

## Chemical reaction and equation

### Short type questions

#### 1> What type of reaction is represented by the digestion of food in our body?

Ans – In digestion of food proteins, fats, carbohydrates is decomposed and formed sugar (glucose) and amino acids with energy.

**Decomposition reaction** is involved to digestion the food.

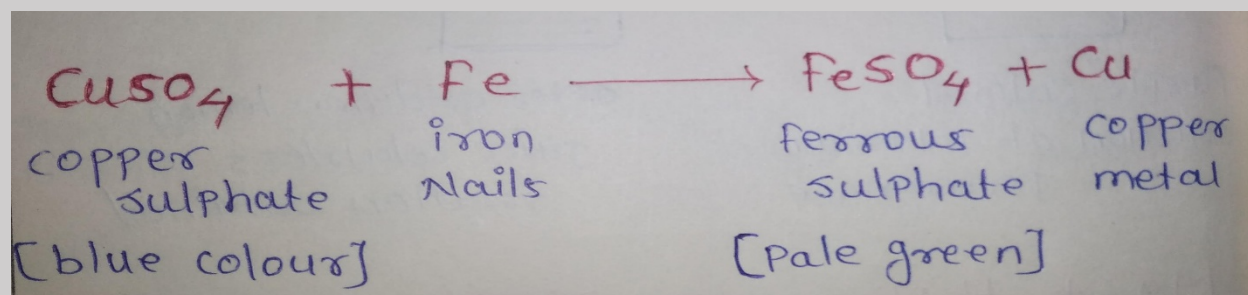
#### 2> Name the various type of chemical reaction

Ans – there are 5 types of chemical reaction

- I) Combination reaction
- II) Decomposition reaction
- III) Displacement reaction
- IV) Double displacement reaction
- V) Oxidation and reduction reaction

#### 3> What does the colour of copper sulphate solution change when an iron nail is kept immersed in it ?

Ans – the iron is more reactive than copper when it is immersed in copper sulphate solution, it displace copper from copper sulphate solution to form ferrous sulphate and copper



Blue colour of copper sulphate solution is changes to pale green due to displacement reaction are takes place here

**2> Write the balanced chemical equation for the following reaction**

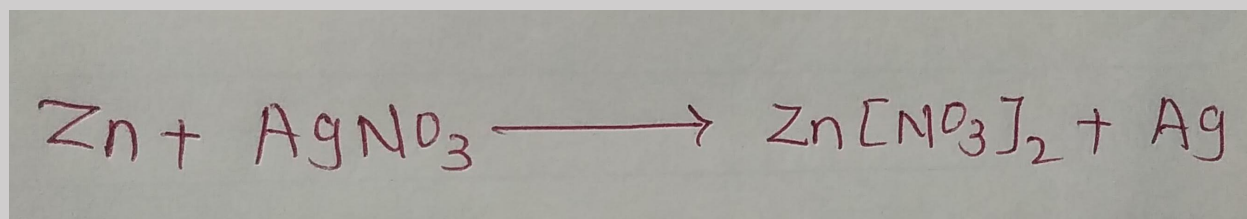
Zinc + silver nitrate  $\longrightarrow$  zinc nitrate + silver

Ans – the chemical formula of silver nitrate is  $\text{Ag}(\text{NO})_3$

The element zinc denoted by Zn

The element silver is denoted by Ag

The chemical formula of zinc nitrate is  $\text{Zn}(\text{NO}_3)_2$

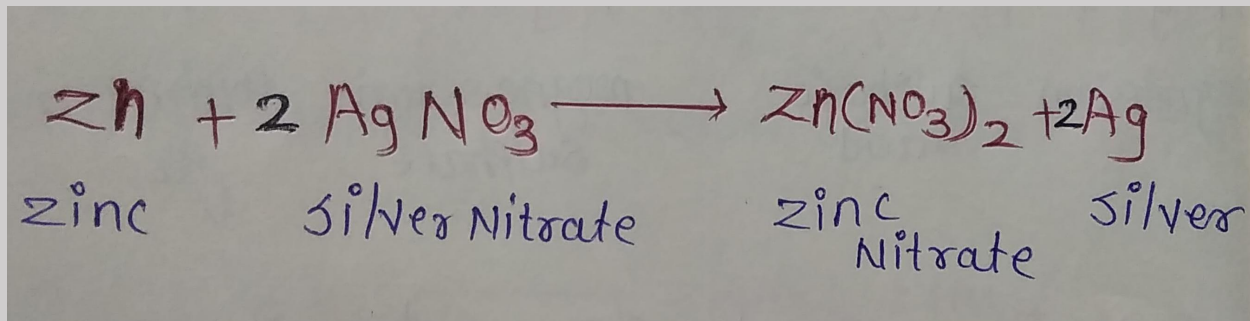


After adding the formulae ,The chemical equation is written as

In above unbalanced chemical reaction , at left hand side 1 zinc atom ,1silver atom ,1 Nitrogen atom and 3 oxygen atom is present

At right hand side 1 zinc atom , 2 Nitrogen atom ,6 oxygen atom and 1 silver atom is present

To balance nitrogen ,oxygen and silver , multiply  $\text{AgNO}_3$  by 2 and Ag by 2



The balanced chemical equation is becomes as

**4> Which term is use to indicate the development of unpleasant smell and taste in fat and oil containing foods due to aerial oxidation ( when they are kept exposed for a considerable time)**

Ans –the term **Rancidity** is use to indicate the development of unpleasant smell taste in fat oil containing food

**5> What is the general name of the chemicals which are added to fat and oil containing food to prevent the development of Rancidity ?**

Ans – the chemical which is use to prevent the development of Rancidity is **Antioxidant**

The common example of Antioxidants is **BHA** ( butylated Hydroxy - Anisole )

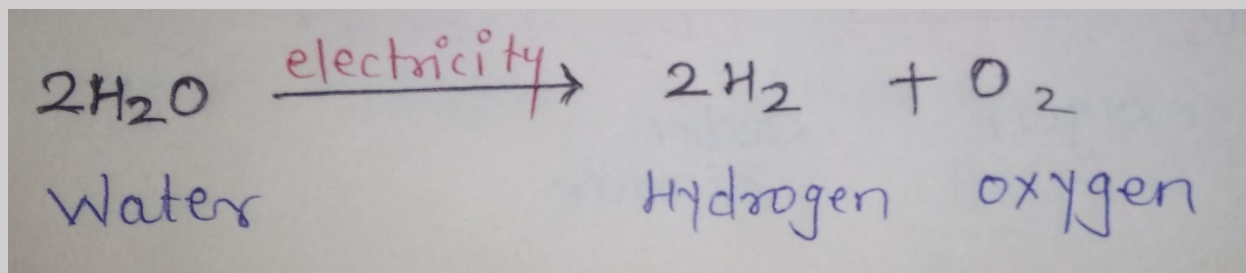
And **BHT** ( Butylated Hydroxy - Toluene )

State an important use of decomposition reaction

Ans –1) decomposition reaction is used to extract the metal from their ores ( oxides, chlorides ) . It is metallurgy process

2) Decomposition reaction is use in electrolysis of water

When electric current is passed through water it decomposed



into hydrogen and oxygen

3) it is use to manufacture of cement

4) decomposition reaction is use in thermite welding .

**8 ) what are anti – oxidants ? Why are they added to fat and oil containing foods?**

Ans – **antioxidant** : antioxidant is a chemical material which is use to prevent oxidation of food and prevent from unpleasant smell and taste .

It is act as reducing agent

Antioxidant is added in oil containing food to avoid the oxidation of food and do not turn to Rancidity of food. After adding antioxidant it is used for longer times hence antioxidant is used to store food for longer times.

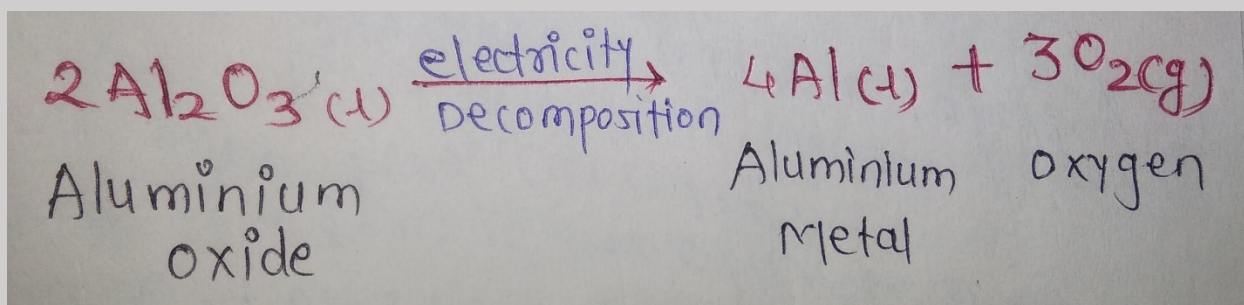
**9) Explain why, food products containing fats and oils ( like potato chips ) are packed in Nitrogen .**

Ans – When nitrogen gas is packed in potato chips then there is no oxygen in the potato chips pack. Hence it is no possibility to cause oxidation and food does not become rancid.

Hence to prevent the oxidation of food and rancidity food products are packed in Nitrogen gas.

10) Give one example of decomposition reaction which is carried out

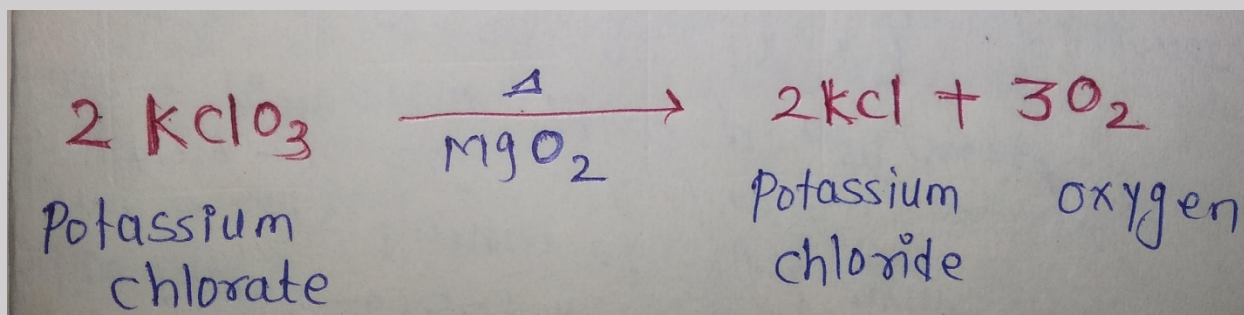
**A) With electricity:** when the electric current is passed through



molten aluminium oxide is decomposed to give aluminium metal and oxygen gas.

Above reaction aluminium oxide is split into two components aluminium metal and oxygen gas

**B) with heat .:** When potassium chlorate is heated in the presence of magnesium dioxide catalyst , the potassium



chlorate is decomposed into potassium chloride and oxygen gas

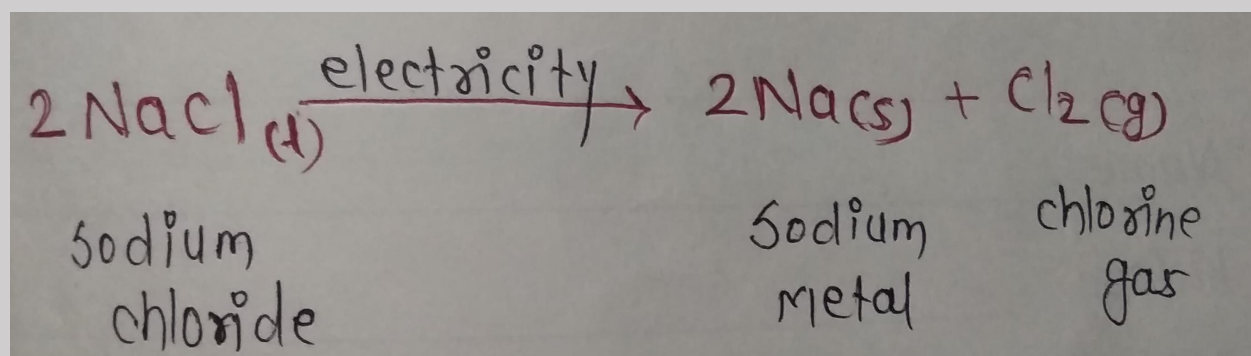
In above reaction after applying heat potassium chlorate is splitting into two similar compound

**11) What type of chemical reaction is use to extract the metal from their naturally occurring compound like oxides and chlorides ?**

Ans – **Decomposition reaction** is used to extract the metal from their naturally occurring compound like oxides and chlorides

In the decomposition reaction metal chloride is decomposed after passing electricity and metal is deposited on the cathode ( negative electrode)

- e.g. when electric current is passed through molten sodium chloride , it decomposed to gives sodium metal and chlorine gas



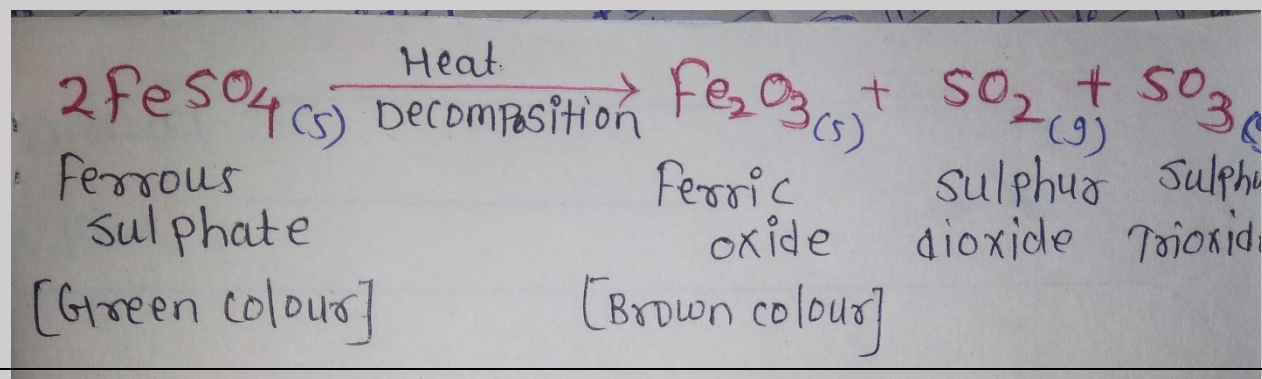
**12) Name two Antioxidants which are usually added to fat and oil containing food to prevent Rancidity?**

Ans – **BHA ( Butylated Hydroxy – Anisole )** and **BHT ( Butylated Hydroxy – Toluene )** this two Antioxidants have an property to prevent oxidation process in food . It is usually added to fat and oil containing food to prevent Rancidity

**13) Write one equation for the decomposition reaction where energy is supplied in the form of a) heat ,b) light and c) electricity**

Ans – **a) heat** – when ferrous sulphate is heated strongly ,it decomposed to form ferric oxide , sulphur dioxide and sulphur trioxide

When green colour ferrous sulphate is heated it changes to

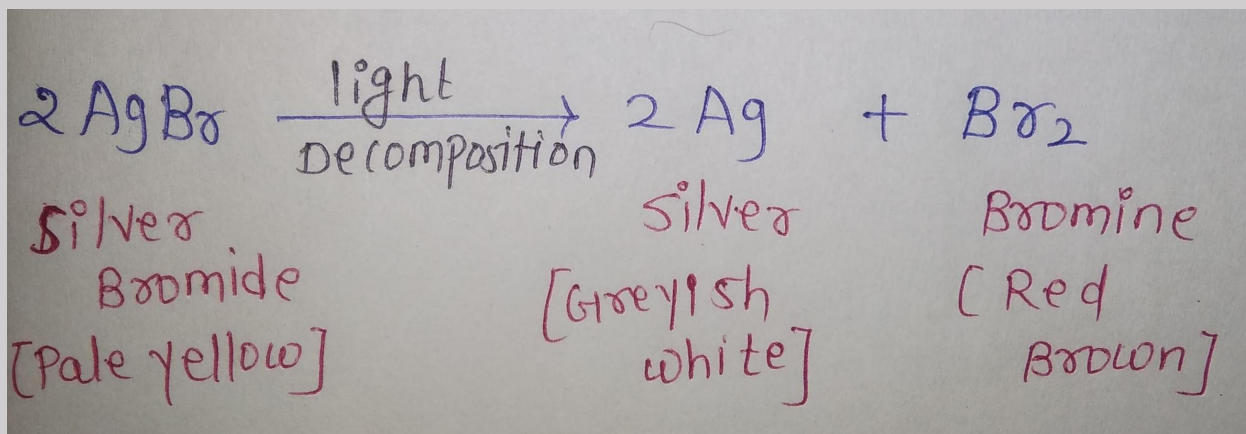


brown colour of ferric oxide with sulphur dioxide and sulphur trioxide gas . Sulphur is identified by smell

Ferrous sulphate split into three components . It is thermal decomposition process .

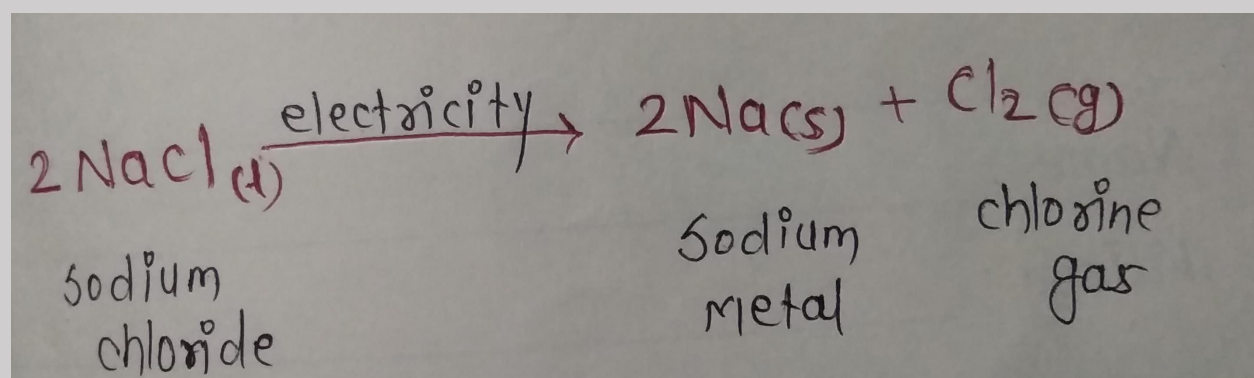
**b) light :** when silver bromide is exposed in light ,it decomposed to form silver metal and bromine vapour

Pale yellow colour of silver bromide exposed in light it changes to greyish colour of silver metal is formed



It is used in black and white photography

**C) electricity :** when electric current is passed through molten





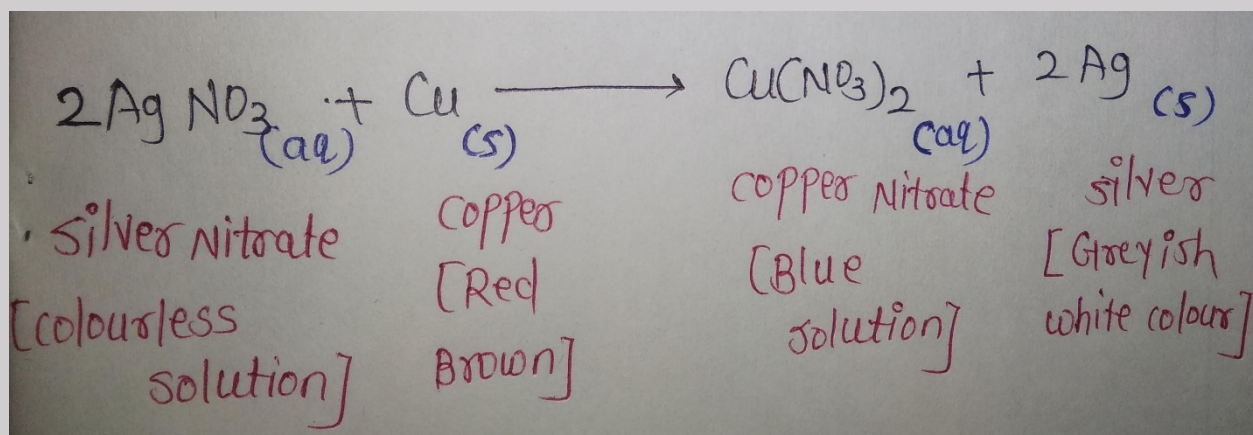
sodium chloride, it decomposed into sodium metal and chlorine gas

It is electrolysis of sodium chloride . It is used to obtained sodium metal from sodium chloride.

**14) In the refining of silver , the recovery of silver from silver nitrate solution involved displacement by copper metal , write down the chemical equation of the reaction involved .**

Ans : the chemical equation of extraction of silver is

In the above process , copper strip is dipped in colourless silver nitrate solution the copper displace silver from silver nitrate solution and form blue colour of copper nitrate solution and greyish colour silver metal on copper strip .



**15) What type of reaction are represented by the following equation ?**



- it is a **thermal decomposition reaction** .

The heat is given to calcium carbonate to split into calcium oxides and carbon dioxide gas .



It is a **combination reaction**

In which two compound calcium oxide and water is combined with each other and formed calcium hydroxide ( slacked lime )



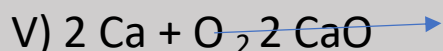
It is **decomposition reaction** .

When ferrous sulphate is strongly heated it decomposed into brown colour of ferric oxide , sulphur dioxide gas and sulphur trioxide gas



It is **decomposition reaction**

Ammonium chloride is heated and it is decomposed into ammonia and hydrochloric acid .



It is **combination reaction**

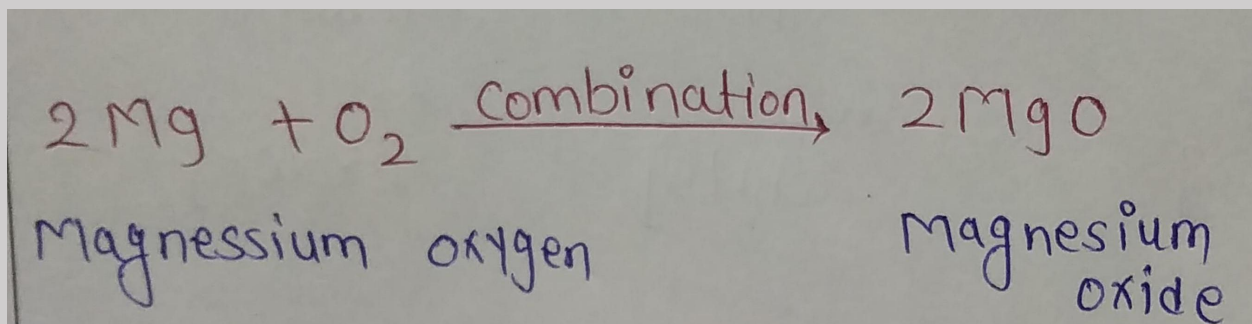
In which calcium and oxygen molecule is combine with each other mad formed calcium oxide

**16) What type of chemical reactions takes place when:**

a) a magnesium wire is burnt in air ?

Ans –when magnesium wire is burnt in air to form magnesium oxide

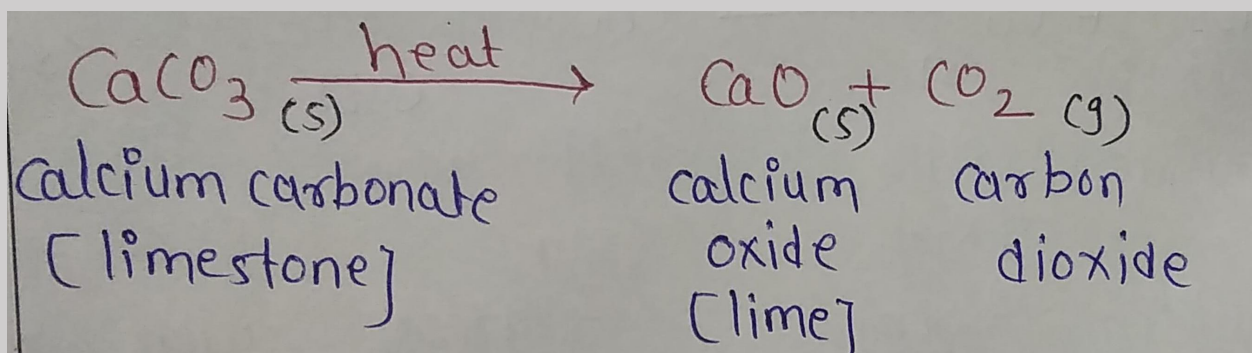
It is **combination reaction** . In which two substance is



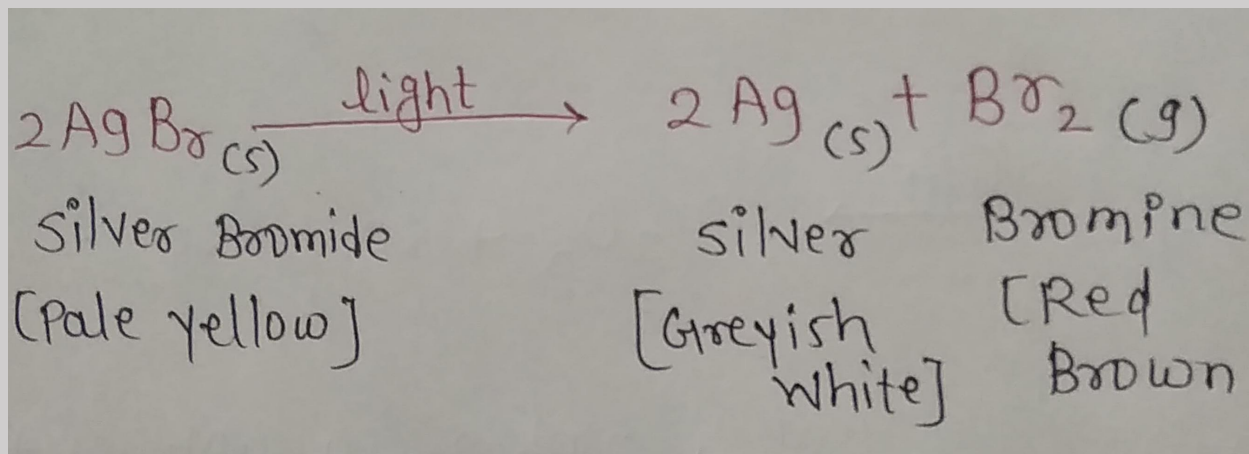
combined with single substance

b) limestone is heated

Ans -when limestone ( calcium carbonate ) is strongly heated and split into calcium oxide ( lime ) and carbon dioxide gas



It is **decomposition reaction**



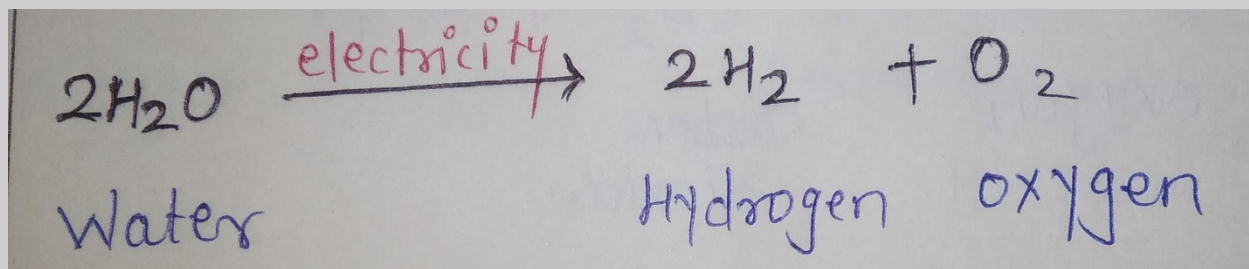
C) silver bromide is exposed to sunlight ?

Ans –silver bromide is decomposed into light to form greyish white silver and bromine ( Red brown )

It is **decomposition reaction**

d) electricity is passed through water ?

Ans –when electricity is passed through water it decomposed



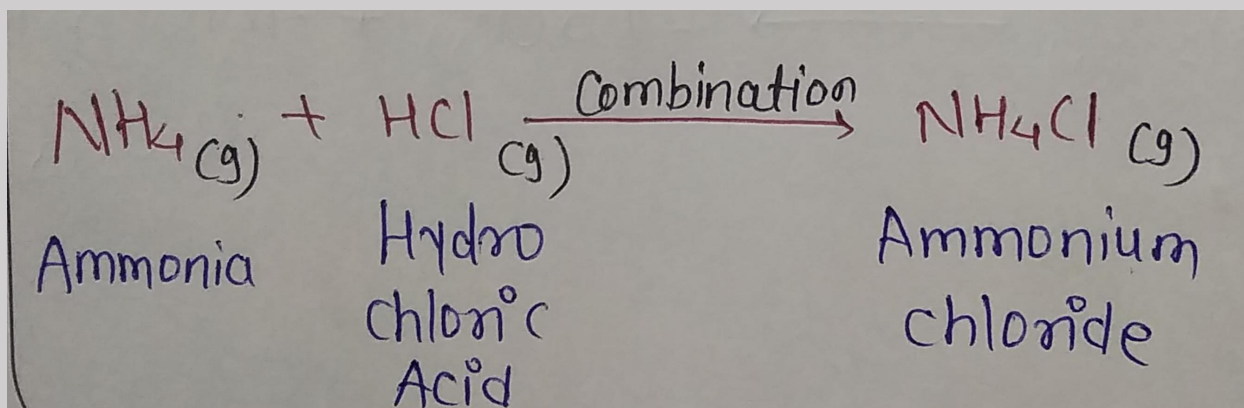
into hydrogen gas and oxygen gas

It is **decomposition reaction** .

e) ammonia and hydrogen chloride are mixed ?

Ans – Ammonia reacts with hydrogen chloride to form ammonium chloride .

It is **combination reaction** . Two compounds Ammonia and



hydrochloric acid combine to form Ammonium chloride

**17) What type of chemical reaction is represented by the following equations?**



- it is **displacement reaction** . In which more reactive element A displaces less reactive element B and forms a new compound AC



Ans : it is **combination reaction** . In which two substances are combined to form one substance .



Ans – it is **decomposition reaction** . In this reaction one substance x is spilt into two or more similar substance Y and Z



Ans – It is **double displacement reaction** . In this reaction two compound PQ and RS is react and exchange of ions takes place to form new compound PS and RQ



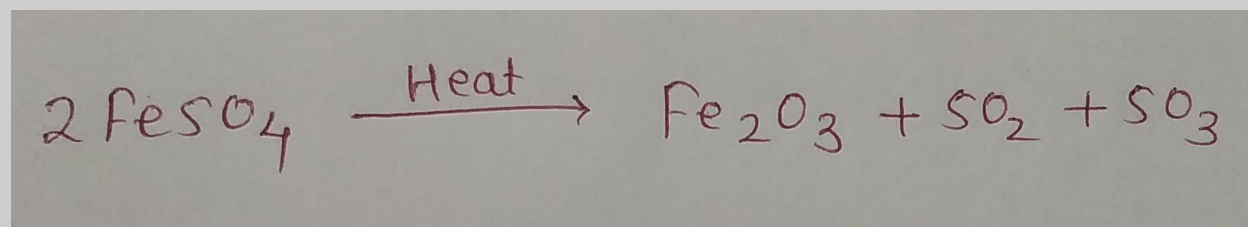
- it is **displacement reaction** . In which B is more reactive than A. B displace A from  $A_2B$  to form  $B_2O_3$ .

### **18) Balance the following chemical equation**



Ans – in the above equation , at left hand side 1 ferrous and 1 sulphur and 4 oxygen atom is present and at right hand side 2 ferrous atom , 2 sulphur atom and 8 oxygen atom is present

To equal the ferrous atom , multiply  $FeSO_4$  by 2 and write the



chemical equation

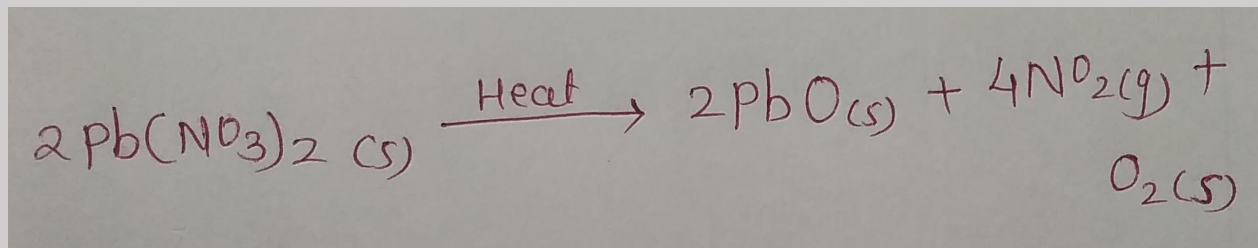
Again count the number of atom in above reaction , equal number of each and every atom is present . Hence balanced chemical equation is



Ans : in the above equation , at left hand side 1 lead atom , 2 nitrogen atom , 6 oxygen atom is present . At right hand side 1 lead atom is present , 1 nitrogen atom and 5 oxygen atom is present . To equal the lead , nitrogen and oxygen multiply Pb ( NO<sub>3</sub> )<sub>2</sub> by 2 and PbO by 2 and NO<sub>2</sub> by 4

Write the chemical equation

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



**19) Which of the following is combination and displacement reaction**



Ans – this is a **displacement reaction** .in which chlorine gas is more reactive than iodine hence chlorine replace iodine from potassium iodine to form potassium chloride and iodine .



Ans : it is **combination reaction** . In which potassium is combined with chlorine gas to form potassium chloride

**20) What type of reactions are represented by the following equations**



Ans –it is **combination reaction**

In the above reaction calcium oxide ( CaO ) is combined with carbon dioxide (CO<sub>2</sub>) to form Calcium carbonate



Ans : it is **displacement reaction**

Sodium is more reactive than hydrogen hence it is displaced hydrogen ( H ) from H<sub>2</sub> O to form NaOH and hydrogen gas



Ans : it is **displacement reaction**

Magnesium is more reactive than copper . Magnesium displaced Copper from copper sulphate ( CuSO<sub>4</sub> ) to form magnesium sulphate ( MgSO<sub>4</sub> ) and copper metal





Ans : it is **Decomposition reaction** . In which  $\text{NH}_4\text{NO}_2$  is split into  $\text{N}_2$  and  $\text{H}_2\text{O}$



Ans : it is **double displacement reaction** .

**21) In the following reaction between lead and sulphide and hydrogen peroxide**



a) Which substance is reduced

- $\text{H}_2\text{O}_2$  ( hydrogen peroxide ) is reduced . In hydrogen peroxide molecule

Oxygen atom decrease the oxidation number and oxygen is remove from the hydrogen peroxide . Oxygen is itself reduced and act as a oxidising agent

b) Which substance is oxidised

- $\text{PbS}$  ( lead sulphide ) is oxidise. In lead sulphide , the oxidation number of lead is increases and lead accept the oxygen from hydrogen peroxide . And act as a reducing agent

**22) Identify the component oxidised in the following reaction**

⋮



Ans :  $\text{H}_2\text{S}$  losing its hydrogen atom and turn into sulphur atom .  
 $\text{H}_2\text{S}$  is oxidised and act as reducing agent

The substance which lose hydrogen is known as oxidising component

**23) When  $\text{SO}_2$  gas is passed through saturated solution of  $\text{H}_2\text{S}$  the following reaction occurs :**



In this reaction , which substance is oxidised and which one is reduced

Ans : In  $\text{SO}_2$  the oxidation number of O is decreases and it remove from  $\text{SO}_2$  to form sulphur .

$\text{SO}_2$  is reduced

In  $\text{H}_2\text{S}$  the oxidation number of H is increase and it gain O from  $\text{SO}_2$ . Addition of oxygen is takes place . Hence  $\text{H}_2\text{S}$  is oxidised .

**24) fill in the following blanks with suitable word**

a) the addition of oxygen to a substance is called ..... where as removal of oxygen is called .....

- **oxidation , reduction**

b) the addition of hydrogen to a substance is called .....  
Where as removal of hydrogen is called .....

- **reduction , oxidation**

C) Anti – oxidants are often added to fat containing foods to  
prevent .....due to oxidation

- **Rancidity**