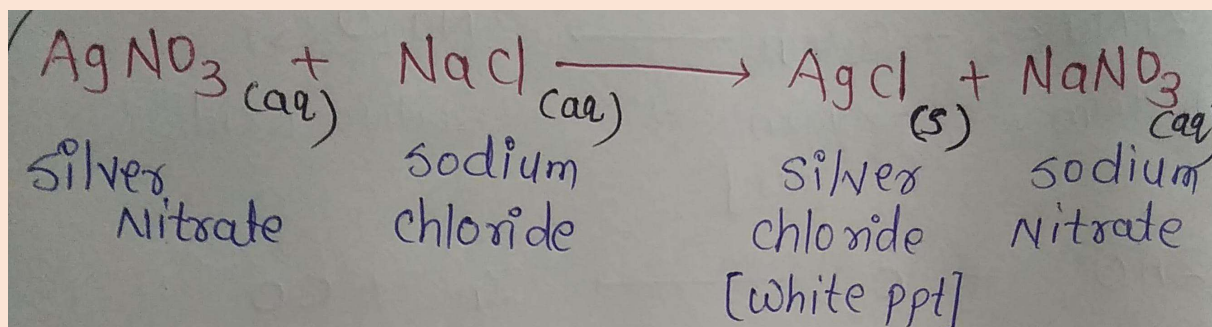
III) **Name the oxidising agent :.** The substance which is reduced is called oxidising agent . CuO supplies oxygen to oxidation process hence **CuO is oxidising agent**

IV) **Name the reducing agent :** the substance which is oxidised is known as reducing agent . Hydrogen is removing oxygen from CuO hence **H_2 is reducing agent**

40) What's happen when silver nitrate solution added to sodium chloride solution

a) Write the equation for the reaction which takes place

Ans : Silver nitrate solution is added to sodium chloride solution white precipitate



of silver Chloride is formed with sodium nitrate solution

In this reaction two solution silver nitrate and sodium chloride is react to form two new compound silver chloride along with ppt and sodium nitrate

b) Name the type of reaction involved :

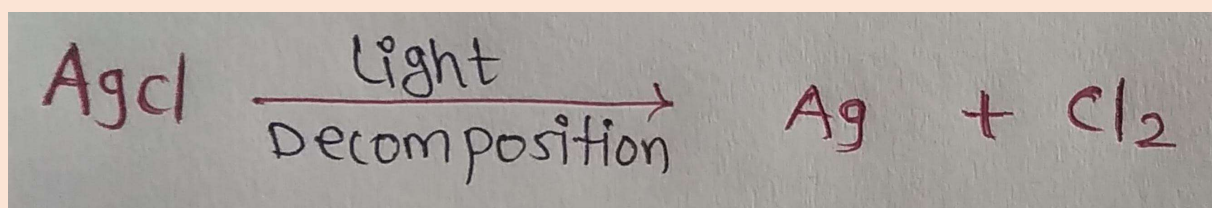
It is double displacement reaction because there exchange of ions takes place . Silver ions (Ag^+) of silver nitrate react with chlorine ions (Cl^-) of sodium chloride to form new compound $\text{Ag}^+ \text{Cl}^-$ (AgCl) .

And sodium ions (Na^+) from NaCl combined with nitrate ion (NO_3^-) to form $\text{Ag}^+ \text{NO}_3^-$ (AgNO_3)

41) What happens when silver chloride is exposed to sunlight ? Write a balanced chemical equation for this reaction give one use of such a reaction

Ans : Silver Chloride is exposed in sunlight to form silver metal and chlorine

Silver Chloride \longrightarrow silver + chlorine



Chemical equation of above reaction is .

In this reaction the white colour of AgCl is change to greyish white deu to formation of silver . This decomposition takes place in sunlight

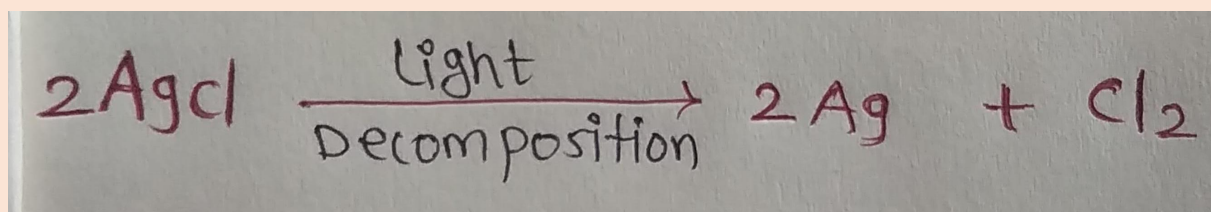
Balancing chemical equation :

Count the number of atom present on both the sides

Name of atoms	Reactant side	Product side
Silver	1	1
Chlorine	1	2

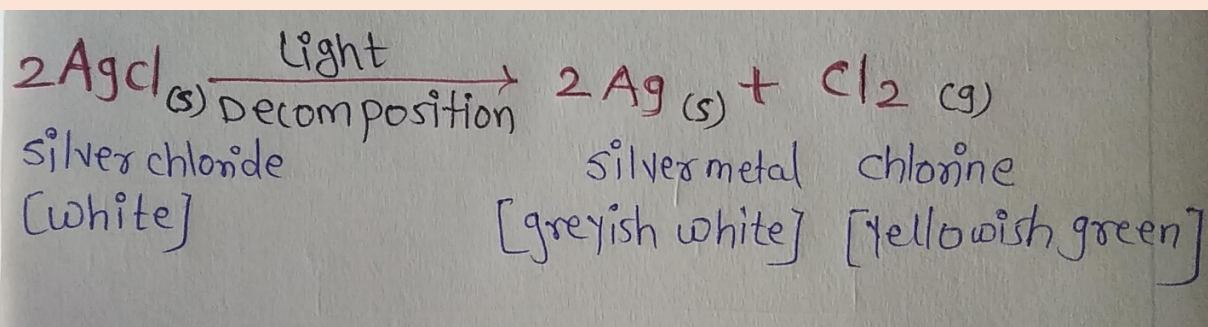
At reactant side 1 silver atom , 1 chlorine atom is present and product side 1 silver atom and 2 chlorine atom is present

To equal the chlorine and silver atom , multiply AgCl by 2 and write it 2 AgCl . And



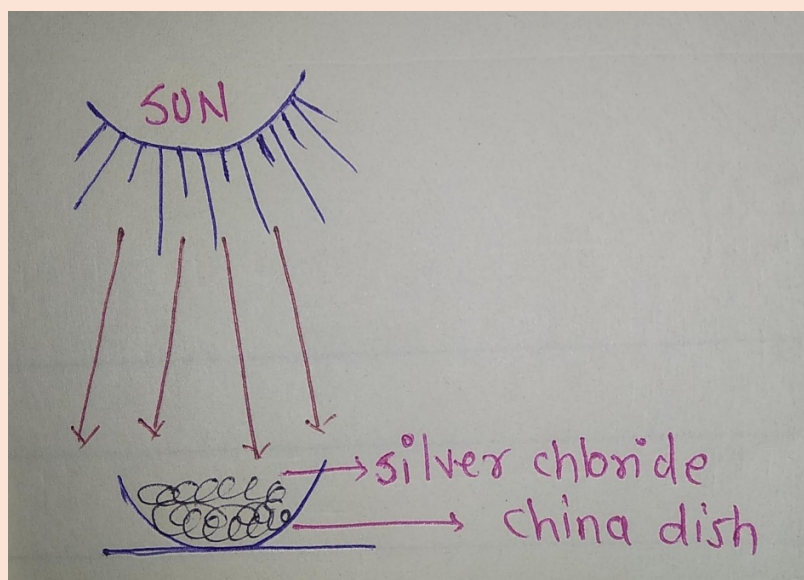
multiply Ag by 2 write it 2Ag

Again count the number of atom present on both the sides, equal the number of atom present .



Balanced chemical equation is

Activity : Take 2 gram of white colour silver chloride in a china dish



Place the china dish in sunlight for the some time .

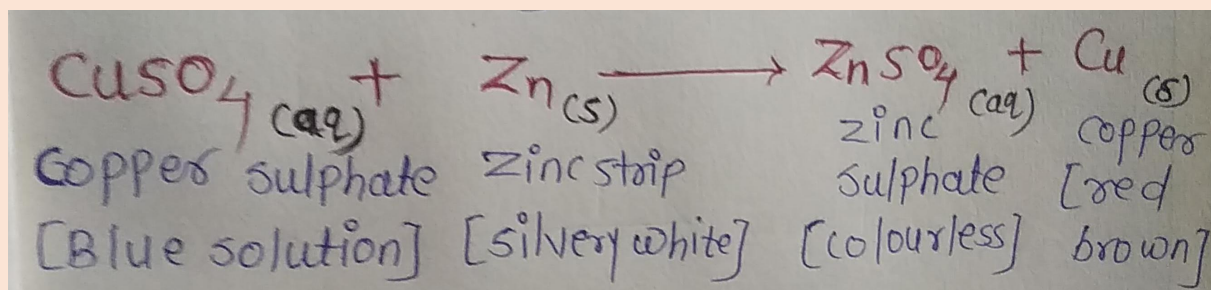
After some time we see that white colour silver Chloride change to greenish white due to formation of silver

Use : it is use in balck white photography

42) What happens when a zinc strip is dipped into a copper sulphate solution

a) Write a equation for the reaction that takes place

Ans – Zinc strip is dipped into a copper sulphate then zinc sulphate and copper is



formed

Zinc is more reactive than copper hence zinc displace copper to form zinc sulphate . Blue colour copper sulphate change to colourless due to formation of zinc sulphate . And red brown colour of copper is deposited on zinc strip

b) Name the type of reaction involved

Ans -. It is a displacement reaction. In which zinc metal displace copper from copper sulphate solution.

• LONG TYPE QUESTIONS :

43) a) Explain the term of corrosion with an example. Write a chemical balanced equation to show the corrosion of iron.

Ans : Corrosion is the process in which metal are eaten up by the action of air , moisture or a chemical (such as an acids) on their surface.

Simply corrosion is a layer on metal compound formed on the surface due to the presence of moisture, acids and oxygen in air

Corrosion is occurs due to oxidation of metals by oxygen in air

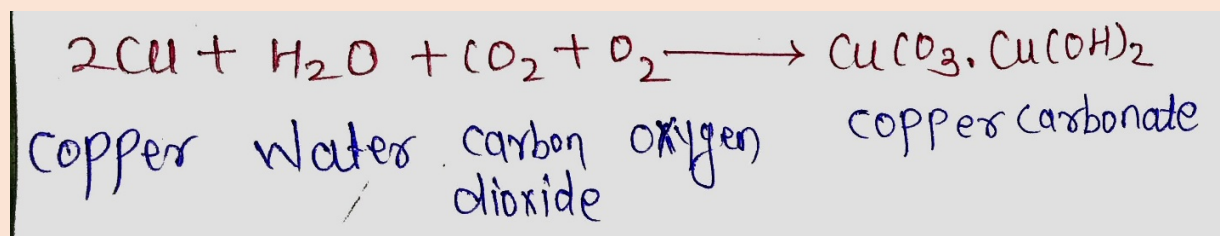
Due the corrosion the object are waken their structure , bodies and cuts their short life.

Corrosion is a degradation process of material

Corrosion is seen in all metal, when exposed to air

Corrosion caused damage to metal articles like, bridge, iron railings , ships and other substance which we daily used.

Example : When copper metal made vessel is kept in a humid atmosphere for a some days a green coating is formed on the surface of vessel it is due to the

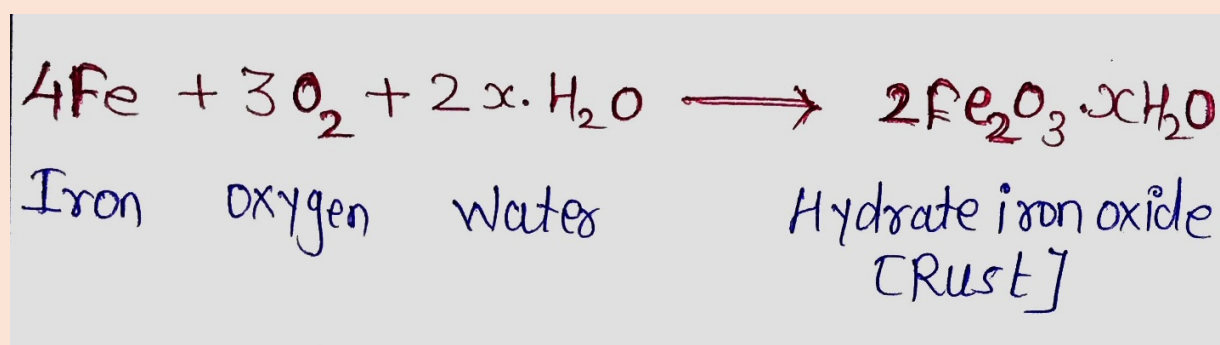


formation of basic copper carbonate

In the above process copper oxide is oxidised to Cu^{2+}

Corrosion of iron : When iron metal is exposed in air, it is affected by moisture (water) in air, oxygen in air or any chemical substances to form a reddish brown layer on its surface it is called rust.

Iron metal is oxidised by oxygen in air and moisture in air to form reddish brown



layer of hydrate iron oxide

Rusting of iron is redox reaction in which oxidation of metal is occurs

After corrosion rust is formed which is soft and porous substance.

Rusting of iron is continuous process in which the iron is fully damage .

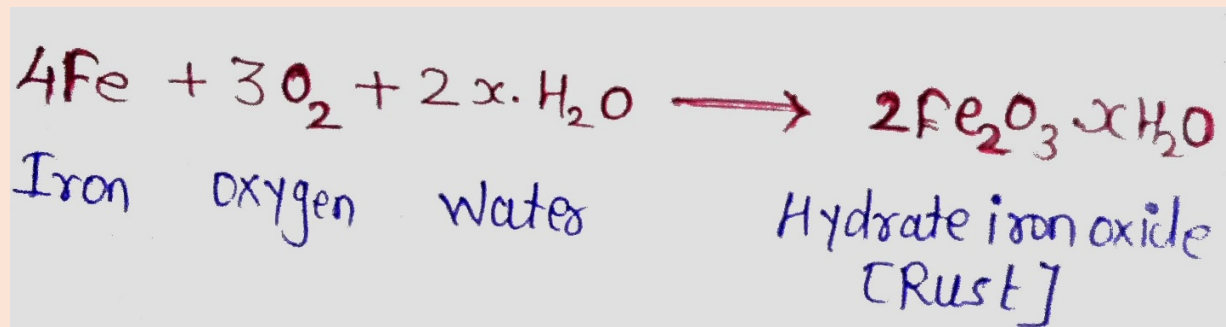
Lost of money is invested to prevent the corrosion of iron and steel object

b) What Special Name is given to corrosion of Iron?

Ans : The special name is given to corrosion of iron is Rusting.

Rusting is the process which iron metal form reddish brown layer after action of any substance.

When the iron metal exposed in the air the oxidation process occurs on iron metal the red brown coloured layer form on Iron metal



The chemical formula of Rust is $2\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$

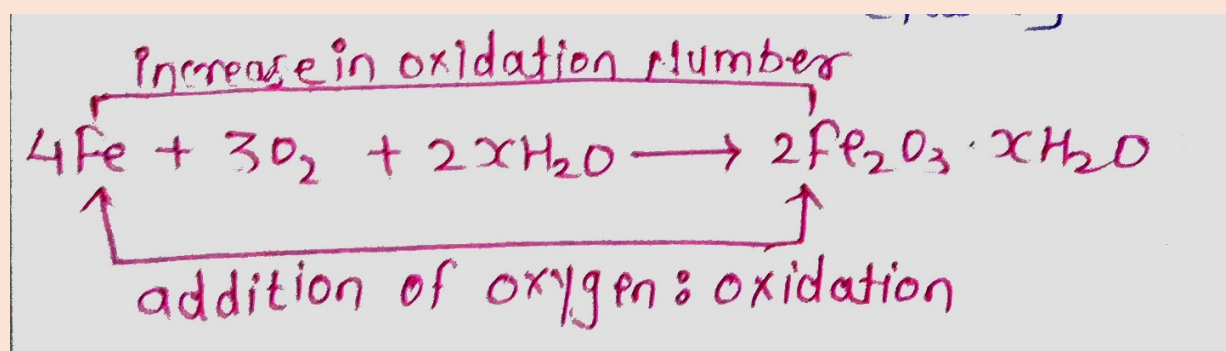
c) What type of chemical reaction is involved in corrosion of iron

Ans : Oxidation reaction is involved in corrosion of iron

In the rusting of iron the iron metal react with oxygen in air and water (in moisture) to form ferrous oxide hydrate.

Iron (Fe) accept oxygen to form $2\text{Fe}_2\text{O}_3$. The oxidation number of ferrous is increases.

When addition of oxygen is takes place is called oxidation. Hence rusting of iron is



oxidation reaction .

d) Name any three object (or structure) which are gradually damage by corrosion of iron and steel .

Ans : Car Vehicles, Ships and bridges this three object are gradually damage by corrosion .

44) a) Explain the term Rancidity . What type of damaged is caused by Rancidity ?

Ans : Rancidity : Rancidity is the process in which oxidation is cause at fat and oil containing food due to this oxidation, the smell and taste of the food is change.

Similarly it is called spoiling of food

It is the condition produced by aerial oxidation of fats in food marked by unpleasant smell and taste is called Rancidity.

Rancidity is called in Hindi is Uikritgandhita

The damage caused by Rancidity : It damage the food items which contains oil and fat.

It cause deterioration in food.

Fat and oil containing food are kept for long time it damage because of causing oxidation process. It may become rancid. The test of food, smell is change . It may causing infection after eating.

Due to Rancidity unpleasant smell ,change in flavour and bad taste are occurs .

b) What type of chemical reaction is responsible for causing Rancidity

Ans .: The oxidation reaction is caused for Rancidity.

When the oily and fatty food are kept for long time ,it is reacted with oxygen in air and become rancid.

c) State and Explain the various method for preventing and retarding the Rancidity of food

Ans : To prevent and retarding the food from oxidation process following five method is used

- 1) Rancidity can be prevented by adding antioxidant to foods containing fats and oils :

Antioxidant is a substance or chemical which is retarded the oxidation process of foods . antioxidant is reducing agent when the antioxidant is added in food the oxidation process does not occurs easily . It may not becomes rancid it is edible for long time .

Two common antioxidant are **BHA (Butylated Hydroxy– Anisol)** and **BHT (Butylated Hydroxy – Toulene)**

- 2) Rancidity can be prevented by packing fat and oil containing food in nitrogen gas :

The manufacturing of potato chips and other similar product is packed in plastic bags along with nitrogen gas. The nitrogen gas is prevented from oxidation when the nitrogen gas is filled in plastic bags with food .no other gases like oxygen is available for oxidation. . There is no chance to get rancid and oxidation

Most of the oily food is packed in plastic bag is along with nitrogen gas for prevention of Rancidity.

- 3) Rancidity can be prevented by keeping food in a refrigerator :

Refrigerator have low temperature when the food is kept in it. The oxidation process is slow down . It may used for long time by this Rancidity is retarded

- 4) Rancidity can be retardedby storing food in tight container :

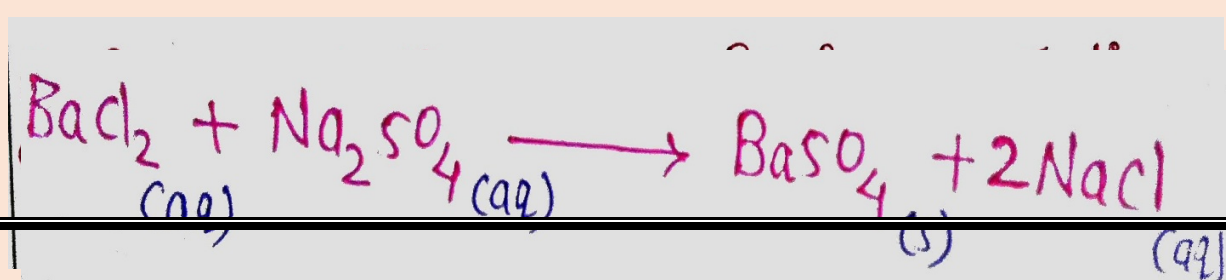
In air tight container there is no presence of oxygen. When food is place in it oxidation process didn't occurs. Due to reduce exposure of Oxygen the development of Rancidity is prevented .

- 5) Rancidity can be retarded by storing food away from light

In absence of light the oxidation process is slow down .

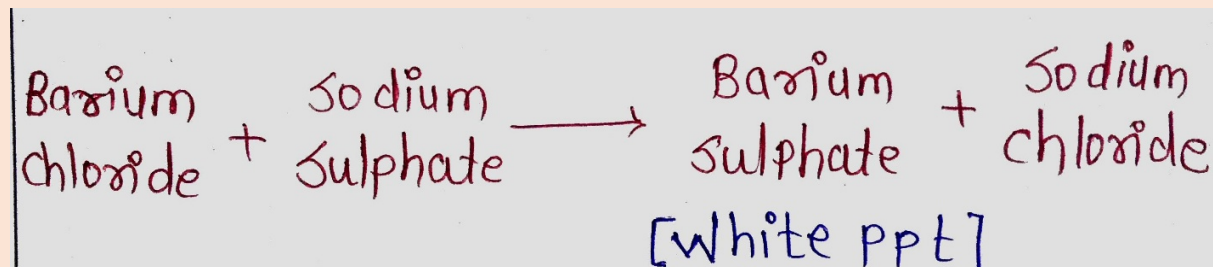
45) a) What happens when an aqueous solution of sodium sulphate is reacts with an aqueous solution of barium chloride

Ans :: When aqueous solution of barium sulphate is added in aqueous solution of barium chloride the white colour precipitated of barium sulphate is form with the sodium chloride solution



b) Write the chemical balanced chemical equation for the reaction .

Ans : Word equation of above reaction is

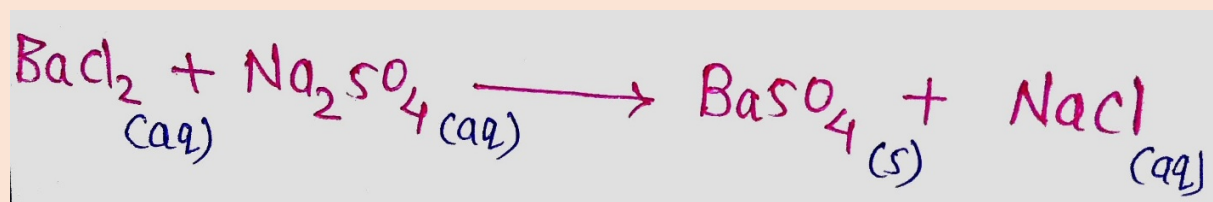


The chemical formula of sodium sulphate is Na_2SO_4

The chemical formula of barium chloride is BaCl_2

The chemical formula of barium sulphate is BaSO_4

The chemical formula of sodium chloride is NaCl



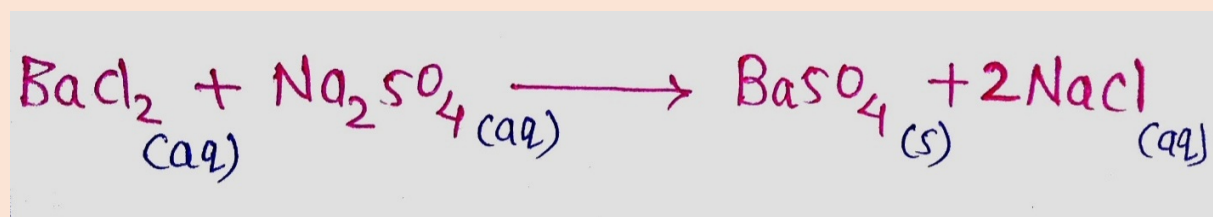
After adding the chemical formulae the chemical equation is becomes as

Balancing chemical equation :

Count the number of atom present on both the sides

Name of the atoms	Reactant side	Product side
Sodium	2	1
Chlorine	2	1
Barium	1	1
Sulphur	1	1
Oxygen	4	4

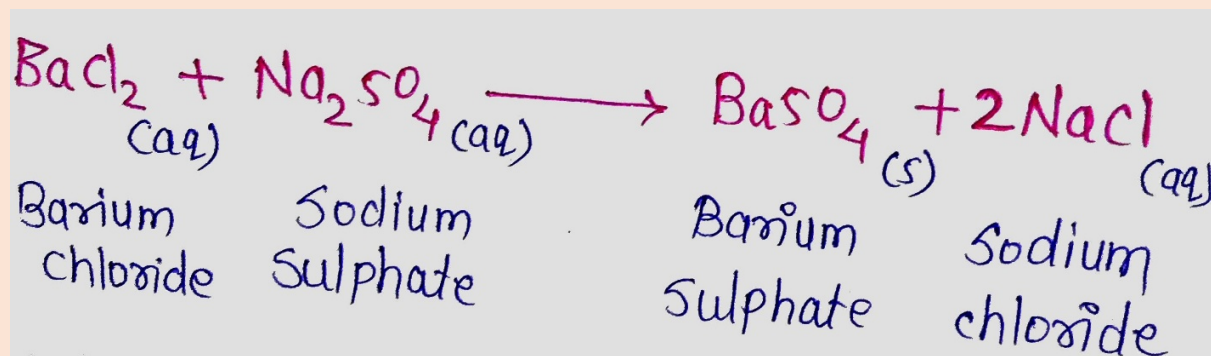
To equal the sodium and chlorine atom at product side , multiply NaCl by 2 and



Write it 2 NaCl . Rewrite the chemical equation .

Again count the number of atom present on both the sides

Equal number of atom is present . Hence balanced chemical equation is



c) State the physical condition of reactant in which reaction will not takes place .

Ans : When the reactant is present in solid state the reaction will not occurs .

It must be in aqueous solution.

d) Name the type of reaction will occurs .

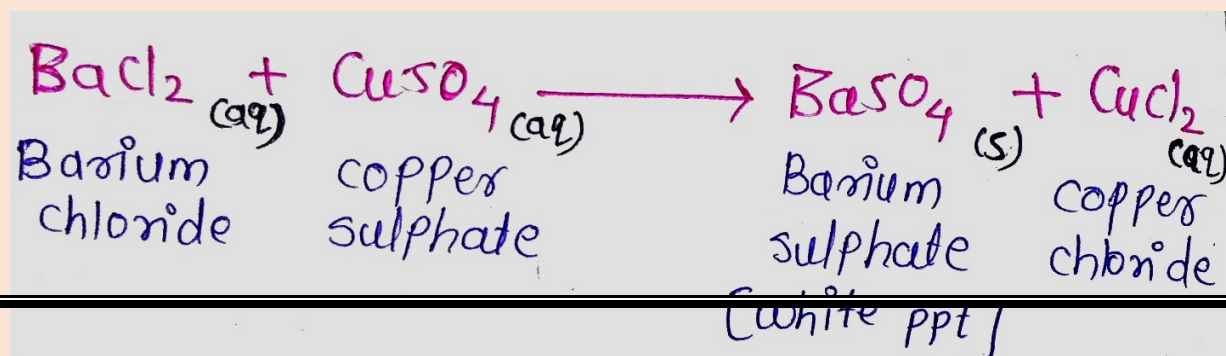
Ans : It is double displacement reaction.

In the above reaction two displacement are takes place. Exchange of ions takes place barium ion (Ba^+) from barium chloride combine with sulphate ion (SO_4^-) from sodium sulphate to form barium sulphate ($\text{Ba}^+ \text{SO}_4^-$)

And sodium ion (Na^+) from sodium sulphate is react with chloride ion (Cl^-) from barium chloride to form sodium chloride ($\text{Na}^+ \text{Cl}^-$)

e) Give one example of other reaction which is Same type of above reaction

Ans : When barium chloride solution is added to copper sulphate solution , then n a white precipitated of barium sulphate is produced along with copper chloride



solution

It is double displacement reaction. Barium chloride and copper sulphate is react by an exchange of ions to form a new compound barium sulphate and copper chloride .