

# UPAAN

2025

**CHEMICAL REACTIONS AND EQUATIONS**

Effects of Oxidation in Daily Life and

NCERT Questions (Imp.)

CHEMISTRY

Lecture - 08

**BY: SUNIL BHAIYA**



Bharat Mata Ki Jai



# Topics

*to be covered*

- 1 Effects of Oxidation in Daily Life – Types of Redox Reactions ✓
- 2 Some Important NCERT Intext and Exercise Questions ✓



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## Knowledge Ride On



Effects of Oxidation in Daily Life –  
Types of Redox Reactions

## Knowledge Ride On



Some Important NCERT Intext and  
Exercise Questions

## Knowledge Ride On



Insaniyat Ka Gyaan

RIDDLE WALLAH



Simaila: Which is your favourite movie?

Hasmukhlal: Chemical symbol of Potassium-Aluminium

Hydrogen-Oxygen Sodium Hydrogen-Oxygen

Simaila: Mujhe nahi aaya tu bta?

Hasmukhlal: KAl(OH)4   NaOH

## RIDDLE WALLAH



Simaila: Which is your favourite movie?

Hasmukhlal: Chemical symbol of Potassium-Aluminium

Hydrogen-Oxygen Sodium Hydrogen-Oxygen

Simaila: Mujhe nahi aaya tu bta?

Hasmukhlal: KAl HO Na HO

Niklo Beta Yahan Se!

*Simaila to Hasmukhlal*



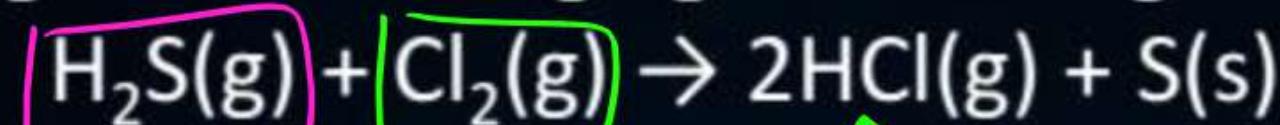
# Concept Polish (गृहकार्य) – Homework Discussion



## Question



Identify the oxidising and reducing agent in the given chemical reaction.



Addition of hydrogen - Reduction - OXIDISING AGENT

Removal of hydrogen - Oxidation - REDUCING AGENT

- A H<sub>2</sub>S: Oxidising agent, Cl<sub>2</sub>: Reducing agent
- B H<sub>2</sub>S: Reducing agent, Cl<sub>2</sub>: Oxidising agent
- C H<sub>2</sub>S: Reducing agent, S: Oxidising agent
- D Cl<sub>2</sub>: Oxidising agent, HCl: Reducing agent

## Question



Is it right to say that generally all displacement reactions are exothermic and redox reactions?

A. Yes

B. No

→ (most of the)  
Generally, displacement reactions are exothermic &  
all are redox reactions.



# (Effects of Oxidation in Daily Life – Types of Redox Reactions)

# Corrosion (संदर्भ)



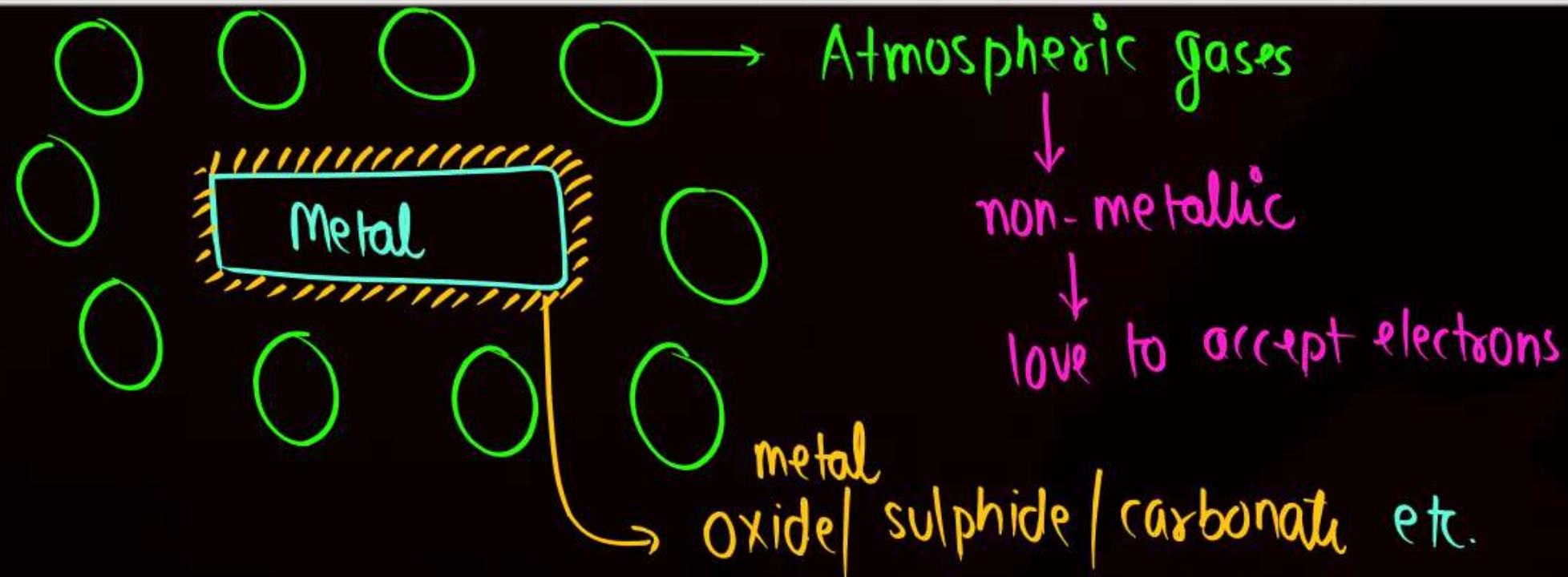
'degradation' (दूष)

It is a surface deterioration process of metals in which they convert to a more stable form, i.e. oxides, sulphides, carbonates and more, due to the attack of atmospheric gases.

Metal (दूष)

↓  
Love to loose  
electron(s)

↓  
'STABLE'



BRIEFDETAIL → CH<sub>3</sub>O<sub>3</sub>CORROSION

Type:

Rusting

Tarnishing

Layer formed:

Rust

Formed on:

Iron (Fe)

Patina

protective layer

(Copper (Cu), Silver (Ag), Aluminium (Al)  
etc.)

Type of Corrosion

Rusting (in case of iron, Fe)

Name and Colour of Layer

✓ Rust & ✓ Reddish Brown

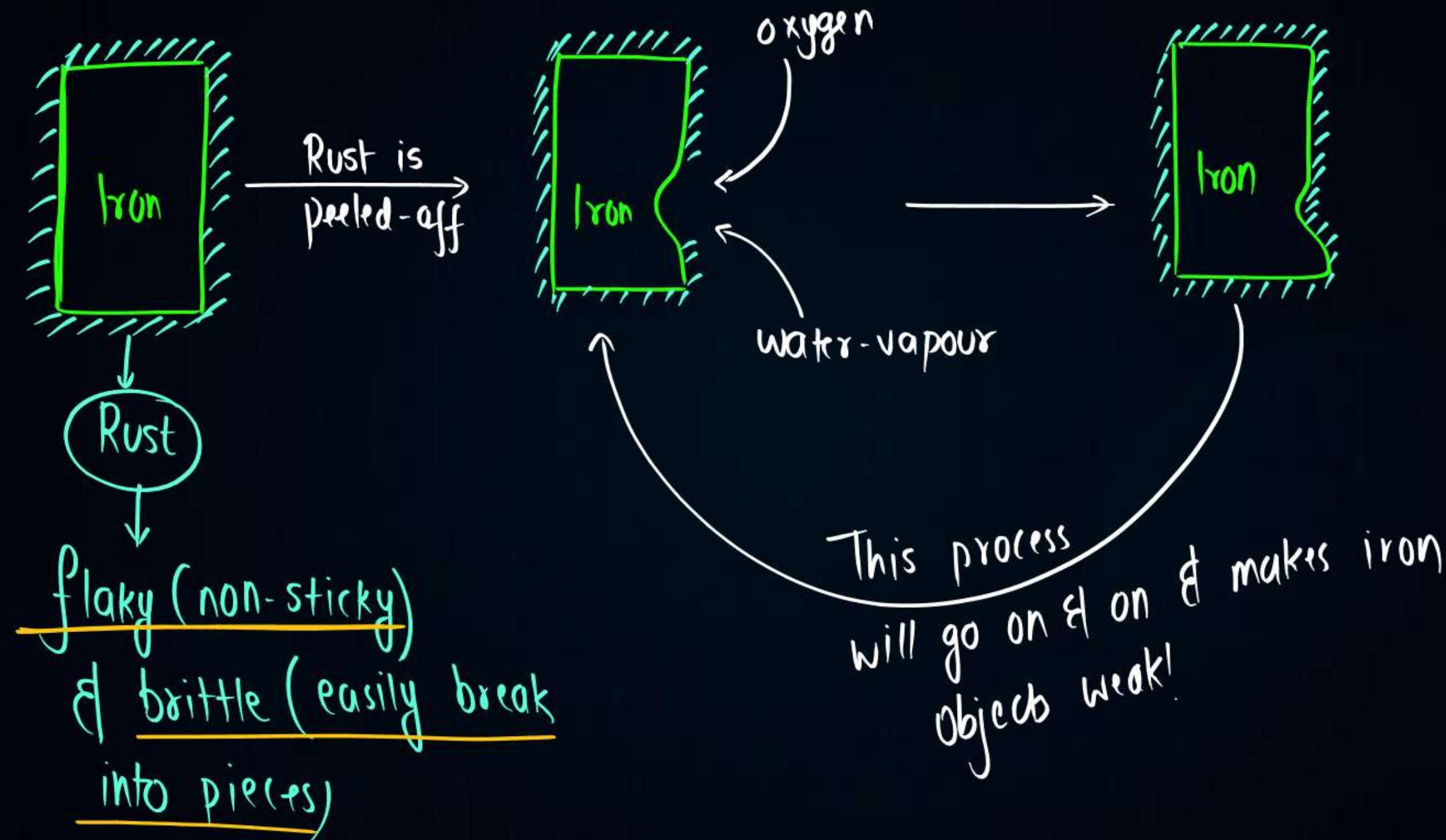


### Cons of Corrosion – Rusting

Rust is a flaky (non-sticky) layer that is very brittle and peels-off. It then exposes the fresh iron layer to moisture and oxygen. This continuous cycle makes iron objects weak and can collapse buildings and bridges, break oil pipelines and more.

# Cons of Corrosion - Rusting

'negative statement'



## Type of Corrosion

→ Tarnishing (in case of Cu)

## Name and Colour of Layer

→ Patina & Green colour



(Green layer of patina)

+ve statement

### Pros of Corrosion – Patina

Patina seems to be helpful for some of the metals like Copper (Cu), which on oxidation forms an impervious protective layer that protects further corrosion (here tarnishing) of metal.

'protective layer'

metal से विरोधी नहीं  
& और अंदर वाले  
metal को बचाती है।

Type of Corrosion

→ Tarnishing ( in case of Ag)

Name and Colour of Layer

→ Patina & Black





# Rancidity/Rancidification

(रान्सिडिफेशन)

L → (Type of Redox Reaction)  
<sup>G-I</sup>G-III

'Oxidative rancidity'

It is the oxidation of oil or fat-containing food items when they are kept in the open for a long time, resulting in an unpleasant odour and taste.

G-II

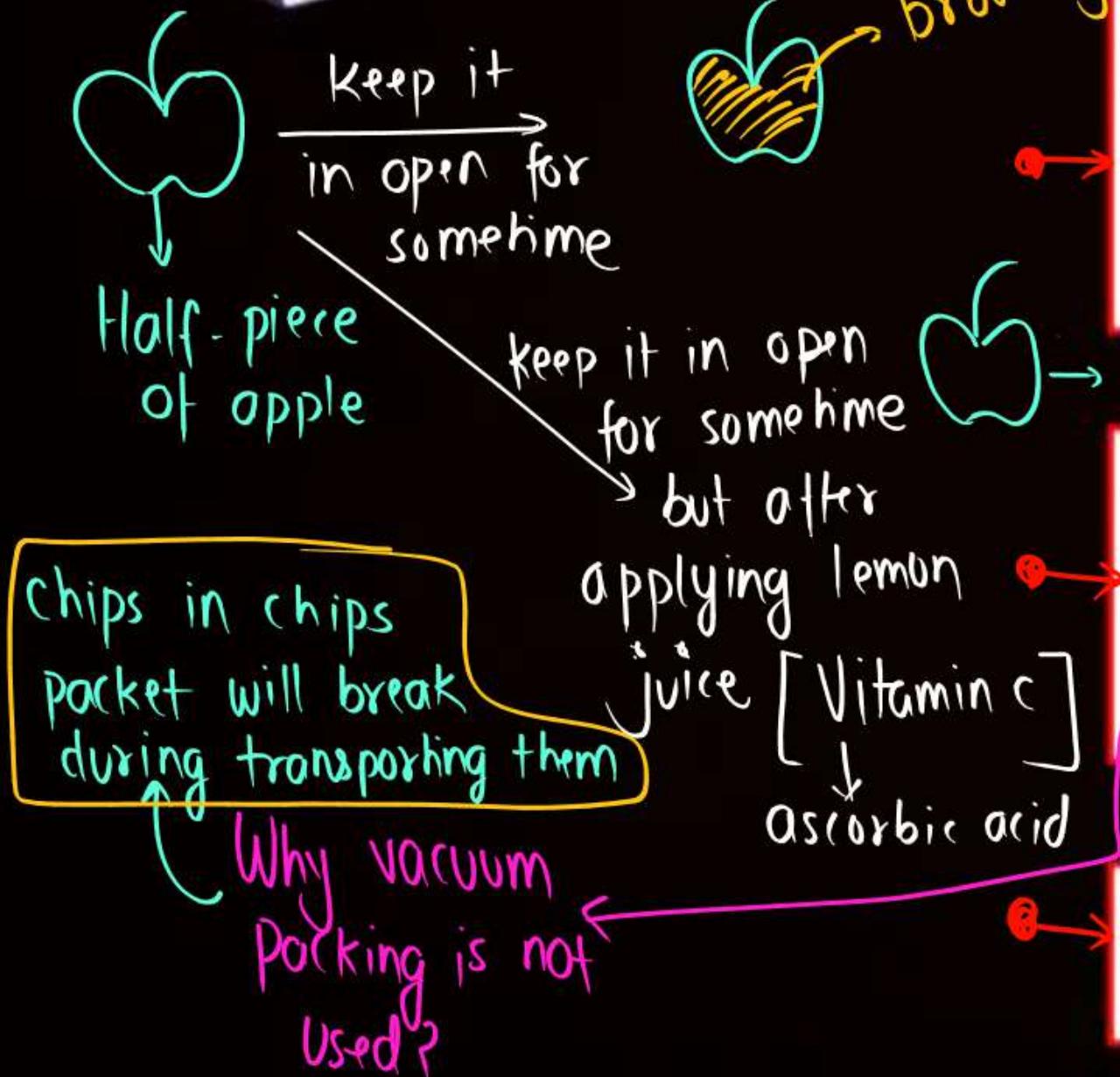
### Types of rancidity

- Oxidative → because of oxygen
- Micro-organisms ex: bread mould
- Hydrolytic → because of water



AE CHI...

# Ways to Prevent Rancidity



## Some methods to prevent rancidity

(i) **Addition of antioxidants:** Some chemical substances are added to the fat and oil-containing substances that inhibit their oxidation. Such substances are called antioxidants. (रोकना)

Examples: Vitamin C (Ascorbic acid), Vitamin E and many more

air is removed (contains 20.95% O<sub>2</sub>)

(ii) **Filling nitrogen gas:** In chip packets, the oxygen gas is replaced with nitrogen to prevent the oxidation of chips. Moreover, nitrogen does not react with the chips to change their odour and taste. Hence, the chips retain their original taste and odour.

→ Helium (He) can also be used!

(iii) **Refrigeration of food items:** Refrigeration lowers down the oxidation of food items and prevents a change in their odour and taste.

Temp. (↓), Speed of rxn (↓)

KYA BOLTI PUBLIC





## (Some Important NCERT Intext and Exercise)

- All questions are imp. & all are already covered.
- 'Different ones'

## Question



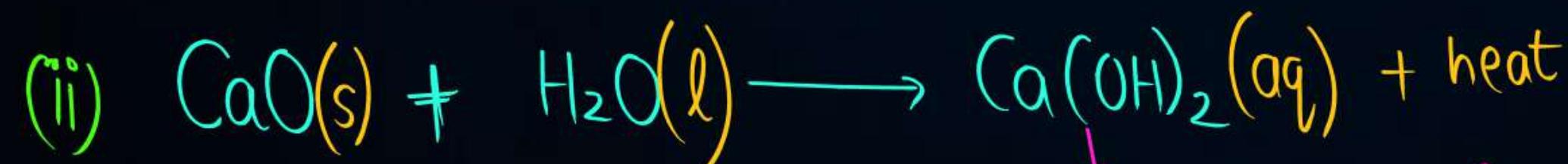
A solution of a substance 'X' is used for white washing.

- (i) Name the substance 'X' and write its formula.
- (ii) Write the reaction of the substance 'X' named in (i) above with water.

NCERT Intext Question 1., P.N. 10

(i) X : CaO [Calcium oxide]

↓ also called  
quicklime| burnt lime



↓  
Calcium hydroxide (slaked lime)

## Question



A solution of a substance 'X' is used for white washing.

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**NCERT Intext Question 1., P.N. 10**

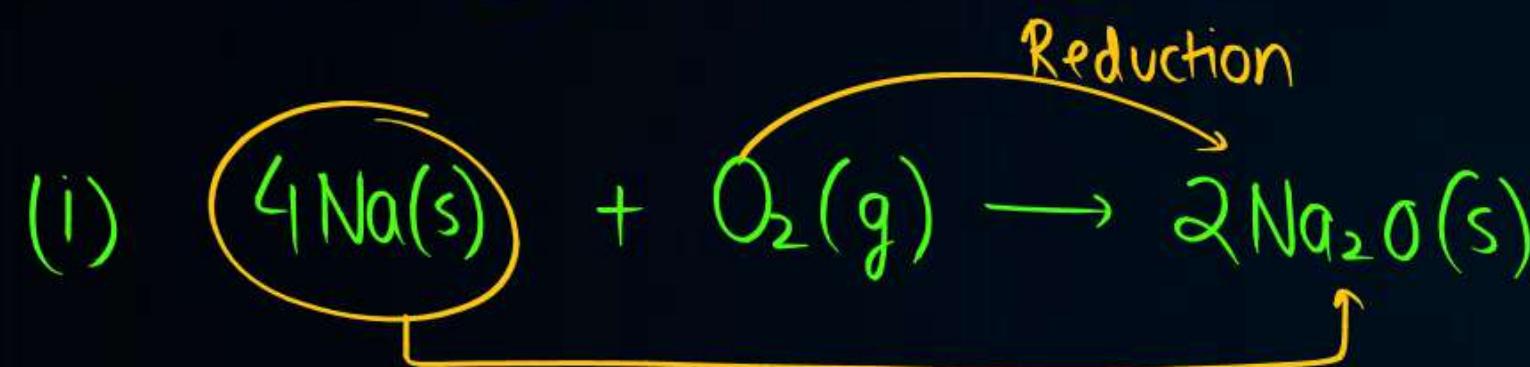
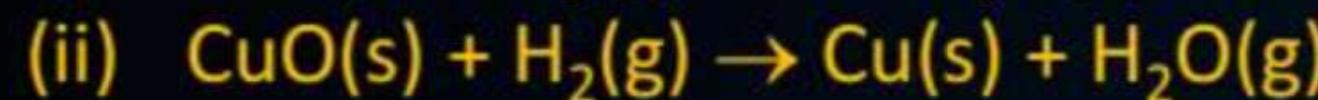
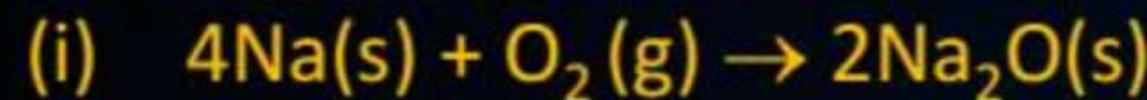
- (i) X: Solution of CaO (Quicklime/Burnt lime) is used for whitewashing.



## Question



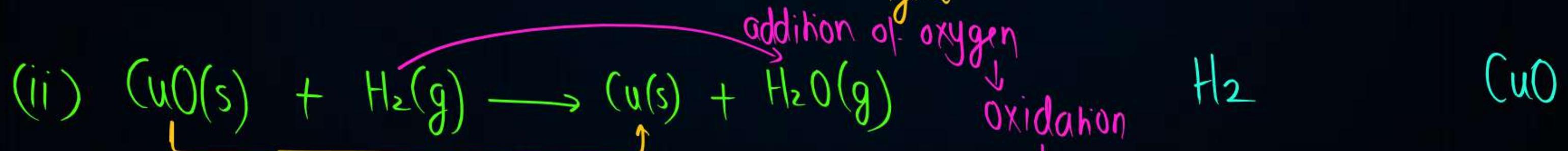
Identify the substances that are oxidised and the substances that are reduced in the following reactions.



NCERT Intext Question 3., P.N. 13

Oxidised	Reduced
Na	$\text{O}_2$

Addition of oxygen  $\rightarrow$  OXIDATION  $\rightarrow$  Reducing agent



Removal of oxygen  $\rightarrow$  REDUCTION  $\rightarrow$  Oxidising agent      Reducing agent

## Question



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

- (i)  $4\text{Na(s)} + \text{O}_2\text{(g)} \rightarrow 2\text{Na}_2\text{O(s)}$
- (ii)  $\text{CuO(s)} + \text{H}_2\text{(g)} \rightarrow \text{Cu(s)} + \text{H}_2\text{O(g)}$

*NCERT Intext Question 3., P.N. 13*

- (i) ✓ Na: It has been oxidised and hence, it acts as a reducing agent.  
O<sub>2</sub>: If sodium has been oxidised then oxygen has been reduced and it acts as an oxidising agent.
- (ii) ✓ CuO: Removal of oxygen takes place from copper oxide; it has been reduced and hence, it acts as an oxidising agent.  
H<sub>2</sub>: Addition of oxygen takes place on hydrogen; it has been oxidised and hence, it acts as a reducing agent.

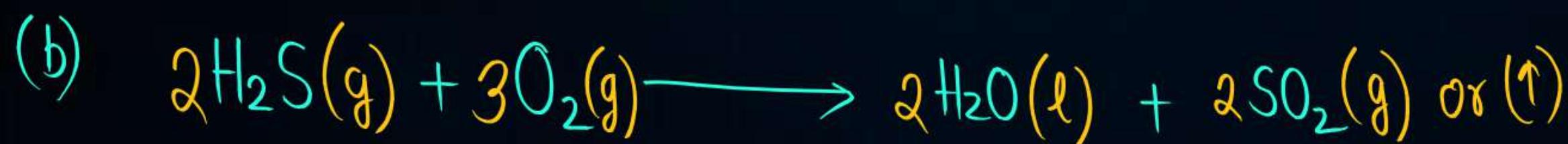
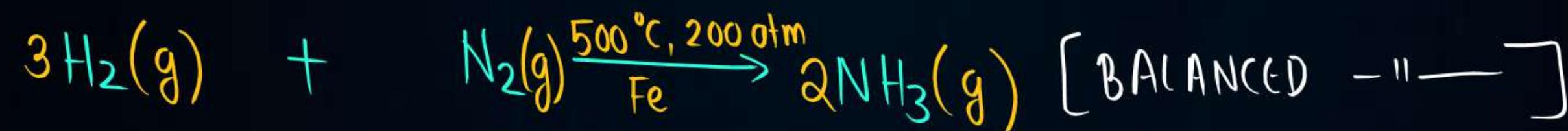
## Question



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

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

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



**NCERT Exercise, Question 5**

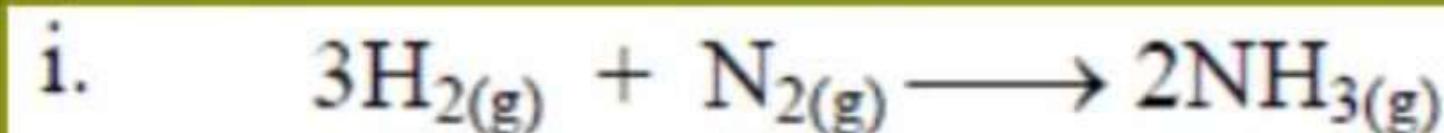
## Question



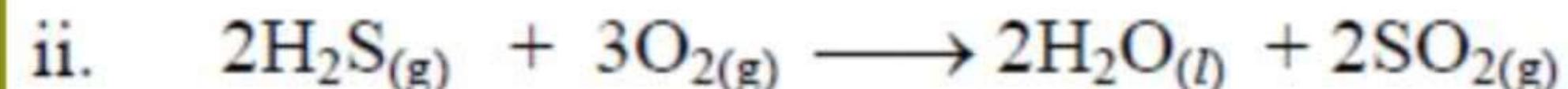
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## **NCERT Exercise, Question 5**



## Hydrogen    Nitrogen    Ammonia



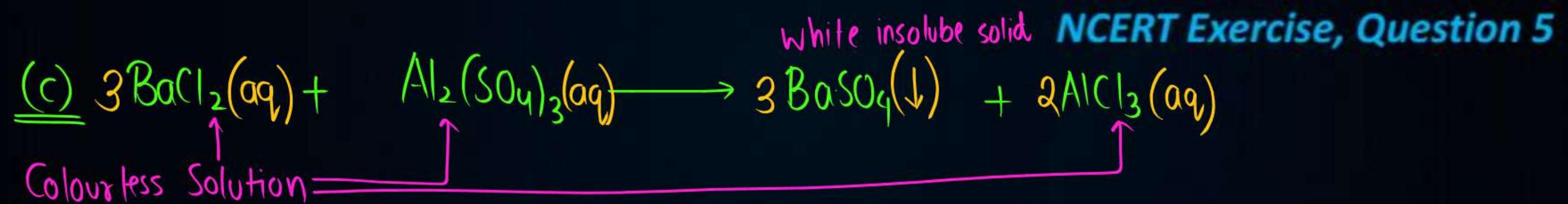
Hydrogen      Oxygen      Water      Sulphur  
sulphide

## Question



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

- (c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.
- (d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.



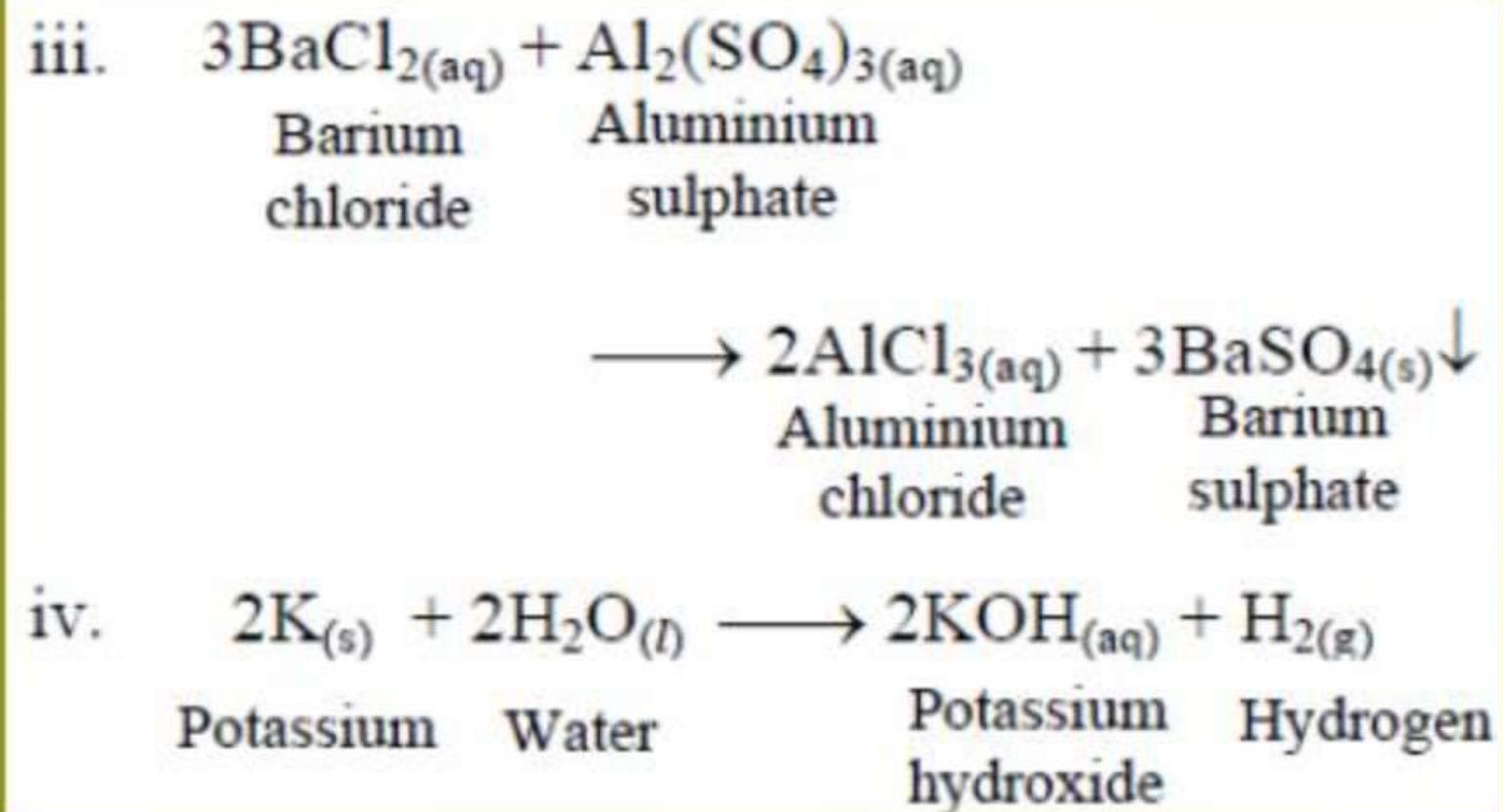
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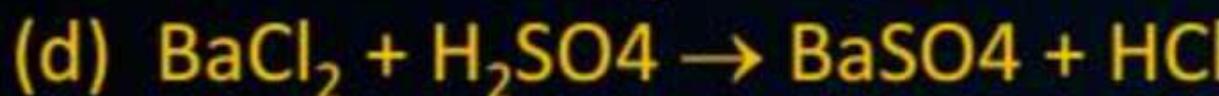
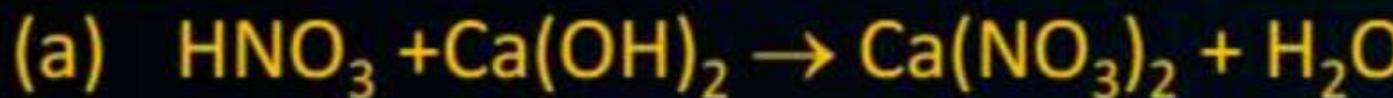
### NCERT Exercise, Question 5



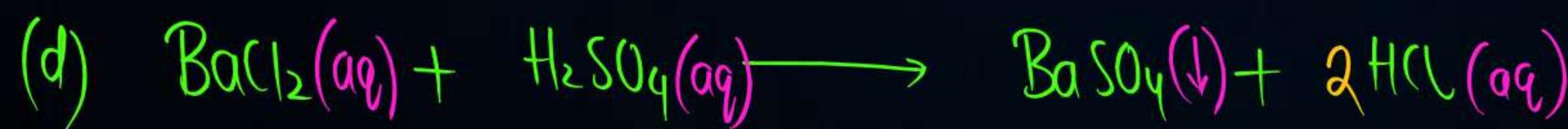
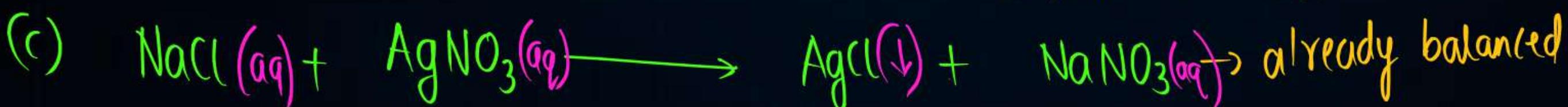
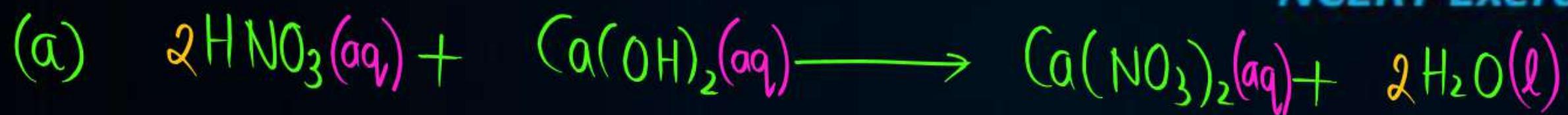
## Question



Balance the following chemical equations.



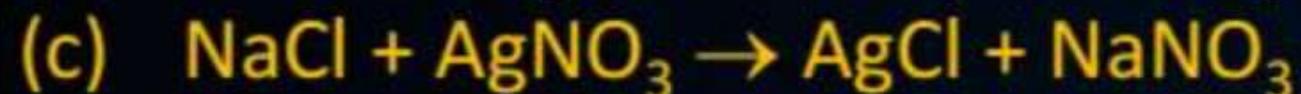
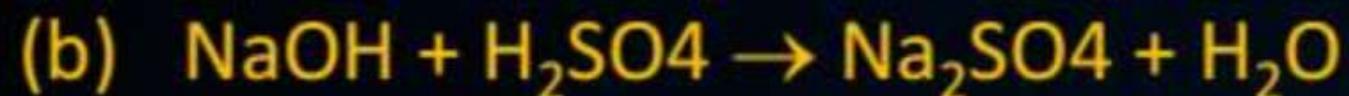
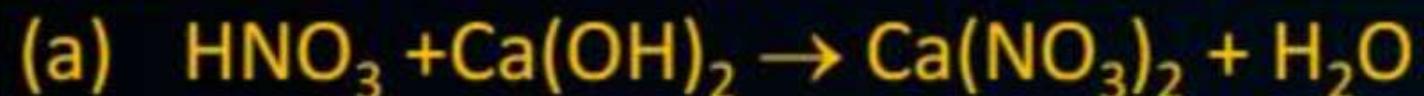
## NCERT Exercise, Question 6



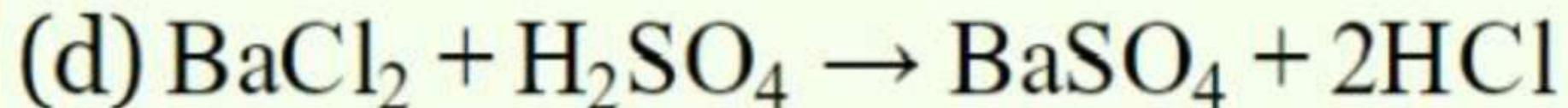
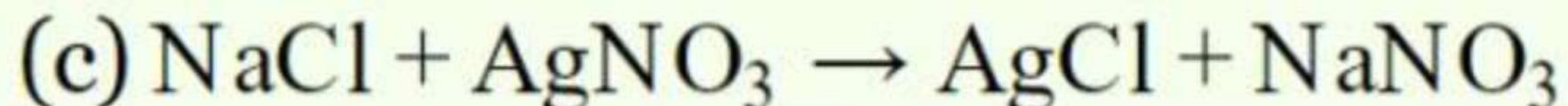
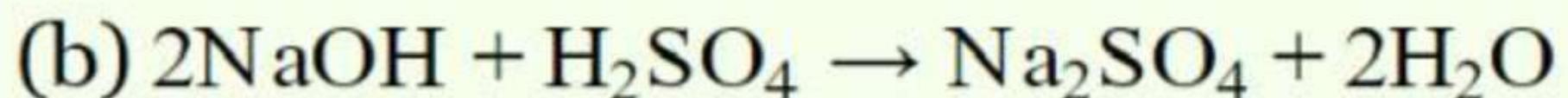
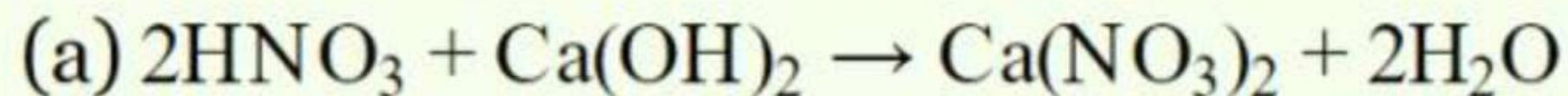
## Question



Balance the following chemical equations.



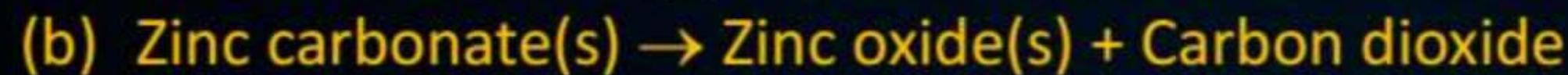
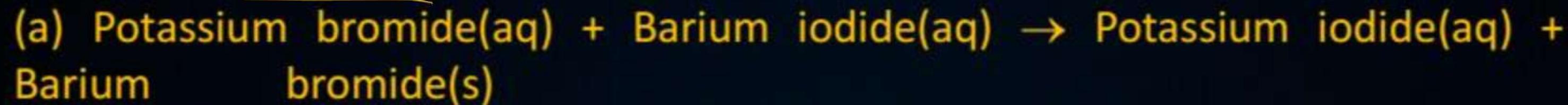
*NCERT Exercise, Question 6*



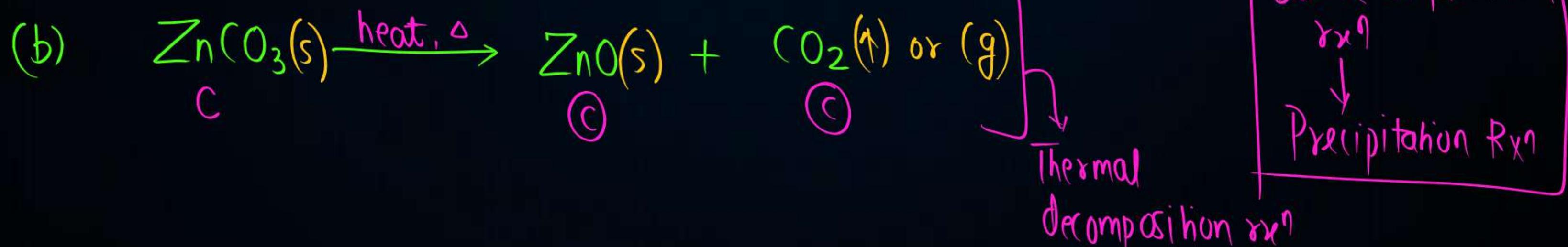
## Question



Write the balanced chemical equation for the following and identify the type of reaction in each case.



### NCERT Exercise, Question 8

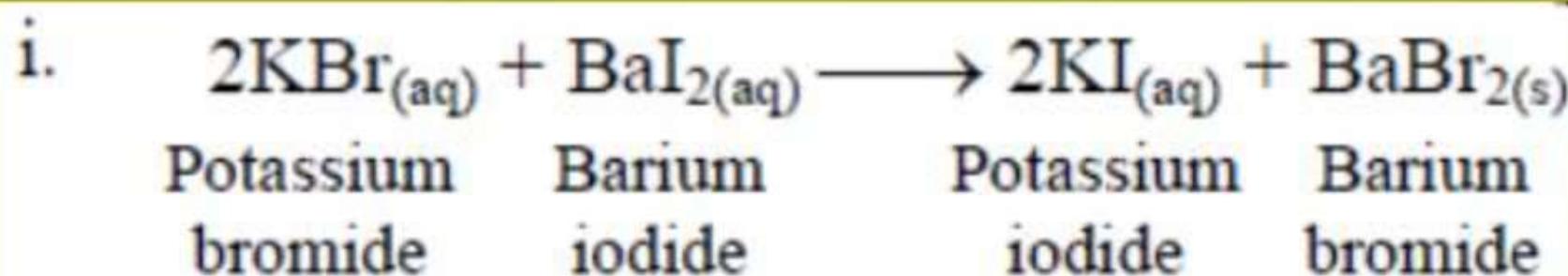


## Question

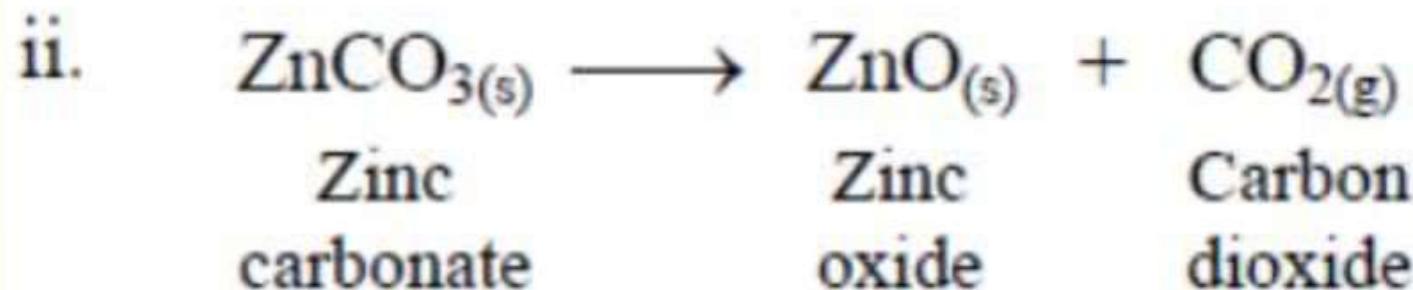


Write the balanced chemical equation for the following and identify the type of reaction in each case.

- (a) Potassium bromide(aq) + Barium iodide(aq) → Potassium iodide(aq) + Barium bromide(s)
- (b) Zinc carbonate(s) → Zinc oxide(s) + Carbon dioxide(g)



It is a double displacement reaction.



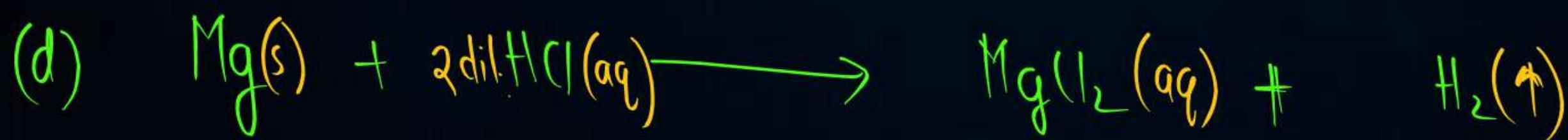
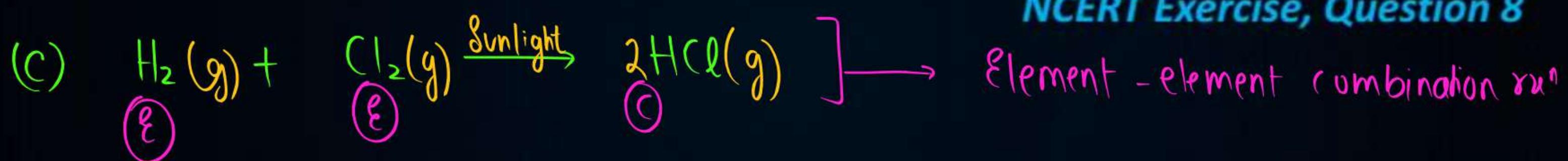
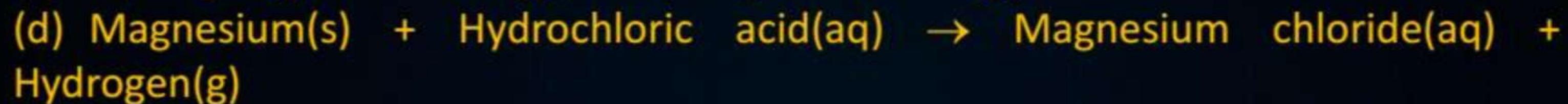
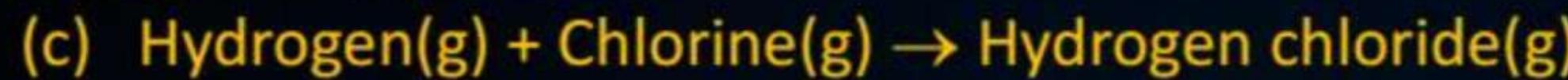
It is a decomposition reaction.

## NCERT Exercise, Question 8

## Question



Write the balanced chemical equation for the following and identify the type of reaction in each case.

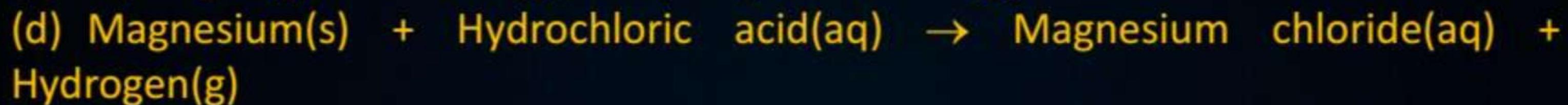


**NCERT Exercise, Question 8**

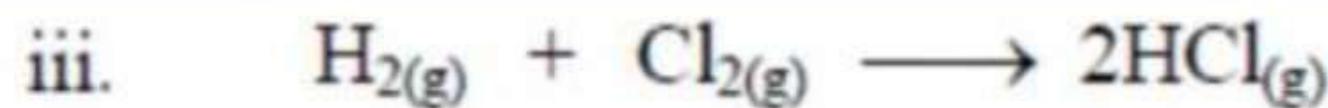
## Question



Write the balanced chemical equation for the following and identify the type of reaction in each case.



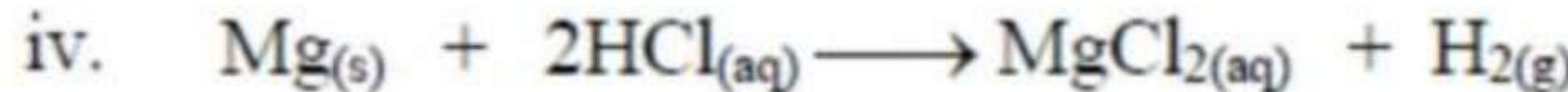
## **NCERT Exercise, Question 8**



## Hydrogen Chlorine Hydrogen chloride

A red checkmark indicating a correct answer.

It is a combination reaction.



It is a displacement reaction.

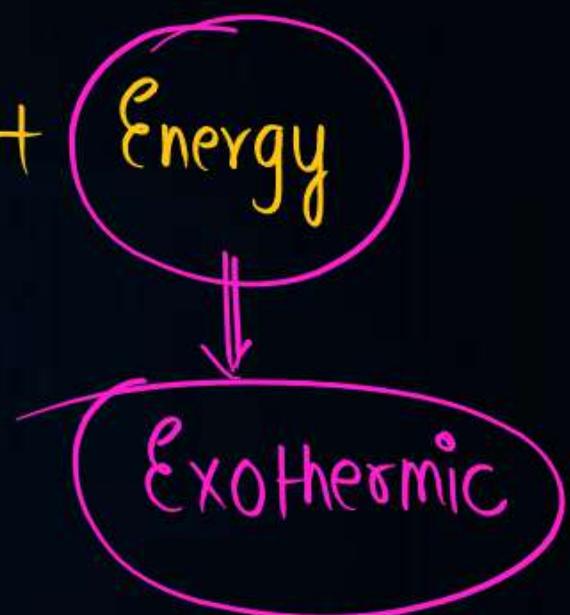
## Question



Why is respiration considered an exothermic reaction? Explain.

**NCERT Exercise, Question 10**

↓  
'aerobic respiration'



## Question



Why is respiration considered an exothermic reaction? Explain.

**NCERT Exercise, Question 10**

*During aerobic respiration the following reaction takes place:*

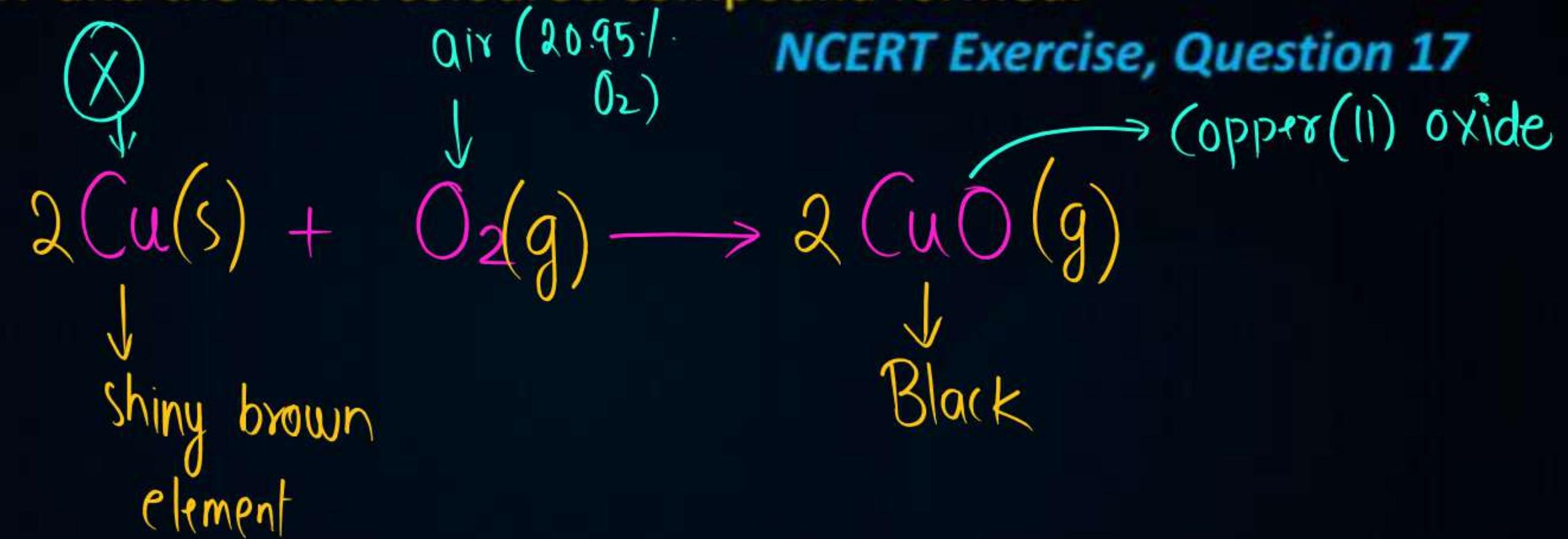


*Energy is released and hence, it is an exothermic reaction!*

## Question



A shiny brown coloured element 'X' on heating in air becomes black in colour.  
Name the element 'X' and the black coloured compound formed.



## Question



A shiny brown coloured element 'X' on heating in air becomes black in colour.  
Name the element 'X' and the black coloured compound formed.

**NCERT Exercise, Question 17**

- X: Copper (Cu)
- *On heating copper reacts with oxygen to form a black coloured oxide of CuO. The following reaction takes place:*



## Question



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

*NCERT Exercise, Question 19*

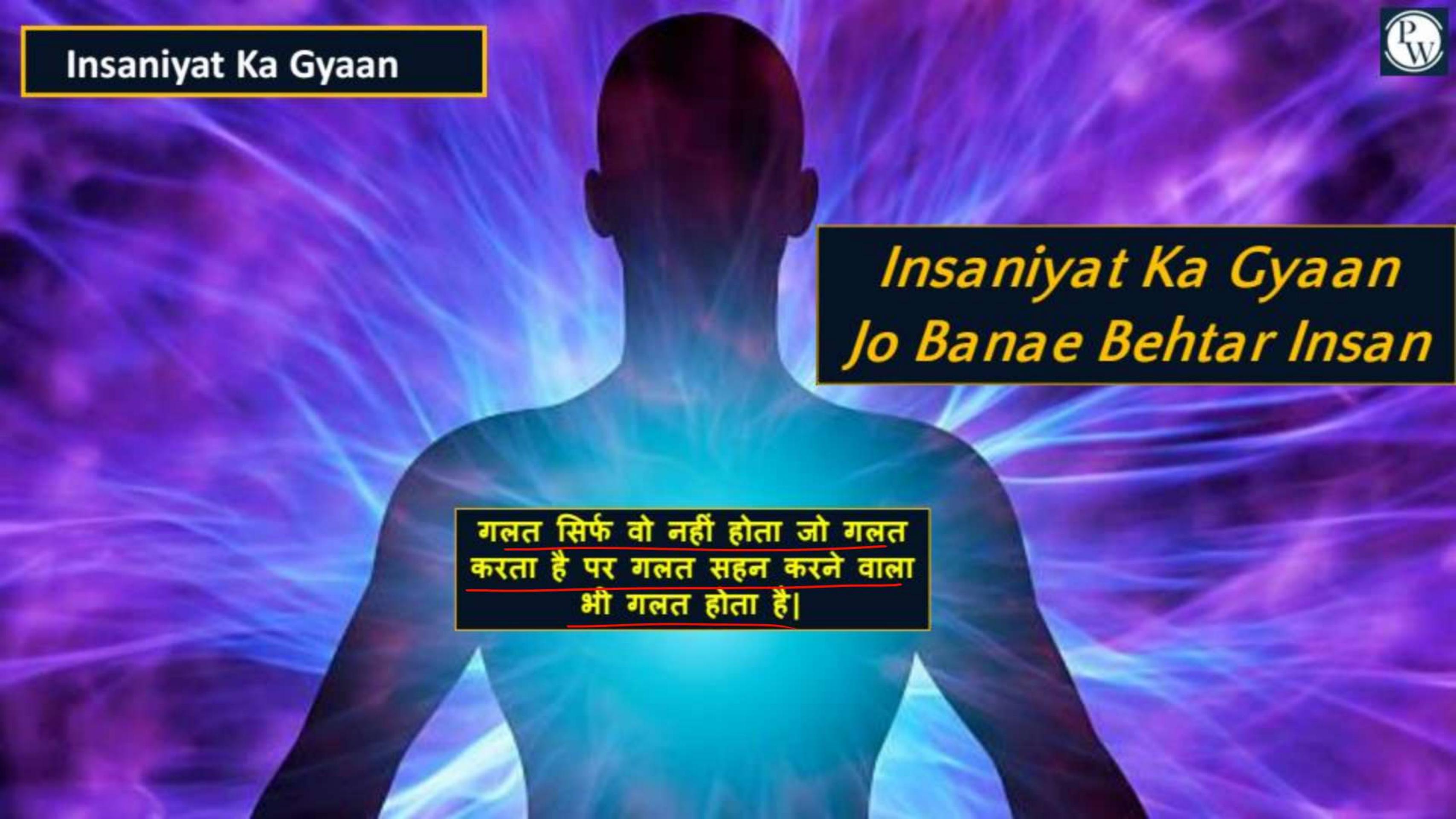
- ① Nitrogen don't react with oil & fat containing food items ] Result  
Their odour & taste remain intact.
- ② Nitrogen is flushed & vacuum packing is avoided  
So that no damage is caused to food item while transporting it!

## Question

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

*NCERT Exercise, Question 19*

In chip packets, the oxygen gas is replaced with nitrogen to prevent the oxidation of chips. Moreover, nitrogen does not react with the chips to change their odour and taste. Hence, the chips retain their original taste and odour.

A central silhouette of a person's head and shoulders, facing right, set against a vibrant background of purple and blue light rays emanating from behind them. The person is wearing a dark shirt.

गलत सिर्फ वो नहीं होता जो गलत  
करता है पर गलत सहन करने वाला  
भी गलत होता है।

*Insaniyat Ka Gyaan  
Jo Banae Behtar Insan*

# SUNIL BHAIYA

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# CBSE QUESTION & CONCEPT BANK

Chapter-wise & Topic-wise

Includes Point-wise Answers with Step-wise Marking

## CLASS 10<sup>th</sup> **SCIENCE**

Chapter-wise  
**CONCEPT MAPS**

CBSE 2024-25 & NEP 2020  
**CURRICULUM BASED**

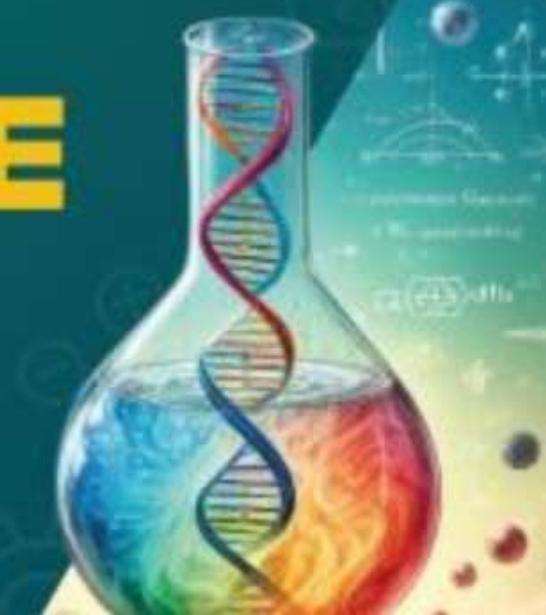
Revision Plan, Prioritised Solved Questions  
**COMPETENCY FOCUSED**

CBSE 2024 & 2023 with Handwritten Solutions  
**LATEST CBSE PAPERS**

As per Latest Pattern  
**MOCK TESTS**

**2025**

EXAMINATION



► Rakshak Dua  
► Samridhi Sharma  
► Sunil Vijay Hingorani

Detailed Review and Importance of  
the Book in One Video.

**Channel: PW Foundation YouTube**



**95%+**

IN CLASS 10<sup>TH</sup>

**STUDENTS**

कम हो गए हैं?

**SOLUTION**



10:59

Class 10th में 95%+ लाने वाले बच्चे घटे ?

Reason and Solution

SUNIL BHAIYA IS ALWAYS THERE FOR YOU.  
#sbsathhai ✓  
#pwsathhai



# THANK YOU

