



RADIANT

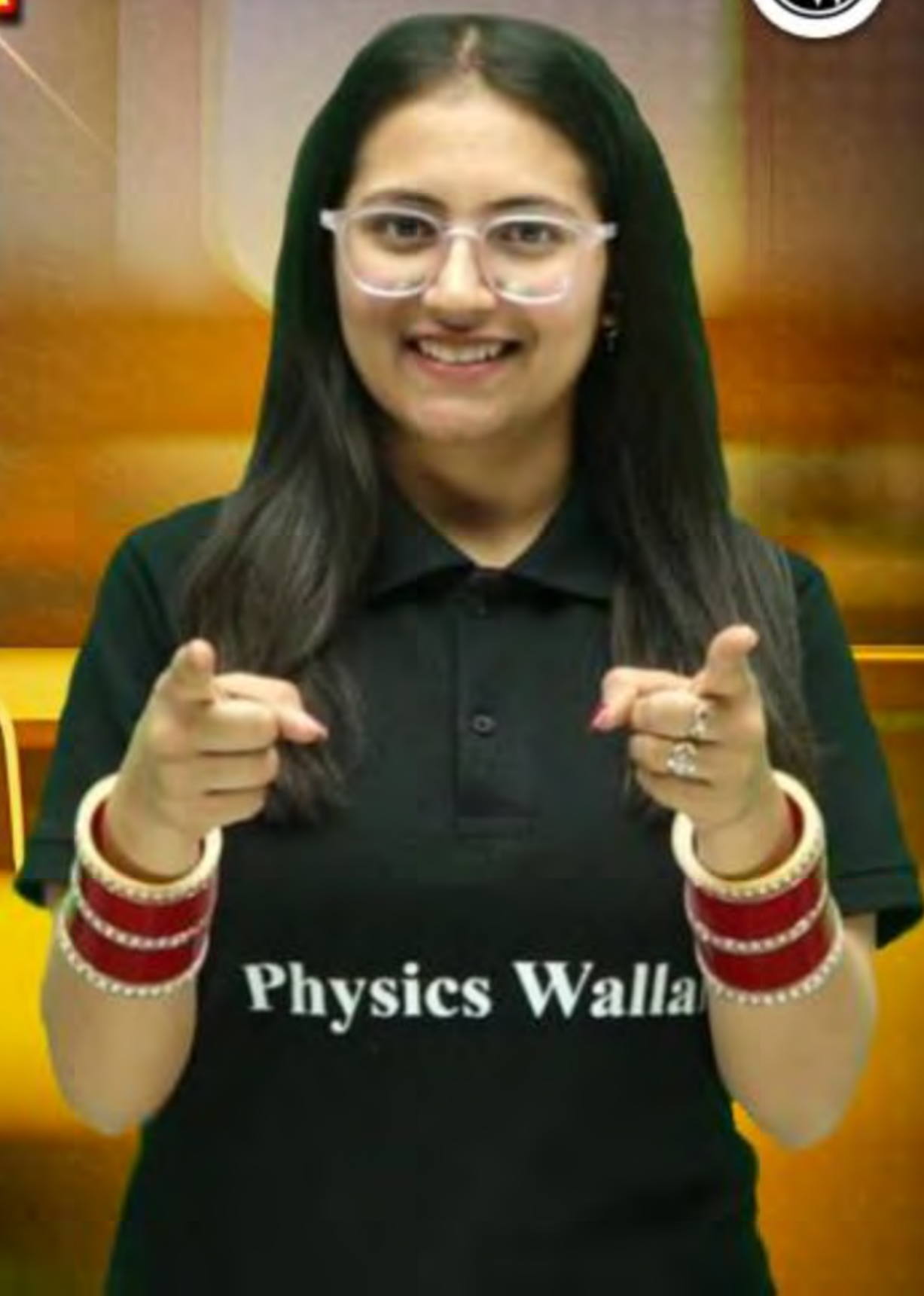
2026

Chemistry

Chemical Changes and
Reactions

Lecture - 03

By- Bharti Ma'am



Physics Wallah

Topics [★] to be covered



- 1.) Exothermic and Endothermic
- 2.) Electrochemical Reaction
- 3.) Redox Reaction
- 4.) Que Energy exchange reaction



Energy change in chemical reactions



In every chemical change or chemical reaction, change in energy is involved. i.e. there is a difference between the chemical energies of the reactants and the products. This energy can be in the form of heat, light, sound and electricity.

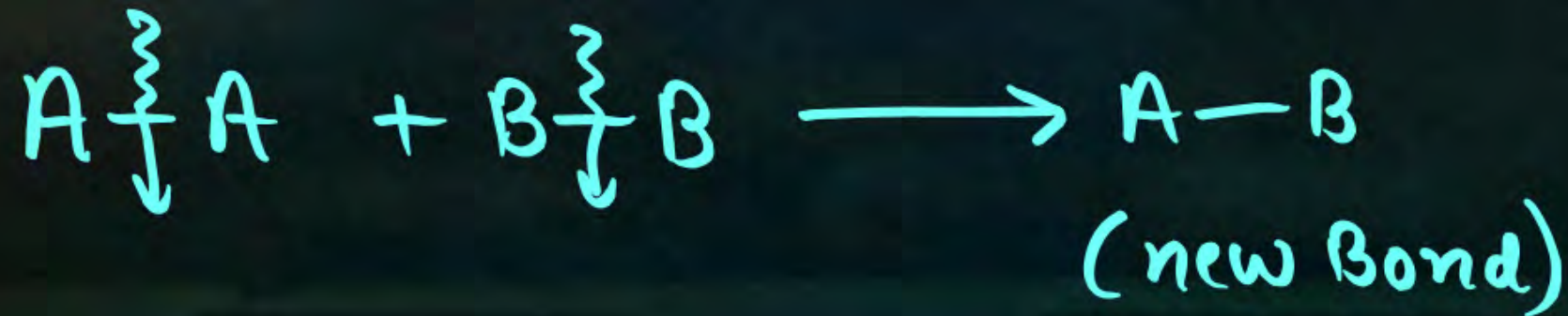
Every substance has a fixed amount of stored energy, which is in the form of potential energy, and is referred to as its chemical energy.



Energy change in chemical reactions



A chemical reaction involves the breaking up of chemical bonds between atoms resulting in absorption of energy in the form of heat, and simultaneous formation of bonds with release of energy.





Energy change in chemical reactions



1. Exothermic Heat ↑
2. Endothermic



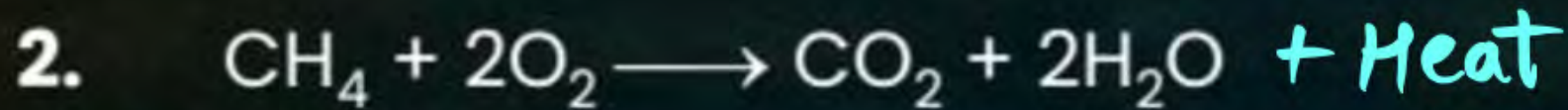
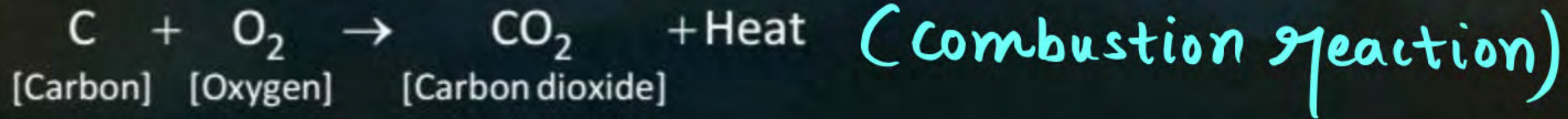
Energy change in chemical reactions



gmp

1. Exothermic:

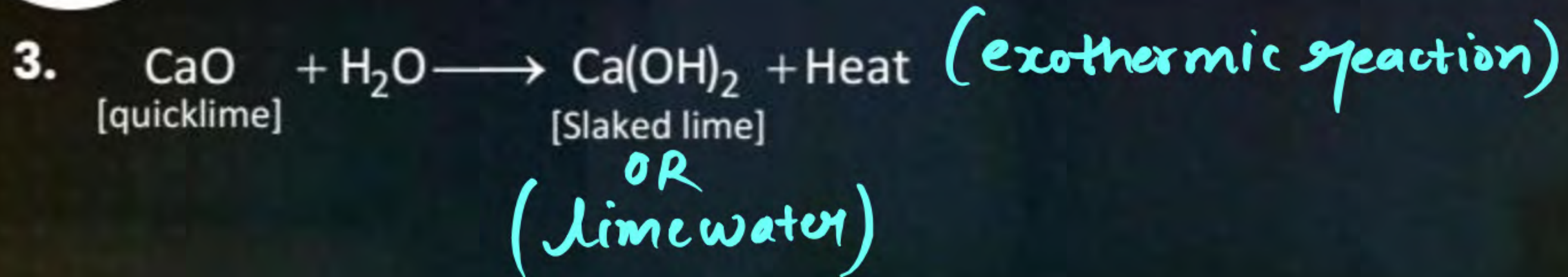
A chemical reaction in which heat (a form of energy) is given out is called an exothermic reaction. It causes a rise in temperature.



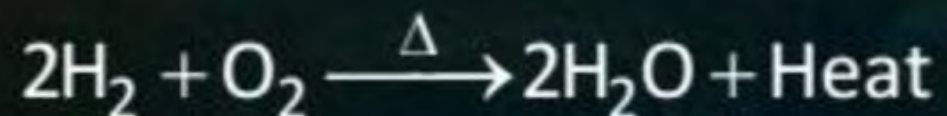
(Methane)



Energy change in chemical reactions



4. When hydrogen





Energy change in chemical reactions

v.gmp



We need energy to stay alive and we get this energy from simpler substances. For example, the carbohydrates in rice, potatoes and bread are broken down to form glucose.



→ 'ATP'

This reaction is exothermic and it is known by a special name respiration.

'oxidation of glucose'

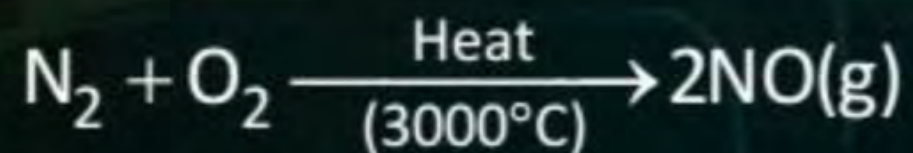
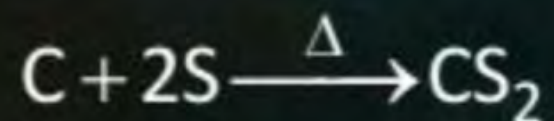


Endothermic reaction



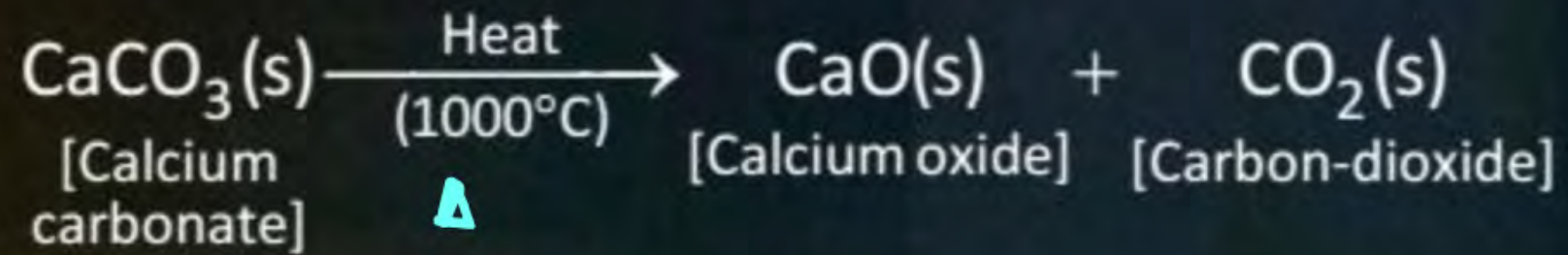
A chemical reaction in which heat is absorbed is called an endothermic reaction. It causes a fall in temperature.

Thus, such reactions cannot be sustained source without supply of energy from an external source.





Endothermic reaction



Δ

Metal
oxide

Reactant side: Carbonate
OR
bicarbonate

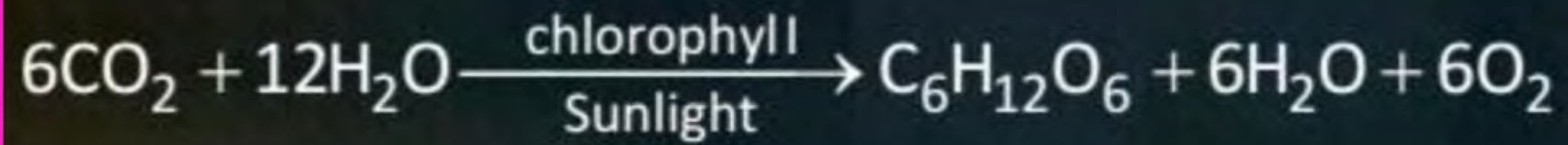
Product: $\text{CO}_2 \uparrow$



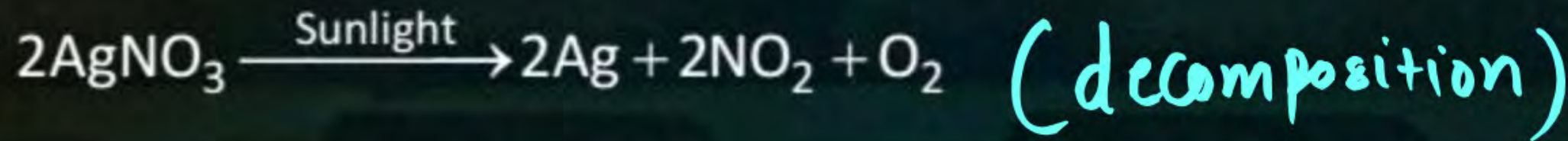
Photochemical reaction



Photosynthesis:



Endothermic + Photochemical
↓
'light'

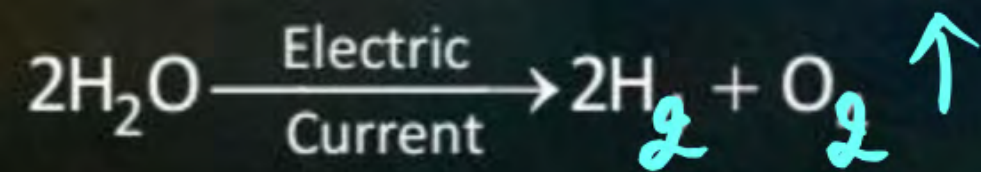




Electrochemical reaction



: By using Electric Current

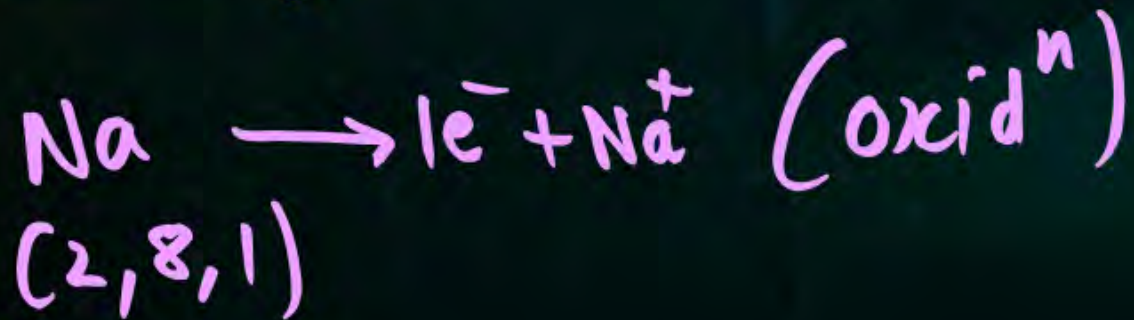


Oxidation Reaction

- Addition of oxygen
- Removal of Hydrogen
- oxidⁿ is loss of e⁻



(oxidⁿ Rxⁿ)



oil-Rig

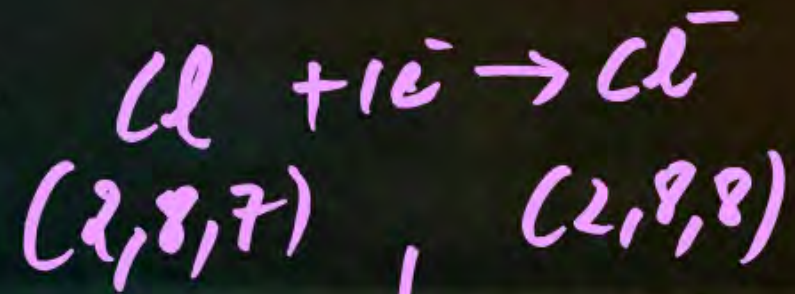
Redⁿ is gain of e⁻

Reduction Reaction

- Addⁿ of Hydrogen / Reduction is gain of e⁻

OR

- Removal of oxygen



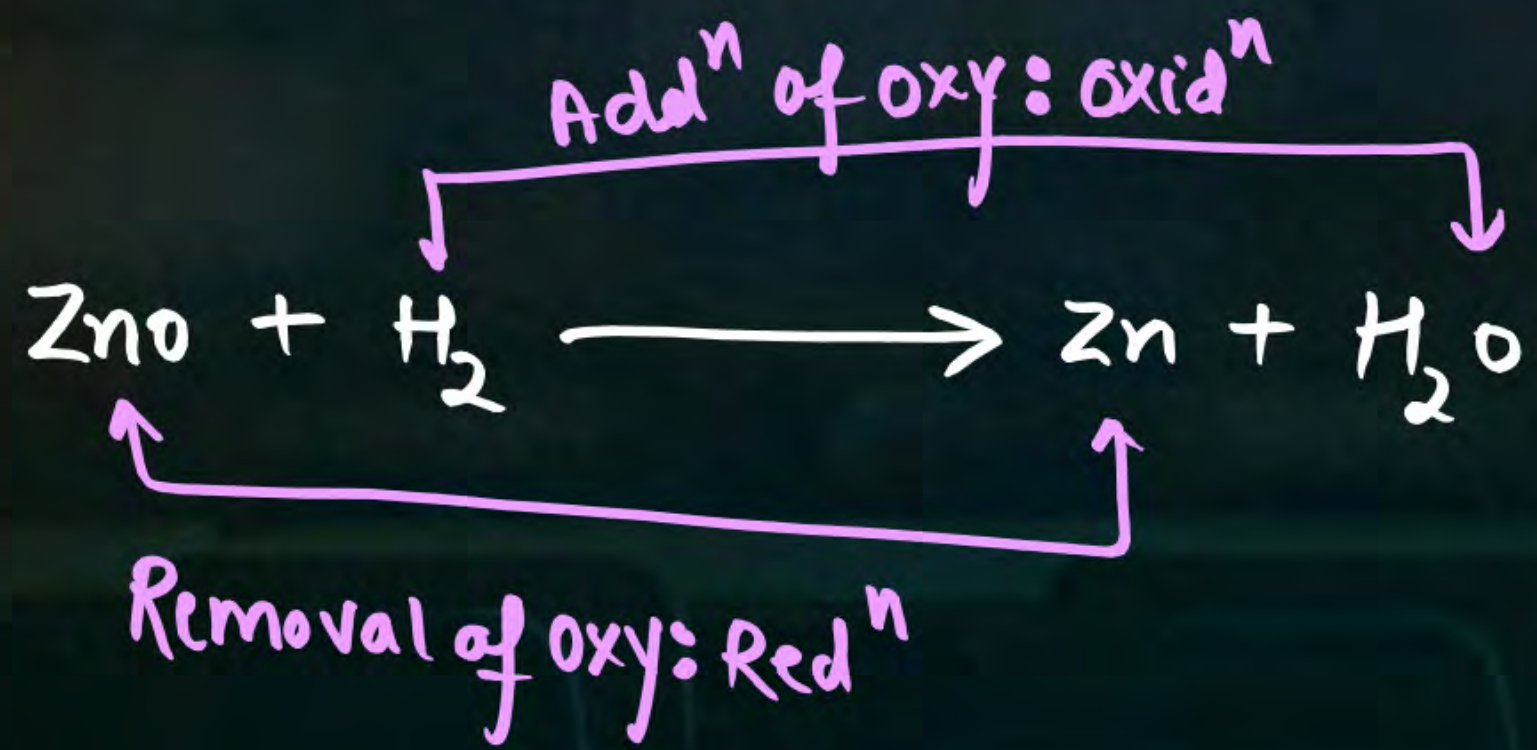
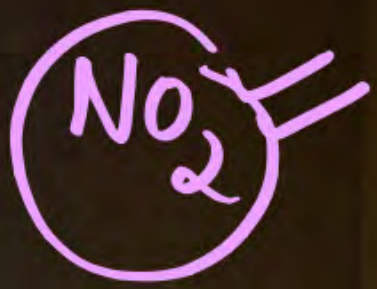
(Redⁿ)





Redox-Reaction

Redⁿ oxidⁿ



Both oxidⁿ and Redⁿ



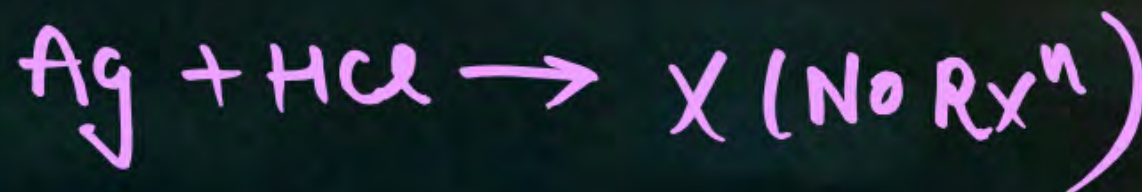
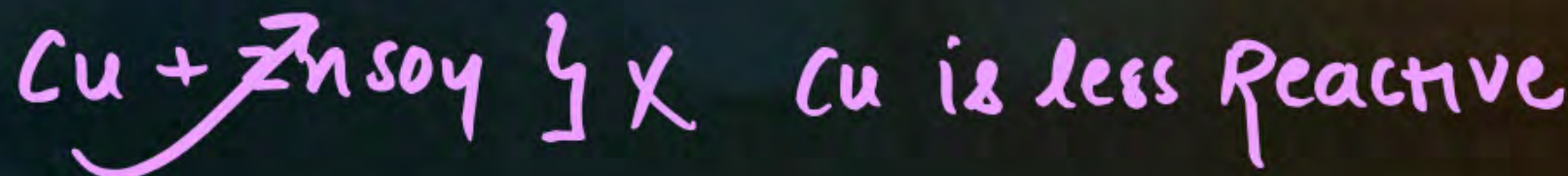
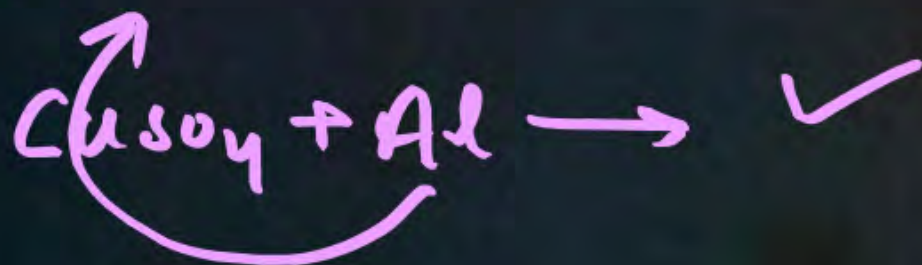
Question

(Band C)

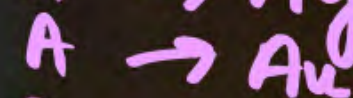
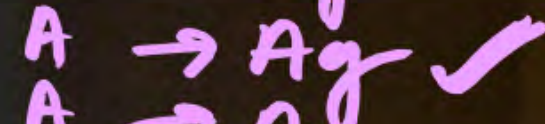
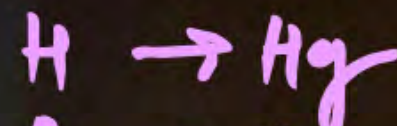
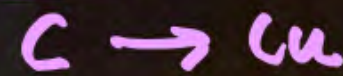


Which of the following reaction will not takes place?

- A** Reaction of Al and copper sulphate
- B** Reaction of copper and zinc sulphate
- C** Reaction of silver and hydrochloric acid
- D** Reaction of Iron and copper sulphate

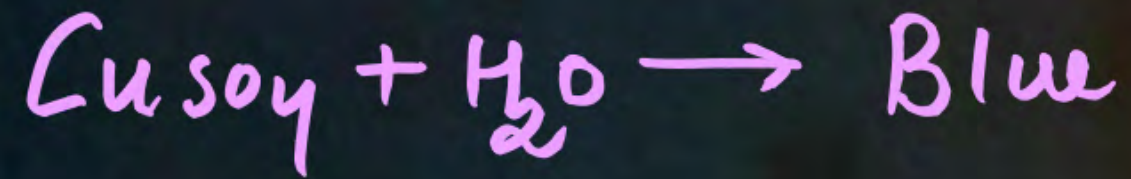


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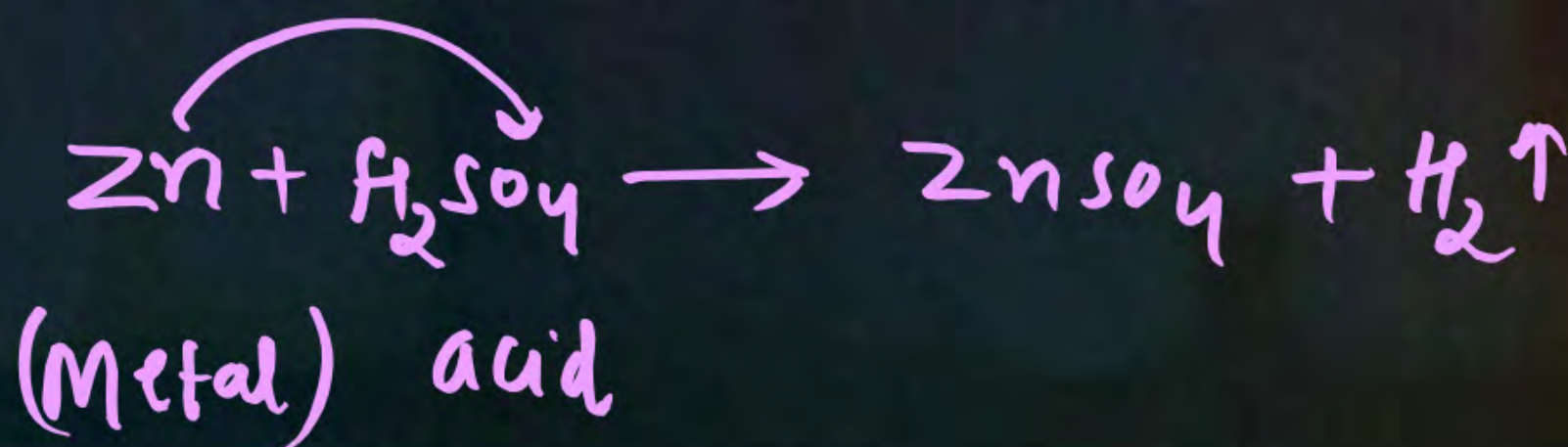
When copper sulphate crystals are dissolved in water, the colour of solution becomes

- A Green
- B Yellow
- C Blue
- D Red



When sulphuric acid reacts with zinc, which of the following gas is formed?

- A Sulphur dioxide
- B Hydrogen
- C Oxygen
- D Zinc dioxide

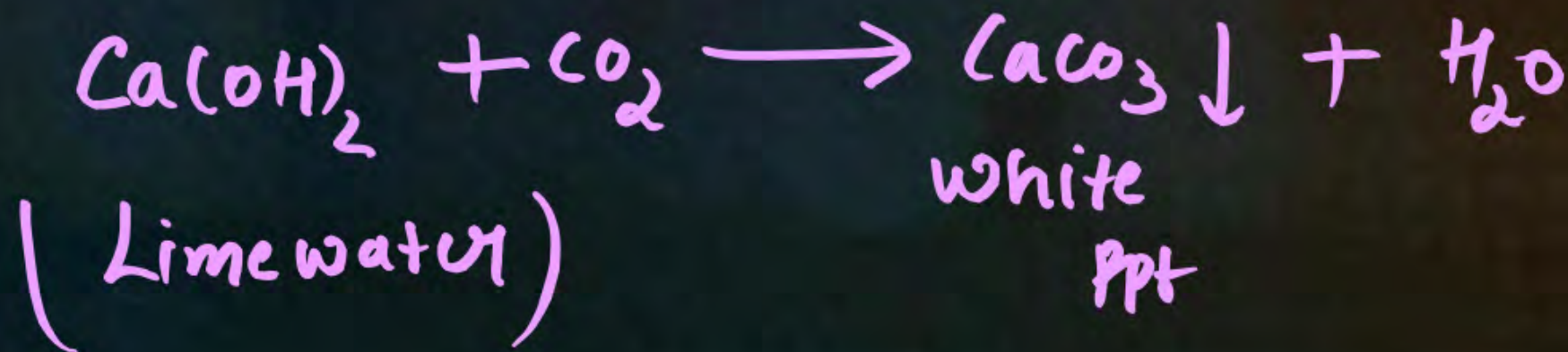


Which of the following is an example of double displacement reaction?

- A** Reaction of lead and copper chloride ✗
- B** Reaction of carbon and oxygen to form carbon dioxide ✗
- C** Reaction of zinc and copper sulphate ✗
- D** Reaction of sodium sulphate and barium chloride

Because of the formation of which of the following lime water turns milky when carbon dioxide is passed in it?

- A** Calcium carbonate
- B** Calcium bicarbonate ~~X~~
- C** Calcium hydroxide ~~X~~
- D** Sodium carbonate ~~X~~



Question

A chemical reaction involves in

C

- A** Only breaking of bonds
- B** Only formation of bonds
- C** Both breaking and formation of bonds
- D** None of these

Question

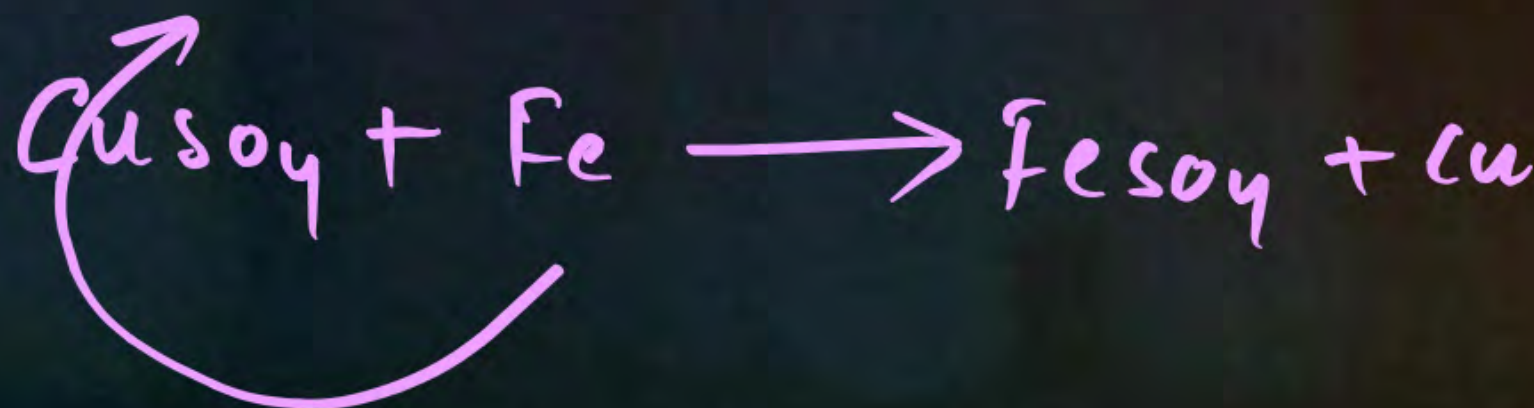


Respiration is a/an *oxidation of glucose (Energy in the form of ATP)*

- A** Endothermic reaction
- B** Exothermic reaction
- C** Both (A) and (B)
- D** None of these

The chemical reaction between copper sulphate and iron nail is

- A decomposition reaction ~~X~~
- B combination reaction ~~X~~
- C displacement reaction
- D Double displacement reaction ~~X~~

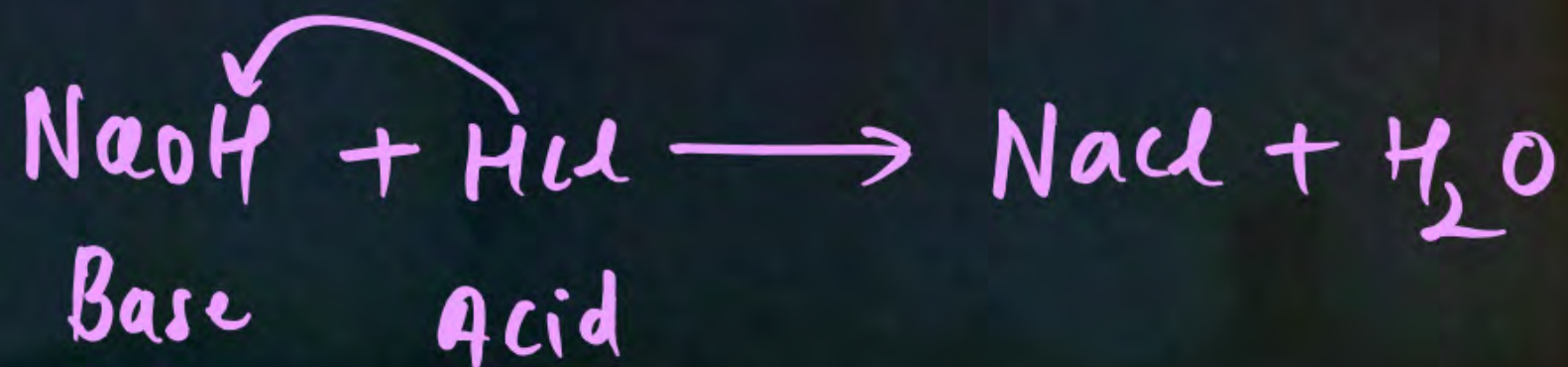


Question



The product obtained when sodium hydroxide reacts with hydrochloric acid?

- A** Calcium chloride
- B** Sodium chloride ✓
- C** Sodium hydride
- D** Hydrogen cyanide



Which gas is formed by burning of natural gas?

- A** Oxygen
- B** carbon dioxide ✓
- C** Hydrogen }
- D** Ammonia }

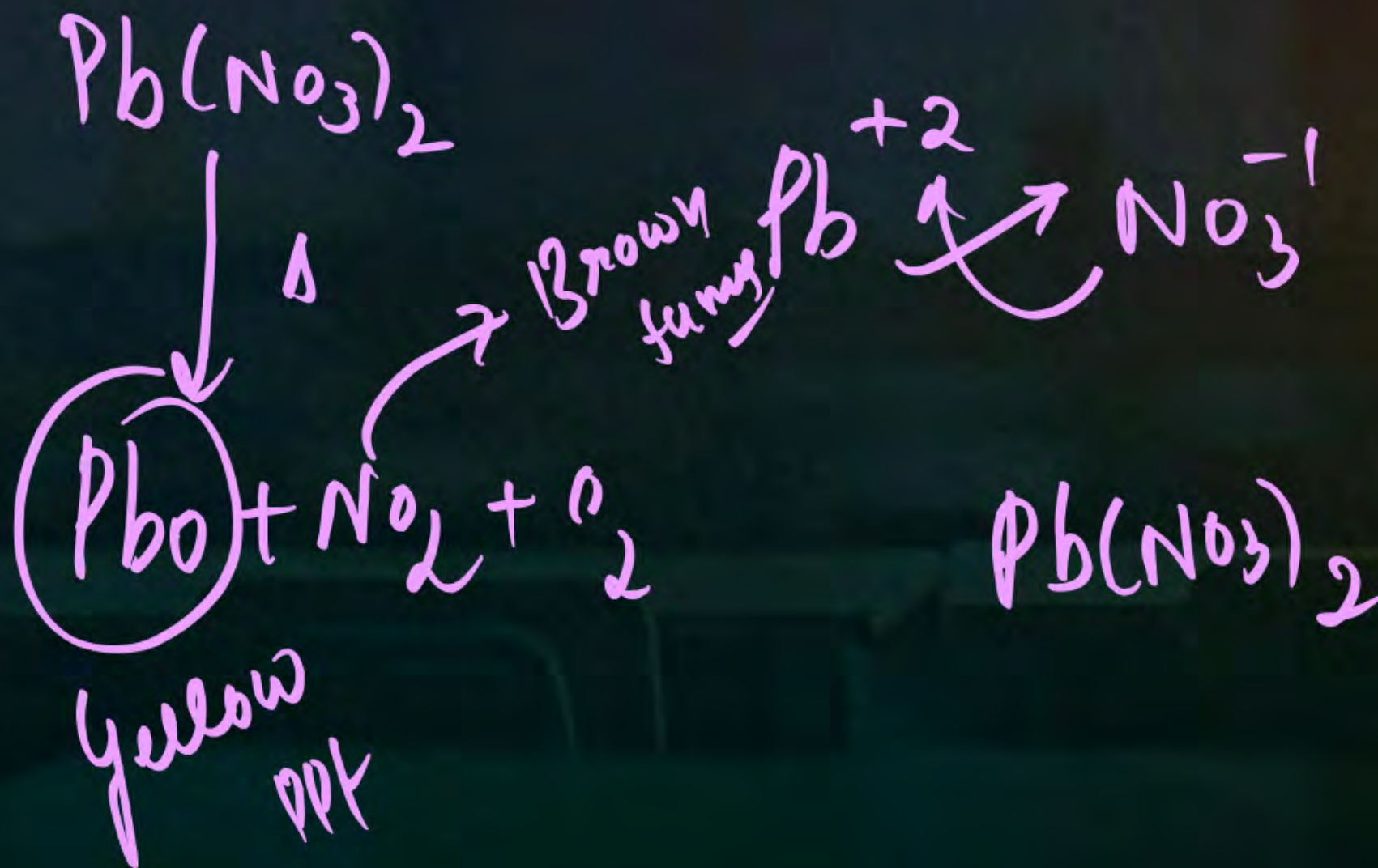
Question

$\text{NO}_2 = \text{Brown gas}$



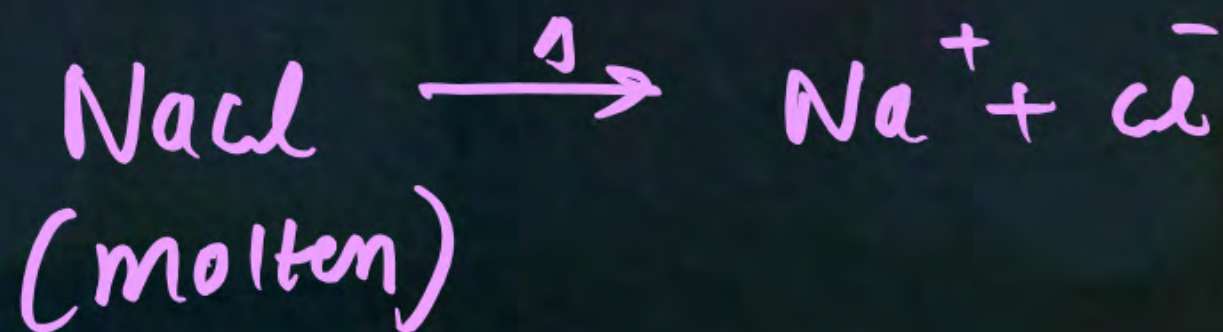
By decomposition of lead nitrate, yellow precipitate is formed. The precipitate is of

- A** Lead oxide
- B** Nitrogen dioxide
- C** Lead
- D** None of these



During electrolysis of which gas is formed? molten sodium chloride,

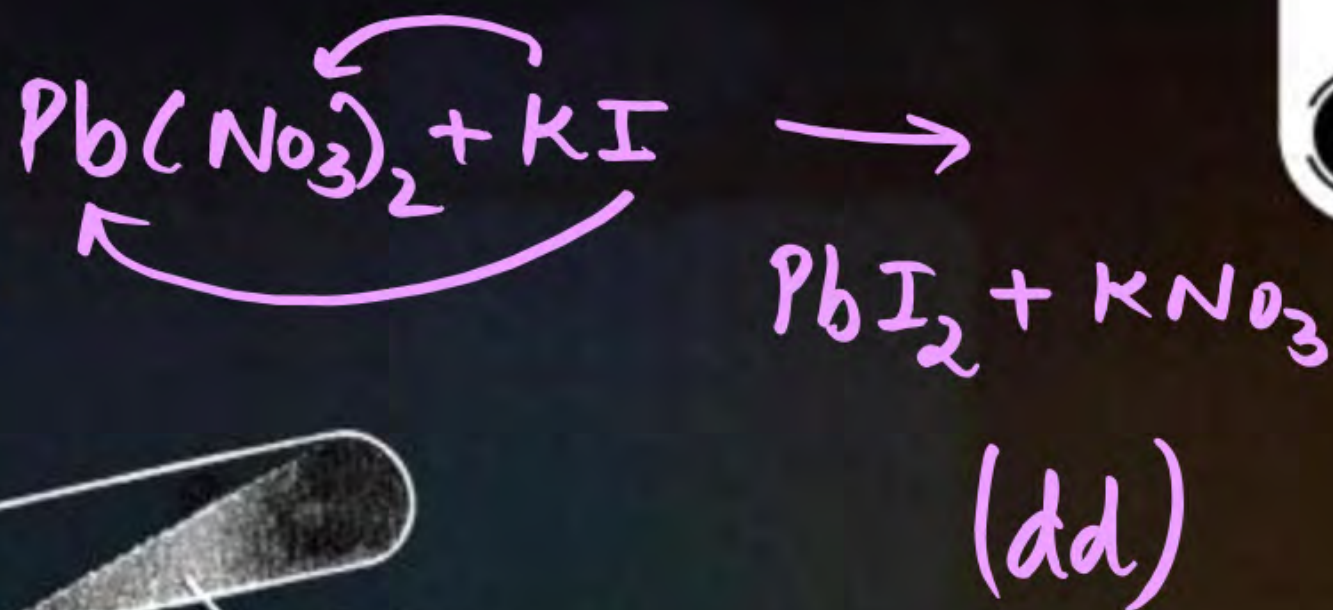
- A Sodium
- B Oxygen
- C Nitrogen
- D Chlorine



Question

Identify the type of reaction shown in the figure:

- A** Combination
- B** Displacement
- C** Double-displacement
- D** Decomposition



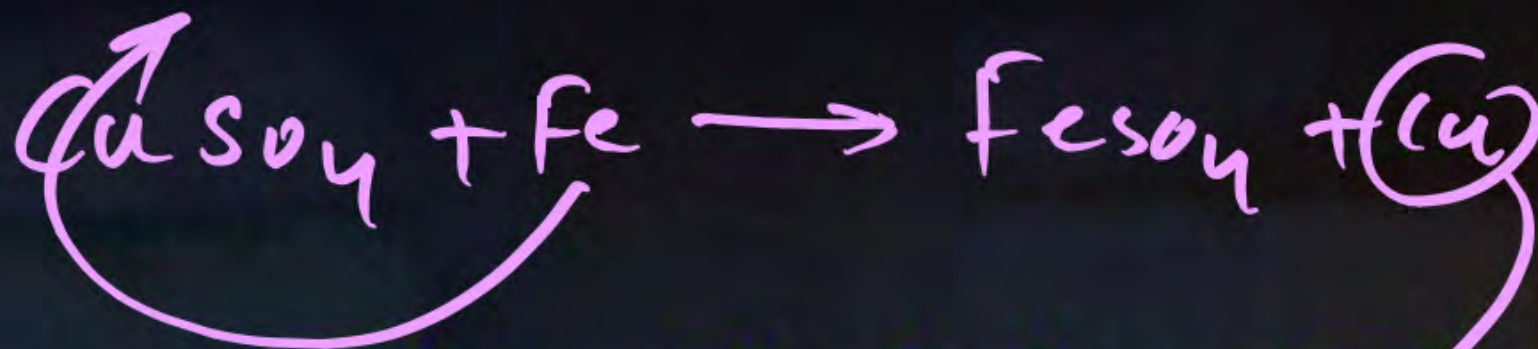
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Given below is a chemical reaction. One of the products formed is in the form of a precipitate. Identify the product.



- A Barium sulphate
- B Sodium chloride
- C Both (A) and (B)
- D None of these

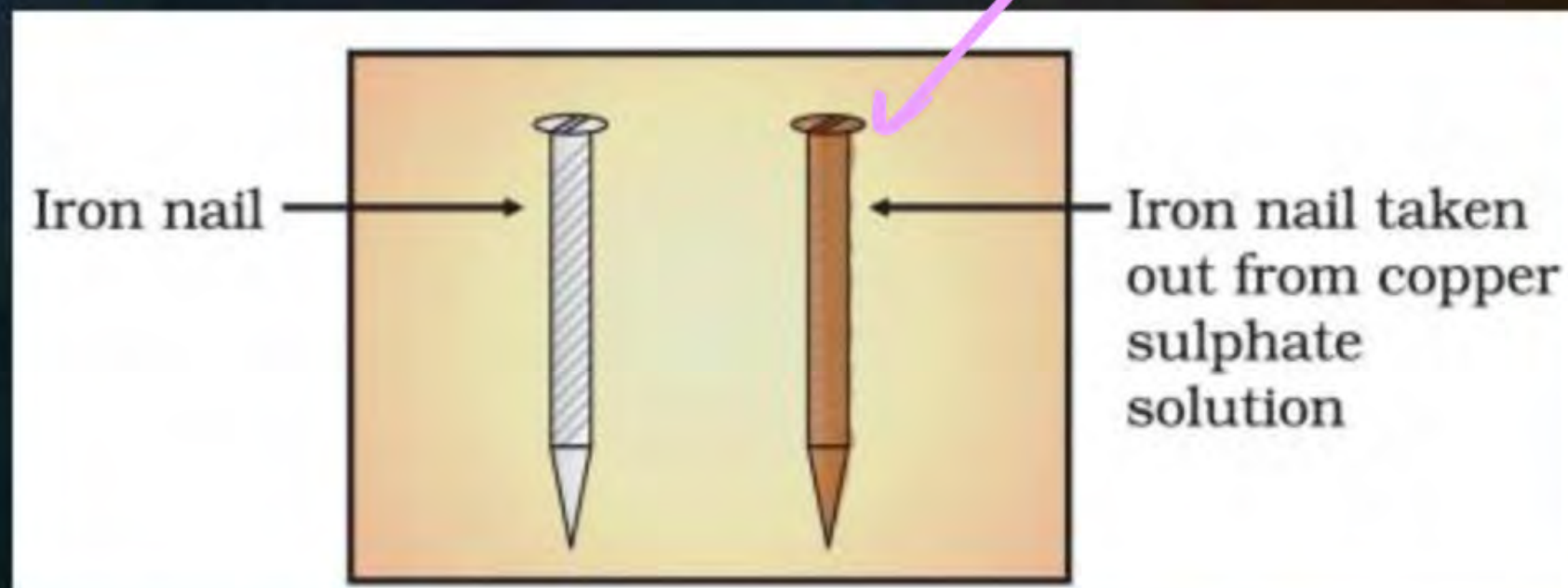
Question



Observe the given figure:

The colour of nail taken out of copper sulphate solution is changed. The reason for this is:

- A** Copper is more reactive than iron.
- B** Iron is more reactive than copper.
- C** The nail is wet.
- D** All the above





Homework



→ Revision

Notes

Nani ke ghar se Apna dimag
wapas magvalo



BHARTI MAAM

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Thank You