


## Chapter 1

# Chemical Reactions and Equations



**Table 3.2** Activity series : Relative reactivities of metals

K	<i>Kedar</i>	Potassium	 Most reactive
Na	<i>Nath</i>	Sodium	
Ca	<i>Ca</i>	Calcium	
Mg	<i>Malic</i>	Magnesium	
Al	<i>Aaloo</i>	Aluminium	
Zn	<i>Zara</i>	Zinc	
Fe	<i>Feeke</i>	Iron	
Pb	<i>Pakata</i>	Lead	
H	<i>H</i>	Hydrogen	
Cu		Copper	
Hg		Mercury	
Ag		Silver	
Au		Gold	
			Least reactive
Pt		Platinum	

Ethoxide  $\text{CH}_3\text{CH}_2\text{O}^{1-}$

Ethanoate  $\text{CH}_3\text{COO}^{1-}$   
(acetate)

Permanganate  $\text{MnO}_4^{1-}$

Dichromate  $\text{Cr}_2\text{O}_7^{2-}$

Aluminate  $\text{AlO}_2^{1-}$

Zincate  $\text{ZnO}_2^{2-}$

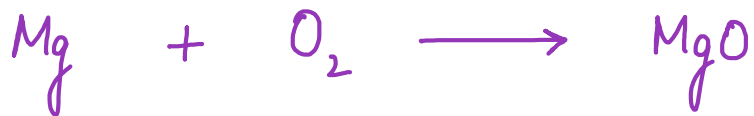
Table 3.6: Names and symbols of some ions

Vale- ncy	Name of ion	Symbol	Non- metallic element	Symbol	Polyatomic ions	Symbol
1.	Sodium	$\text{Na}^+$	Hydrogen	$\text{H}^+$	Ammonium	$\text{NH}_4^+$
	Potassium	$\text{K}^+$	Hydride	$\text{H}^-$	Hydroxide	$\text{OH}^-$
	Silver	$\text{Ag}^+$	Chloride	$\text{Cl}^-$	Nitrate	$\text{NO}_3^-$
	Copper (I)*	$\text{Cu}^+$	Bromide	$\text{Br}^-$	Hydrogen carbonate	$\text{HCO}_3^-$
	Lead	$\text{Pb}^{2+}$	Iodide	$\text{I}^-$		
2.	Magnesium	$\text{Mg}^{2+}$	Oxide	$\text{O}^{2-}$	Carbonate	$\text{CO}_3^{2-}$
	Calcium	$\text{Ca}^{2+}$	Sulphide	$\text{S}^{2-}$	Sulphite	$\text{SO}_3^{2-}$
	Zinc	$\text{Zn}^{2+}$			Sulphate	$\text{SO}_4^{2-}$
	Iron (II)*	$\text{Fe}^{2+}$				
	Copper (II)*	$\text{Cu}^{2+}$				
3.	Barium	$\text{Ba}^{2+}$				
	Aluminium	$\text{Al}^{3+}$	Nitride	$\text{N}^{3-}$	Phosphate	$\text{PO}_4^{3-}$
	Iron (III)*	$\text{Fe}^{3+}$				

**Chemical Reactions :-** are the processes in which new substances with new properties are formed.

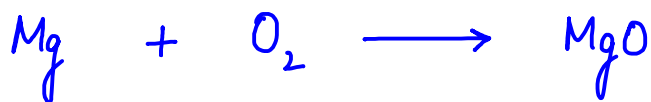


**Chemical Equation :-** is a method of representing a chemical reaction with the help of symbols and formulae.

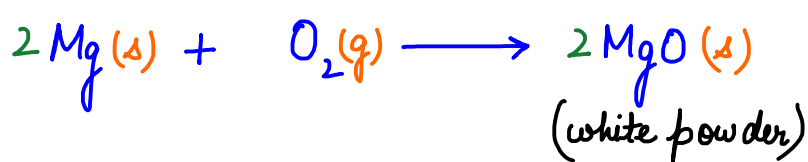


Magnesium + Oxygen  $\longrightarrow$  Magnesium Oxide

(Word Equation)



(Skeletal Chemical Equation)



(Balanced Chemical Equation)

→ Magnesium ribbon burns with dazzling white flame.

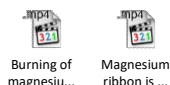
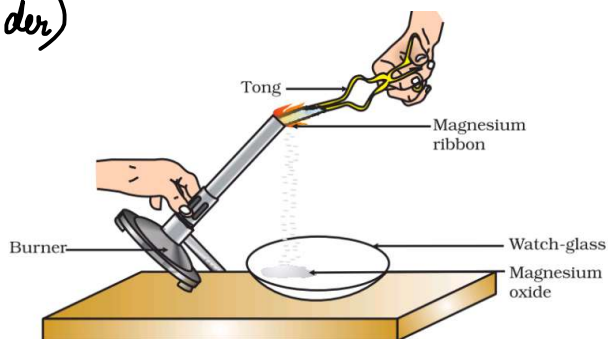


Figure 1.1

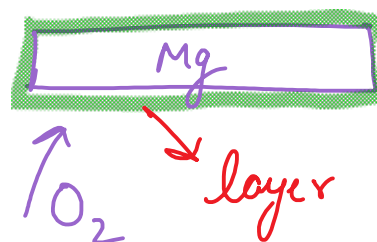
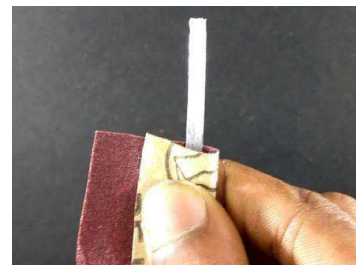
Burning of a magnesium ribbon in air and collection of magnesium oxide in a watch-glass

### NCERT

Q. Why should a magnesium ribbon be cleaned before burning in air ?

Ans. Magnesium ribbon should be cleaned to remove the layer of magnesium oxide, so that magnesium burns easily.

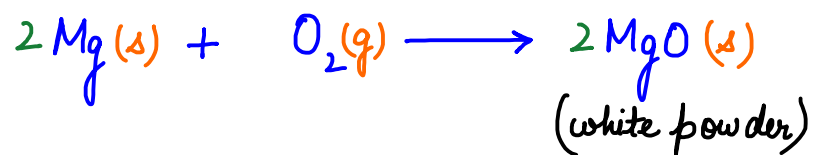
Basic magnesium carbonate



Q. Write a balanced chemical equation of magnesium ribbon burnt in air. Name the product

formed and mention the characteristics of the flame produced.

Ans.



→ Product formed is magnesium oxide.

→ Magnesium ribbon burns with dazzling white flame.

flame.

## Characteristics / Observations of chemical reactions :-

1. Evolution of gas.
2. Change in state.
3. Change in colour.
4. Change in temperature.
5. Formation of precipitate.

**Q. Write two observations when sulphuric acid is added to zinc granules taken in a conical flask.**

Displacement reaction :-



Zinc

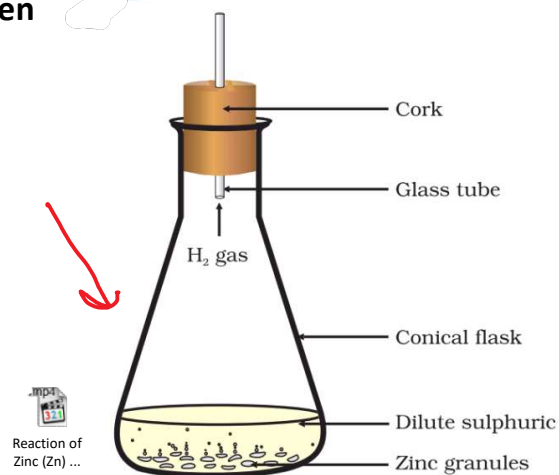
Sulphuric acid

Zinc sulphate

Hydrogen

Observation :-

- Evolution of gas
- Change in temperature.  
(Exothermic)



**Q. Give the characteristic test for hydrogen gas ( H<sub>2</sub> ).**

Ans. Bring a burning candle near hydrogen gas. The gas will burn with a pop sound

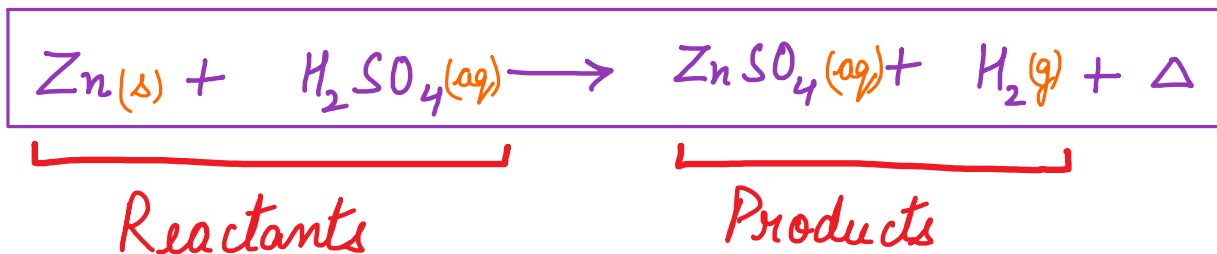
Hydrogen  
pop sound





(Exothermic)

Zinc + Sulphuric acid  $\longrightarrow$  Zinc sulphate + Hydrogen



**Reactants :-** The substances which react in a chemical reaction.

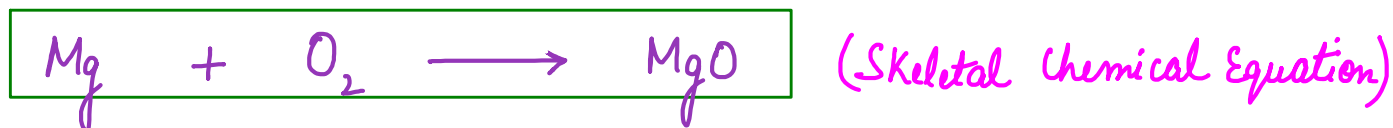
**Products :-** The new substances produced in a chemical reaction.

**Q. Define a chemical equation.**

Ans. method of representing a chemical reaction with the help of symbols and formulae.

**Q. What is meant by skeletal chemical equation ?**

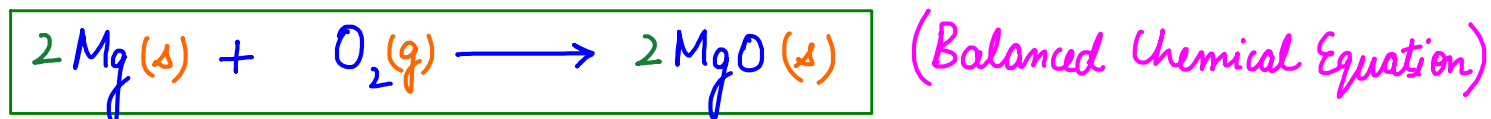
Ans. Skeletal chemical equation is an unbalanced chemical equation.



### NCERT

**Q. What is meant by balanced chemical equation ? Why chemical equations are balanced ?**

Ans. A chemical equation in which number of atoms of each element are same in reactants and products.



→ To follow the law of conservation of mass, we need to balance chemical equation.

**Law of conservation of mass :-** states that mass can neither be created nor be destroyed in a chemical reaction.

(Balanced Chemical Equation)

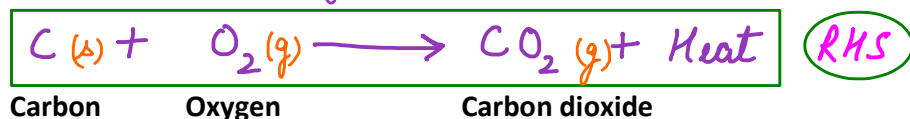
# Exothermic and Endothermic reactions :-

**NCERT**

**Q. What does one mean by exothermic and endothermic reaction ? Give example.**

Ans. **Exothermic reaction** :- Those reactions in which **heat** is released.  
(energy)

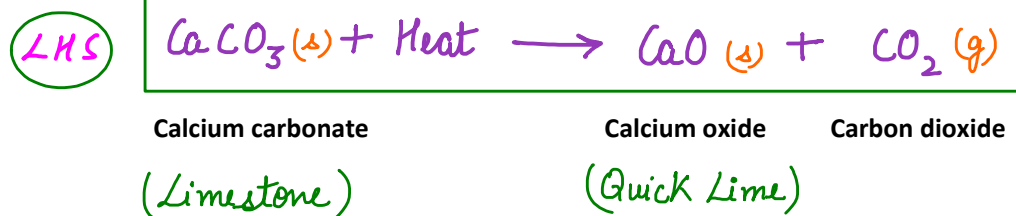
Example :- Burning of Coal.



→ All the combustion reactions are exothermic.

**Endothermic reaction** :- Those reactions in which **heat** is absorbed.  
(energy)

Example :- Decomposition of Calcium carbonate



→ All the decomposition reactions are endothermic.

**Q. What is precipitate ?**

Ans. Precipitate :- An insoluble solid product formed in chemical reaction.  
in short (ppt.)

# Types of chemical reactions :-

1. Combination reaction.
2. Decomposition reaction.
3. Displacement reaction.
4. Double displacement reaction.
5. Oxidation and Reduction.

# Combination reaction :-

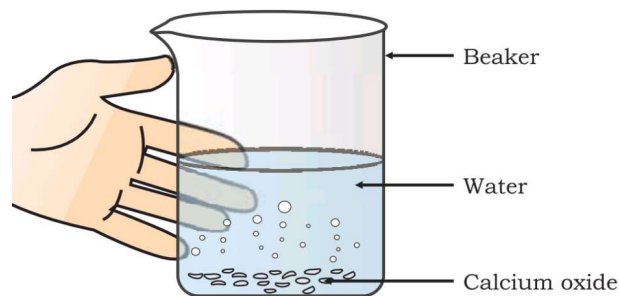
**Combination reaction :-** Those reactions in which two or more reactants combine to form a single product.

**Q. Solid calcium oxide was taken in the container and water was added slowly to it.**

- (i) State two observations made in the experiment.  
(ii) Write the balanced chemical equation of this reaction.

**Ans. Observations :-**

1. The mixture produces a hissing sound.
2. Large amount of heat is released which makes beaker hot. (Exothermic)



Calcium oxide

(Quick lime)

Water

Calcium Hydroxide

(Slaked lime)



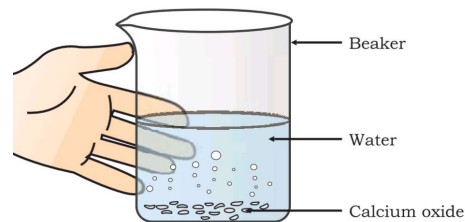
quick lime  
and water

2013

Q. Give an example for a combination reaction which is exothermic .

Q. While studying the combination reaction on adding water to quick lime, name the product formed and write its color.

Ans. Product formed is Calcium Hydroxide and it is white in colour.  
(Slaked lime)



Reaction of quick lime with water :-



Calcium oxide

(Quick lime)

Water

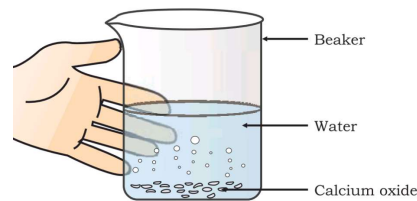
Calcium Hydroxide

(Slaked lime)



Q. A student adds water to quicklime taken in a beaker. He feels the beaker turning hot. Why does this happen ? Write a chemical equation for the reaction. State the type of this reaction.

Ans. Large amount of heat is released which makes beaker hot. (Exothermic)



→ Reaction of quick lime with water :-



Calcium oxide

(Quick lime)

Water

Calcium Hydroxide

(Slaked lime)

→ Combination reaction.

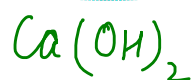




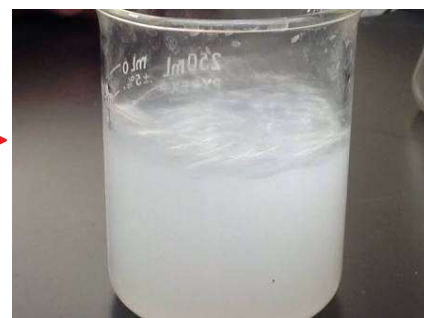
Calcium oxide  
(Quick lime)



Solid calcium hydroxide (s)  
(Slaked lime)



quick lime  
and water



Calcium hydroxide  
solution (aq)  
(Lime water)



**Q. Write balanced chemical equation for the reaction when carbon dioxide is passed through lime water.**

Ans.

*Lime water turns milky.*



Calcium hydroxide  
solution

Calcium carbonate  
(white ppt.)



**Q. Give the characteristic test for CO<sub>2</sub> gas**

**Q. Give the characteristic test for CO<sub>2</sub> gas .**

Ans. Pass the gas through lime water .

If lime water turns milky which confirms the presence of CO<sub>2</sub>



Calcium hydroxide  
solution

Calcium carbonate  
(white ppt.)



Marble



Egg shells



Chalk

**Chemical formula :-**  $\text{CaCO}_3$   
(Calcium Carbonate)

**Common Name :- Limestone**

## NCERT

Q. A solution of substance X is used for white washing.

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

(ii) Write the reaction of the substance X with water.

Ans. (i)

Calcium oxide

(Quick lime)  $\text{CaO}$



(ii)



Calcium oxide

(Quick lime)



Water

Calcium Hydroxide

(Slaked lime)



Calcium oxide

(Quick lime)



**Q. What is a combination reaction ? State one example giving balanced chemical equation for the reaction.**

Ans. **Combination reaction :-** Those reactions in which two or more reactants combine to form a single product.

Example :- Burning of coal.



Carbon

Oxygen

Carbon dioxide



**Q. Give balanced chemical equation of Hydrogen burns in Oxygen to form water.**

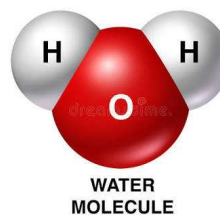
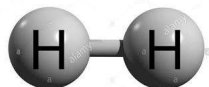
Ans.



Hydrogen

Oxygen

Water



Hydrogen  
and water...

**Carbon**

# Decomposition reaction :-

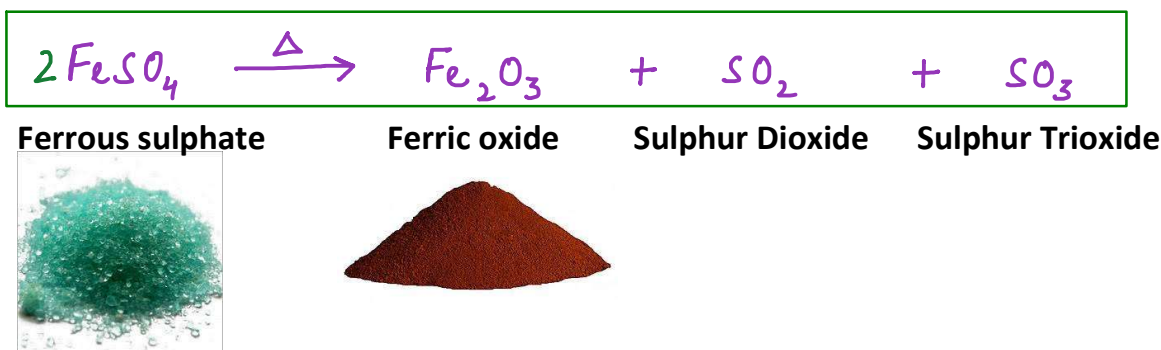
**Q. What is a decomposition reaction ?**

Decomposition reaction :- Those reactions in which a single reactant breaks down into two or more products.



Decomposit  
ion reacti...

Example :-



**Q. What are the types of decomposition reaction ?**

Ans. (i) Thermal decomposition :- When decomposition reaction is carried out by heat energy.



(ii) Electrochemical decomposition :- When decomposition reaction is carried out by electric energy.

(Electrolytic)



(iii) Photochemical decomposition :- When decomposition reaction is carried out by light energy.

(Photolytic)



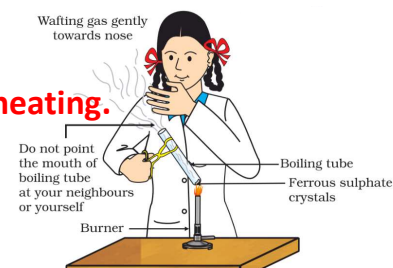
★★ 2013

Q. 2g. of Ferrous sulphate crystals are heated in a boiling tube.

(i) State the colour of ferrous sulphate crystals before heating and after heating.

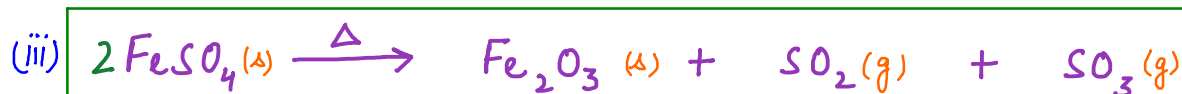
(ii) Name the gases produced during heating.

(iii) Write the chemical equation for the reaction.



Ans. (i) Colour of ferrous sulphate crystals is green.  
After heating it becomes ferric oxide which is brown.

(ii) Sulphur Dioxide ( $\text{SO}_2$ ) and Sulphur trioxide ( $\text{SO}_3$ )



Decomposition of ferro...

Ferrous sulphate



Ferric oxide



(Thermal Decomposition)

Q. A student performed the experiment of heating ferrous sulphate crystals in a boiling tube. He smelt fumes of pungent gas and saw colours of ferrous sulphate disappear.

(i) Write the formula of pungent gas.

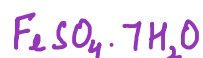
(ii) Why does the colour of crystal disappear.

(iii) Identify the nature of chemical reaction.

Ans. (i)  $\text{SO}_2$  &  $\text{SO}_3$

(ii) Because it loses 7 molecules water of crystallisation.

Hydrated  
Ferrous sulphate

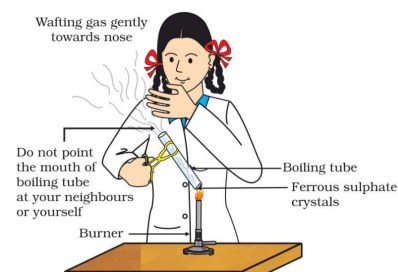


(green)

Anhydrous  
Ferrous sulphate



(white)



(iii) Thermal decomposition reaction.





Ferrous sulphate



Ferric oxide



2019

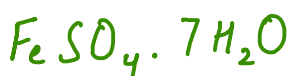
**Q. 2g of ferrous sulphate crystals are heated in a dry boiling tube.**

**(a) List any two observations.**

**(b) Name the type of chemical reaction taking place.**

**(c) Write balanced chemical equation for the reaction and name the products formed.**

Ans. (a) Initially green colour disappear and then it is brown in colour.



Hydrated  
Ferrous sulphate

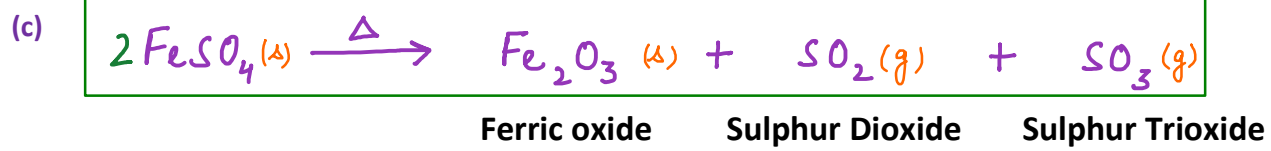


Anhydrous  
Ferrous sulphate



Ferric oxide

(b) Thermal Decomposition Reaction.



# Thermal decomposition of Lead nitrate :-



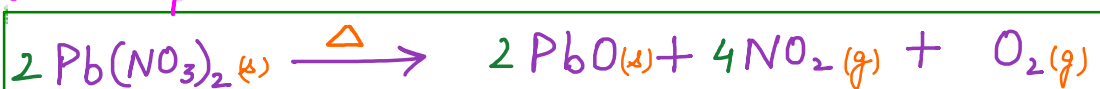
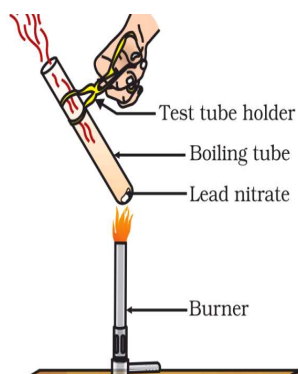
**Q. 2g. of lead nitrate powder is taken in a boiling tube. The boiling tube is heated over flame. Now answer the following :-**

**(a) State the colour of the fumes evolved and the residue left.**

**(b) Name the type of chemical reaction that takes place stating its balanced chemical equation.**

**Ans.** (a) Brown fumes of nitrogen dioxide ( $\text{NO}_2$ ) gas are evolved. residue left is yellow lead oxide.

(b) Thermal decomposition reaction.



**Oxygen**

**Q. What are colours of the products formed when lead nitrate is heated in a boiling tube ?**

Ans.



Lead oxide



Yellow



Nitrogen dioxide



Brown



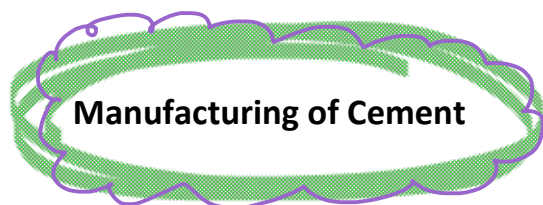
Oxygen

Colourless

## Thermal decomposition of Calcium carbonate :-



$\text{CaCO}_3$  (Limestone)



## Thermal decomposition of Calcium carbonate :-



Calcium carbonate  
(Limestone)

Calcium oxide  
(Quick Lime)

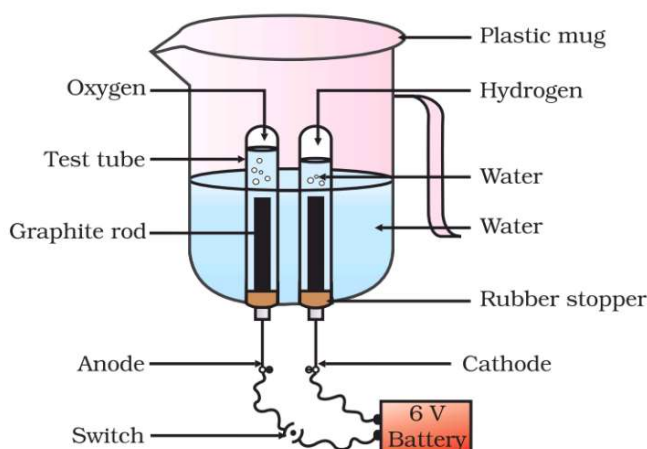
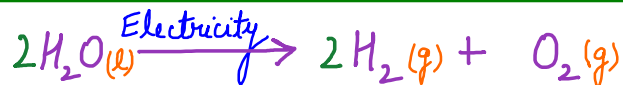
Carbon dioxide



**CaCO<sub>3</sub>**

# Electrochemical decomposition of Water :-

## Electrolysis of Water :- $\text{H}_2\text{O}$



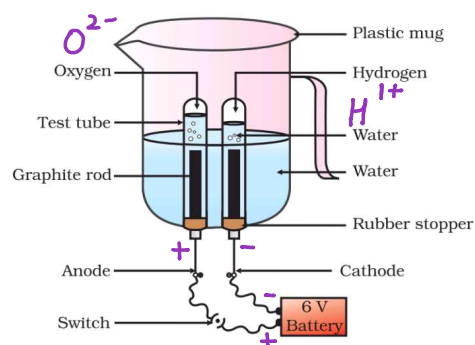
**Q. Observe the following diagram and answer the following questions :-**

**(i) Name the gas evolved at cathode and anode.**

Ans.(i)

At Anode, oxygen gas is evolved.

At Cathode, hydrogen gas is evolved.

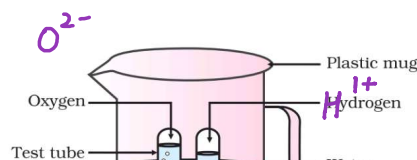


**NCERT**

**(ii) Why is volume of the gas collected at one electrode is double than that at the other.**

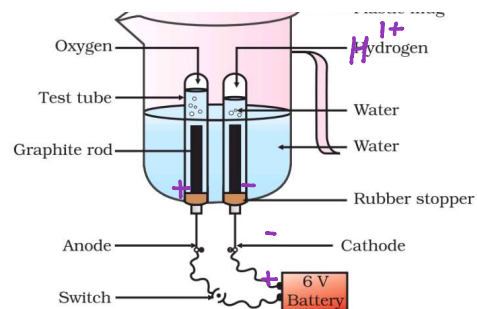
Ans.(ii)

Water ( $\text{H}_2\text{O}$ ) contains two parts of hydrogen and one part of oxygen.



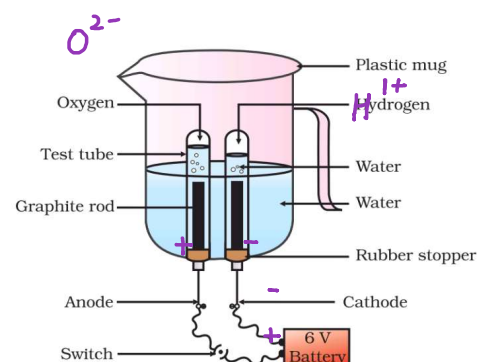
and one part of oxygen.

So, volume of hydrogen gas ( $H_2$ ) collected over cathode is double the volume of oxygen gas ( $O_2$ ) collected over anode.



(iii) What type of reaction is this?

Ans.(iii) Electrochemical Decomposition reaction.



(iv) Why should we add few drops of dilute sulphuric acid in water.

Ans.(iv) To conduct electricity through water.

(v) Give distinguishing tests for the gases evolved.

Ans.(v) Bring a burning candle near hydrogen gas. The gas will burn with a pop sound.





a <sup>u</sup>pop sound

✓ ✓ ✓ ✓

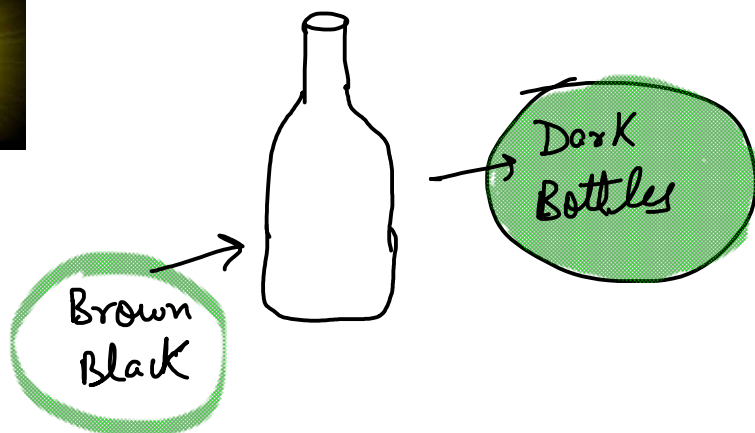


Bring a burning candle near Oxygen gas. The intensity of candle flame is increased.



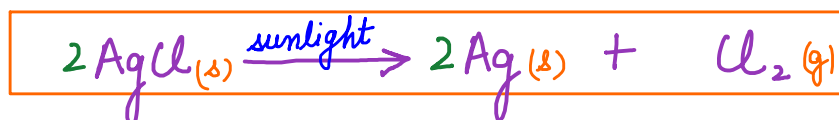
# Photochemical decomposition of Silver Chloride :-

## AgCl



# Photochemical decomposition of Silver Chloride :-

- white silver chloride turns grey.
- Due to decomposition of silver chloride into silver and chlorine.
- Application :- It is used in black and white photography.



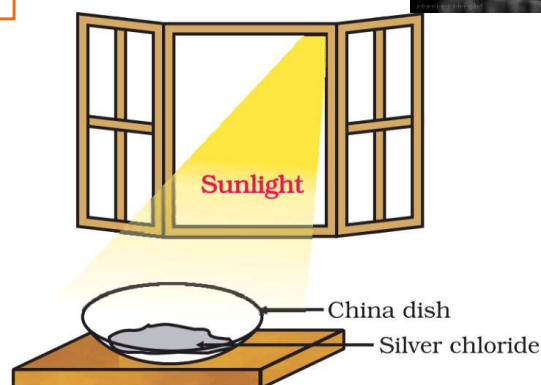
Silver chloride

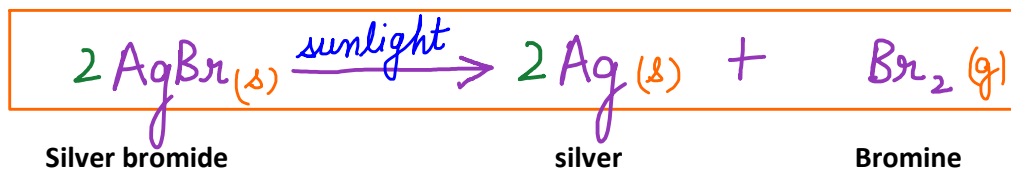


silver



Chlorine

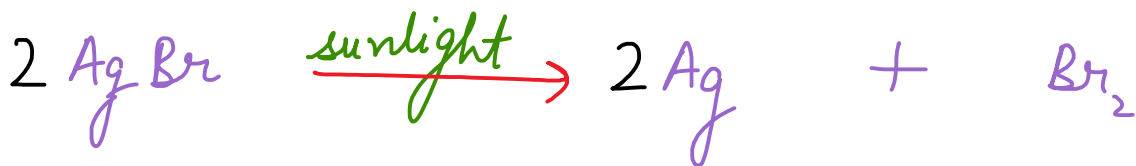
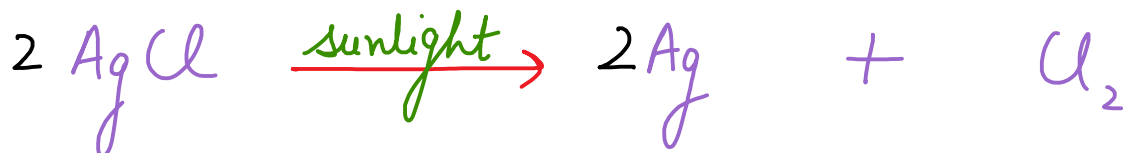




Application :-



Black and white  
photography

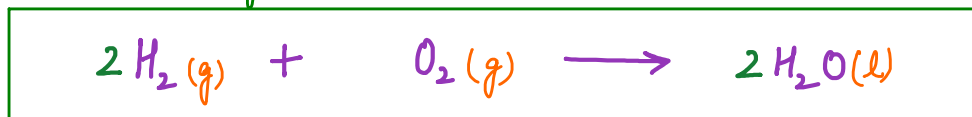


NCERT

Q. Why are decomposition reaction called the opposite of combination reactions ?

Ans. **Combination reaction :-** Those reactions in which two or more reactants combine to form a single product.

Example :-



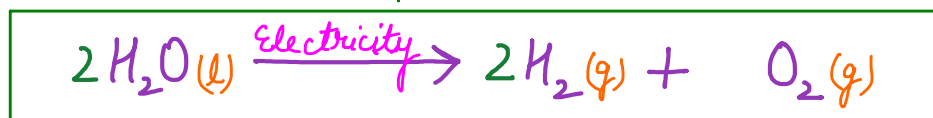
Hydrogen

Oxygen

Water

**Decomposition reaction :-** Those reactions in which a single reactant breaks down into two or more products.

Example :-



Water

Hydrogen

Oxygen

NCERT 2018

Q. Write one equation for decomposition reaction where energy is supplied in the form of heat, light or electricity.

Ans.



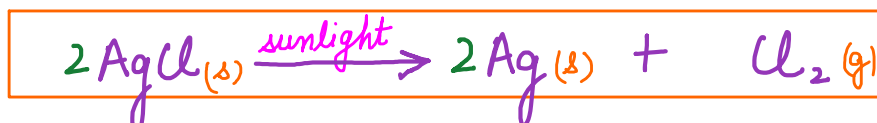
Calcium carbonate

(Limestone)

Calcium oxide

(Quick Lime)

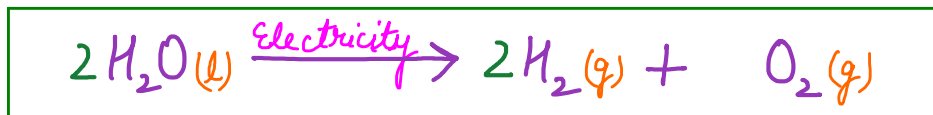
Carbon dioxide



Silver chloride

silver

Chlorine



Water

Hydrogen

Oxygen



Water

Hydrogen

Oxygen

Oxygen

# Displacement reaction :-

**Displacement reaction :-** those reactions in which more reactive element displaces less reactive element from its salt solution.



Example :-



Iron

Copper sulphate

Iron sulphate

Copper

(blue)



(green)

**NCERT**

**Q. Why does the colour of copper sulphate solution change when an iron nail is dipped in it ?**

Ans. Iron is more reactive than copper.

So, Iron displaces copper from copper sulphate solution and forms iron sulphate which is green in colour.

Displacement Reaction :-

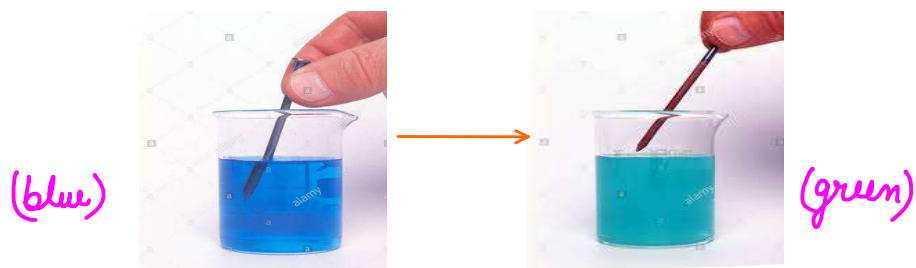


Iron

Copper sulphate

Iron sulphate

Copper



Examples :- Displacement reaction



Zinc

Copper sulphate

Zinc sulphate

copper



Lead

Copper chloride

Lead chloride

Copper

**Q. A silver spoon is kept immersed in an aqueous solution of copper sulphate. What change would be observed in the spoon as well as in the solution ? Justify your answer.**

Ans. No change will be observed because silver is less reactive than copper. So, silver will not displace copper from copper sulphate solution.



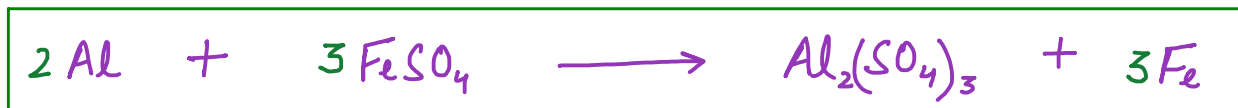


2018

**Q. A student added few pieces of Aluminium metal to two test tubes A and B containing aqueous solution of iron sulphate and copper sulphate. In the second part of her experiment, she added iron metal to another test tubes C and D containing aqueous solution of aluminium sulphate and copper sulphate.**

**In which test tube or test tubes will she observe colour change ? On the basis of this experiment, state which one is the most reactive metal and why ?**

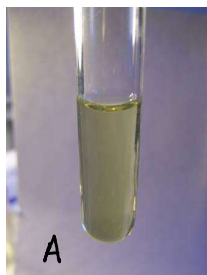
Ans.



Aluminium

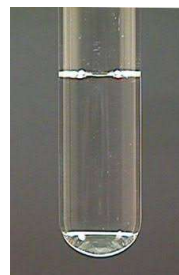


Iron sulphate



green

Aluminium sulphate



colourless

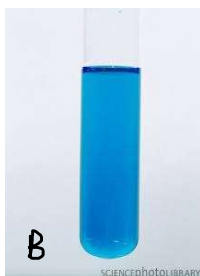




Aluminium



Copper sulphate



blue

Aluminium sulphate



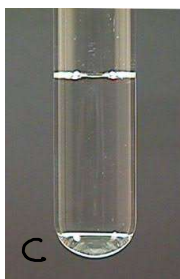
colourless



Iron



Aluminium sulphate



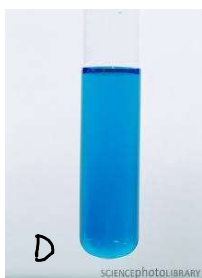
colourless



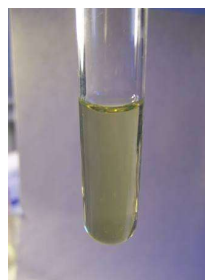
Iron

Copper sulphate

Iron sulphate



blue

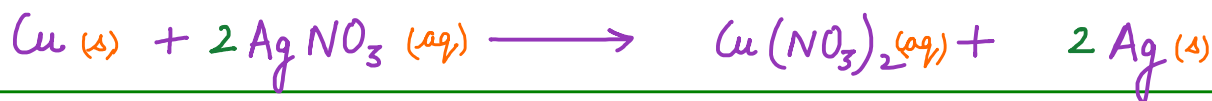


green

NCERT ★★

Q. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

Ans.



(blue)

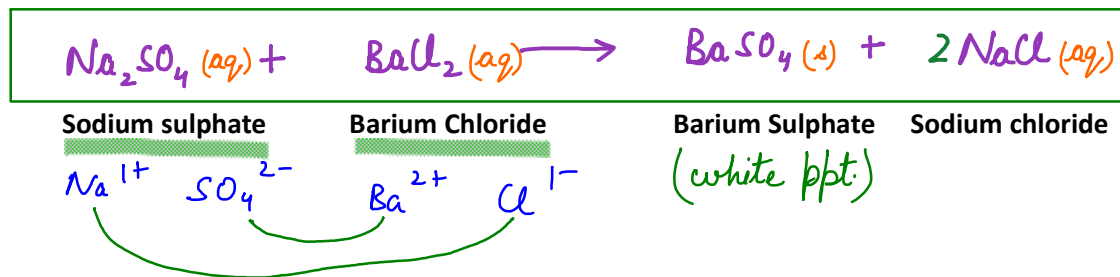
# Double Displacement reaction :-

**Double Displacement reaction :-** Those reactions in which two compounds exchange their ions to form two new compounds

reaction of Sodium s...



Example :-

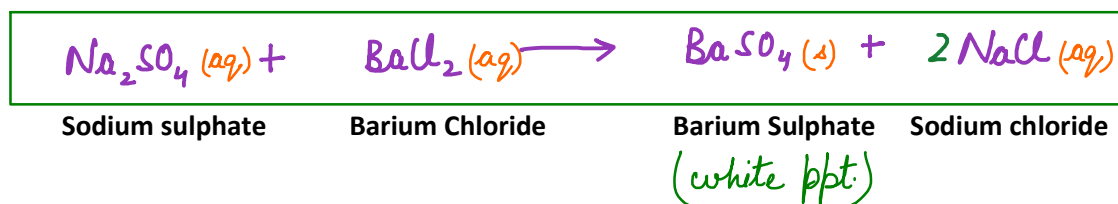


**NCERT**

**Q. Write a balanced chemical equation with state symbols to represent the reaction.**

**Solutions of Barium Chloride and Sodium sulphate in water react to give insoluble solid Barium sulphate and the solution of Sodium Chloride.**

Ans.



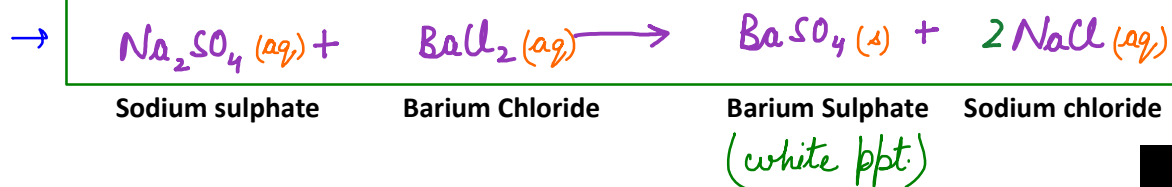
2013

**Q. What type of material is formed when aqueous solution of sodium sulphate and barium chloride are mixed.**

**Give the balanced chemical equation involved.**

**What type of chemical reaction is this ?**

Ans. → A white precipitate of Barium Sulphate ( $\text{BaSO}_4$ ) will be formed.



→ Double displacement reaction.



(white ppt.)

# Double displacement reaction

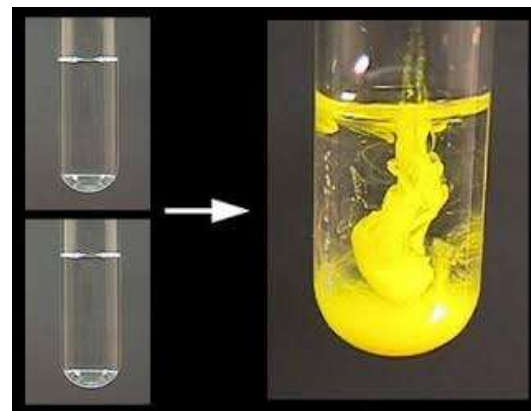
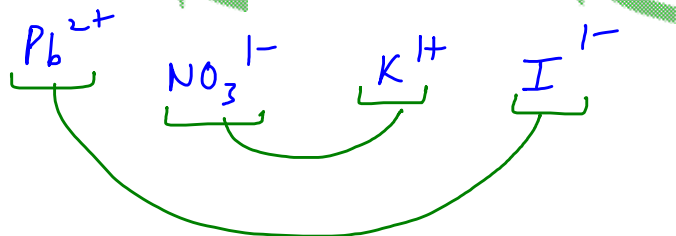


Lead nitrate

Potassium iodide

Lead iodide  
(yellow ppt.)

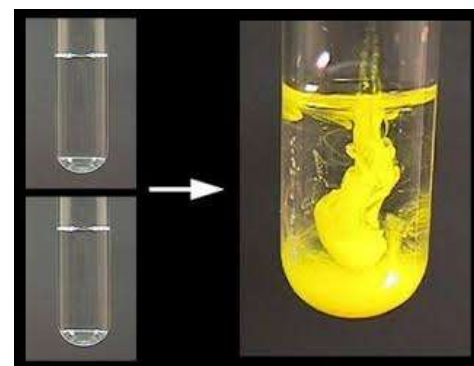
Potassium nitrate



NCERT

**Q. What do you mean by precipitation reaction ? Give example.**

Ans. Any reaction in which precipitate is formed.



Example :-



Lead nitrate

Potassium iodide

Lead iodide  
(yellow ppt.)

Potassium nitrate

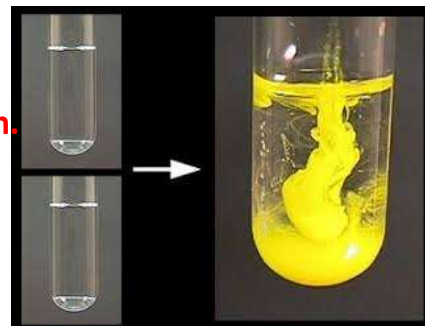
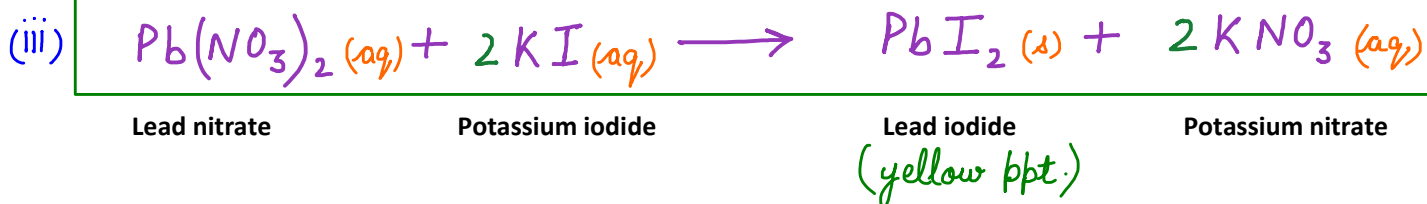
Q. (i) What is observed when a solution of potassium iodide is added to a solution of lead nitrate taken in a test tube ?

(ii) What type of chemical reaction is this ?

(iii) Write a balanced chemical equation to represent the above reaction.

Ans. (i) A yellow ppt. of lead iodide is produced along with potassium nitrate solution.

(ii) Double Displacement Reaction.





# Oxidation and Reduction :-



Oxidation :- is the gain of oxygen to a substance.

or

is the loss of hydrogen from a substance.

Reduction :- is the gain of hydrogen to a substance.

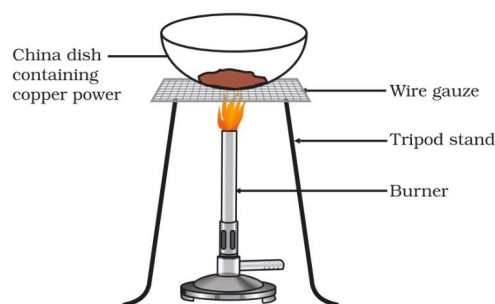
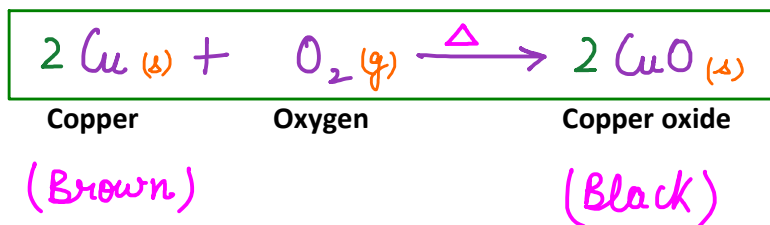
or

is the loss of oxygen from a substance.

NCERT

Q. A shiny brown coloured element X on heating in air becomes black in colour. Name the element X and the black coloured compound formed. Also write the chemical equation for the reaction.

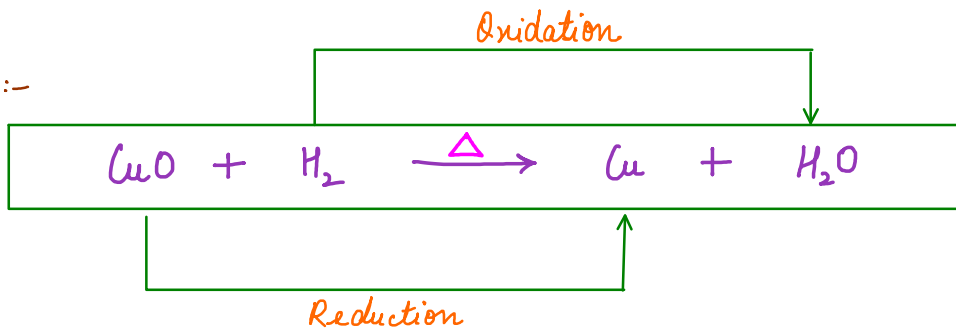
Ans. X is Copper and black coloured compound is Copper oxide.



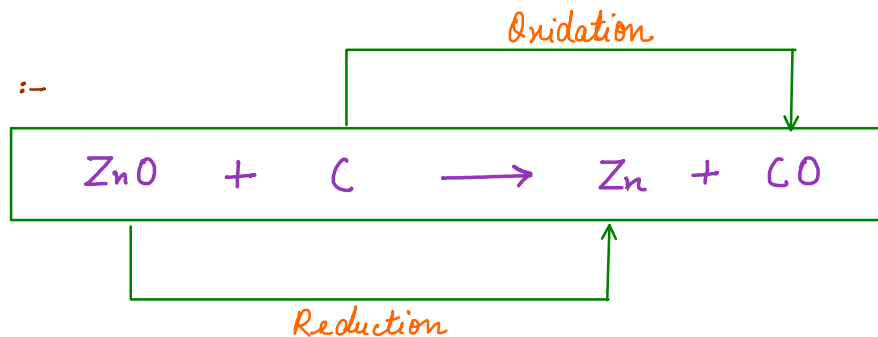
# Redox reaction :-

Redox reactions :- Those reactions in which oxidation and reduction occur simultaneously.

Example :-



Example :-

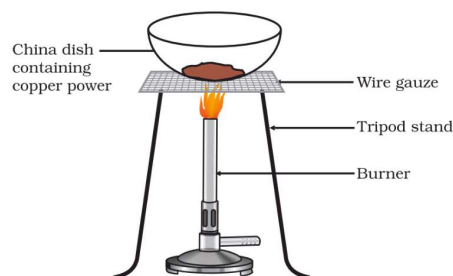
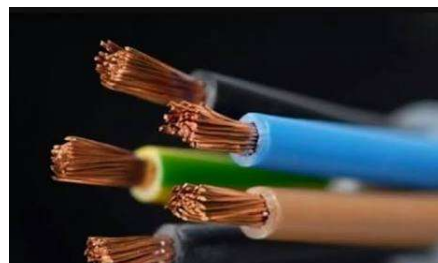
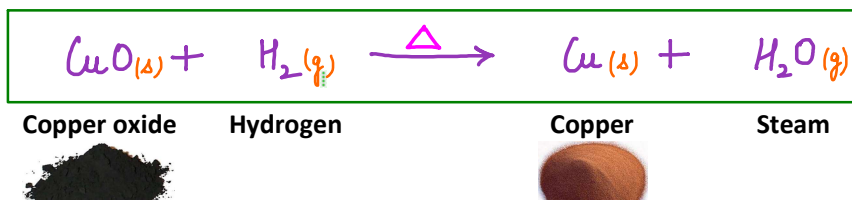
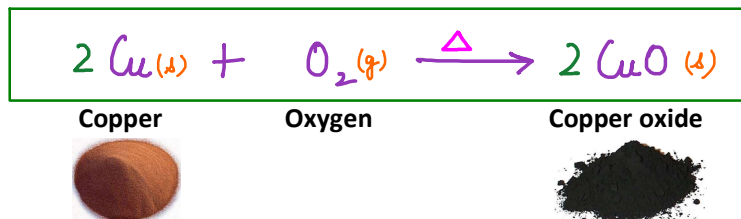


2013

**Q. A reddish brown coloured metal X, used in electrical wires, when powdered and heated strongly in open china dish, turns black. When hydrogen gas is passed over this black substance, It regains its original colour.**

**Write balanced chemical equations for both reactions.**

Ans.



Copper oxide



Hydrogen

Copper



Steam



### NCERT

Q. Identify the substances that are oxidised and the substances reduced in the following reactions.



Ans. (i)  $\text{Na} \rightarrow$  Oxidised  
 $\text{O}_2 \rightarrow$  Reduced

(ii)  $\text{H}_2 \rightarrow$  Oxidised  
 $\text{CuO} \rightarrow$  Reduced

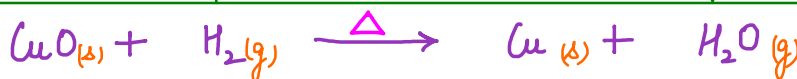
Q. When hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation for this reaction and state :

(i) The substance oxidised

(ii) The substance reduced

Oxidation

Ans.



Reduction

(i) Substance oxidised  $\rightarrow \text{H}_2$  (Hydrogen gas)

(ii) Substance reduced  $\rightarrow \text{CuO}$  (Copper oxide)

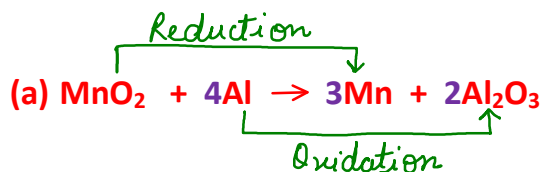
(iii) Reducing agent  $\rightarrow \text{H}_2$  (Hydrogen gas)

(iv) Oxidising agent  $\rightarrow \text{CuO}$  (Copper oxide)

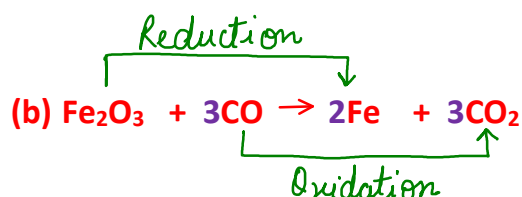
Q. Name the substance oxidised and the substance reduced, and also identify the oxidising agent and reducing agent in the following reaction :



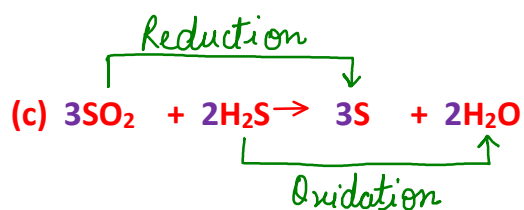
Ans.



- (i) Substance oxidised  $\rightarrow \text{Al}$
- (ii) Substance reduced  $\rightarrow \text{MnO}_2$
- (iii) Reducing agent  $\rightarrow \text{Al}$
- (iv) Oxidising agent  $\rightarrow \text{MnO}_2$



- (i) Substance oxidised  $\rightarrow \text{CO}$
- (ii) Substance reduced  $\rightarrow \text{Fe}_2\text{O}_3$
- (iii) Reducing agent  $\rightarrow \text{CO}$
- (iv) Oxidising agent  $\rightarrow \text{Fe}_2\text{O}_3$



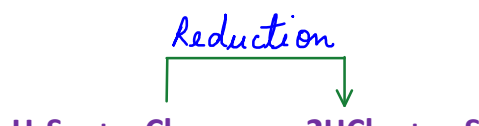
- (i) Substance oxidised  $\rightarrow \text{H}_2\text{S}$
- (ii) Substance reduced  $\rightarrow \text{SO}_2$
- (iii) Reducing agent  $\rightarrow \text{H}_2\text{S}$
- (iv) Oxidising agent  $\rightarrow \text{SO}_2$

2013

Q. Identify the oxidising agent, reducing agent in the following reaction.

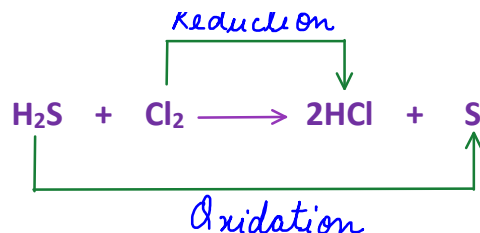


Ans.



- (i) Reducing agent  $\rightarrow \text{H}_2\text{S}$

Ans.



(i) Reducing agent  $\rightarrow \text{H}_2\text{S}$

(ii) Oxidising agent  $\rightarrow \text{Cl}_2$

2019

**Q. You might have noted when copper powder is heated in a china dish, the reddish brown surface of copper powder becomes coated with a black substance.**

(a) Why has this black substance formed ?

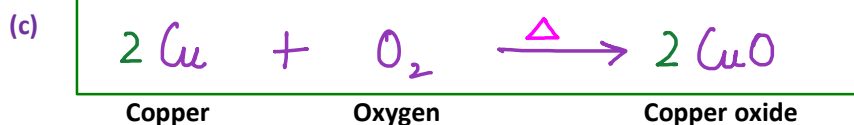
(b) What is this black substance ?

(c) Write the chemical equation of the reaction that takes place.

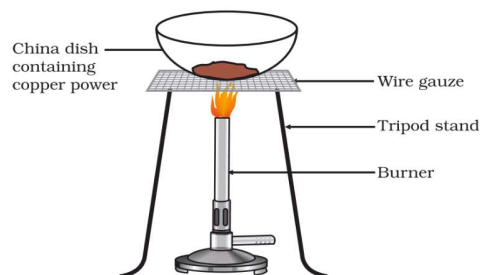
(d) How can the black coating on the surface be turned reddish brown ?

Ans. (a) Due to oxidation of copper.

(b) Copper oxide  $\text{CuO}$



1.2.5 Oxidation a



# Effects of Oxidation :-

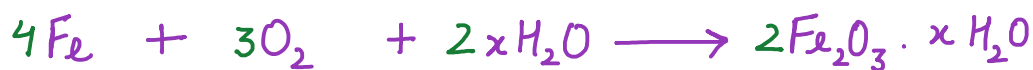
- (i) Corrosion
- (ii) Rancidity

# Corrosion :-

**Corrosion :-** The tarnishing of the metals by the attack of air, moisture or acids.



Rusting of Iron :-



Iron

Oxygen

Water  
vapour

Hydrated Iron (III) oxide

## Examples of Corrosion :-

1. Brown coating on Iron
2. Black coating on Silver.
3. Green coating on Copper.

**Q. Explain why the surface of some metals acquire a dull appearance when exposed to air for a long time. Support it with three examples.**

**Ans.** 1. Corrosion of Iron is called rusting.

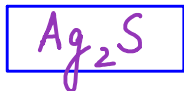
Rust → Hydrated Iron (III) oxide.  
(Brown)



2. Corrosion of Silver

Silver Sulphide

(Black)



3. Corrosion of Copper



### 3. Corrosion of Copper

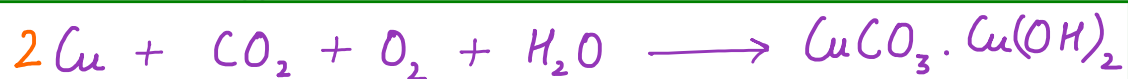
Basic Copper Carbonate

(Green)  $\text{CuCO}_3 \cdot \text{Cu(OH)}_2$



**Q. Write equation to show corrosion of copper and silver.**

**Ans. Corrosion of Copper :-**

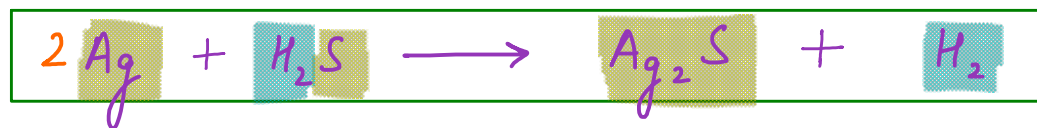


**Basic Copper Carbonate**





### Corrosion of Silver :-



Silver sulphide



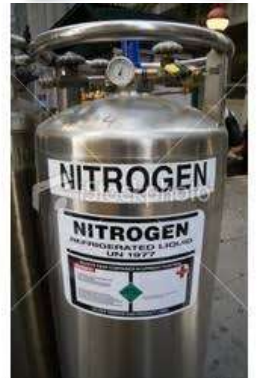
# Rancidity :-

**Rancidity :-** When food materials containing fats and oils are oxidised. they become rancid i.e. their smell and taste changes. This phenomenon is called Rancidity.



**Q. Oil and fat containing food items are flushed with nitrogen. Why ?**

**Ans.** Nitrogen is an inert gas It prevent oil and fat containing food items from rancidity.



**Q. List two measures to prevent rancidity.**

**Ans.** 1 By Keeping food materials in air tight containers.



2. By refrigeration of food materials.



3. By flushing nitrogen in packets.



4. By using anti-oxidants, the substances which prevent oxidation of fats and oils. example - BHA (Butylated Hydroxy Anisole)  
BHT (Butylated Hydroxy Toulene)

2013

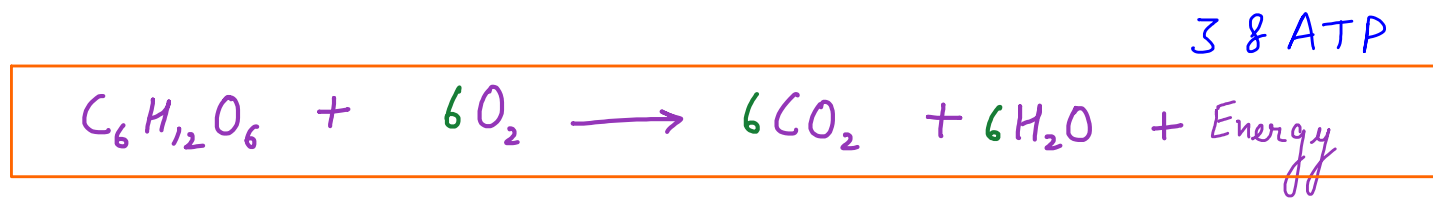
**Q. Name the phenomenon due to which the taste and smell of oily food changes when kept for a long time in open. Suggest one method to prevent it.**

**Ans. Rancidity :-**

**Same as above** 

**Prevention :-**

# Respiration reaction



- Respiration is exothermic reaction.

## Activity to show Endothermic reaction



Barium hydroxide

2g.

Ammonium chloride

1g.

Barium chloride

Ammonium hydroxide

Observation – We will observe that beaker become will cold at the bottom.  
(Endothermic reaction.)

## Combination reaction :-



Carbon monoxide

hydrogen

Methanol

