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Class - 10

Chapter - 4

Carbon and its Compound

Part-6

Properties Of Carbon Compounds

Disha Didi (DD)

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H — Cl, Br (Haloalkane)

Alcohol — OH — Methanol

Aldehyde — CHO — Methanal
()

Carboxylic —  — Methanoic acid

Ketone —  — Propanone

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→ Methane
Ethane
Propane
Butane
Pentane
Hexane

Homologous Series

1) alkane – C_nH_{2n+2}
alkene – C_nH_{2n}
alkyne – C_nH_{2n-2}
2) $-CH_2$ difference
3) C(12M) + H(1M) → CH_2 = 14M
4) molecular mass keeps increasing
5) melting and boiling points ↑ se

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Chemical Properties

1) X $\xrightarrow{O_2}$ Burn → combustion ?

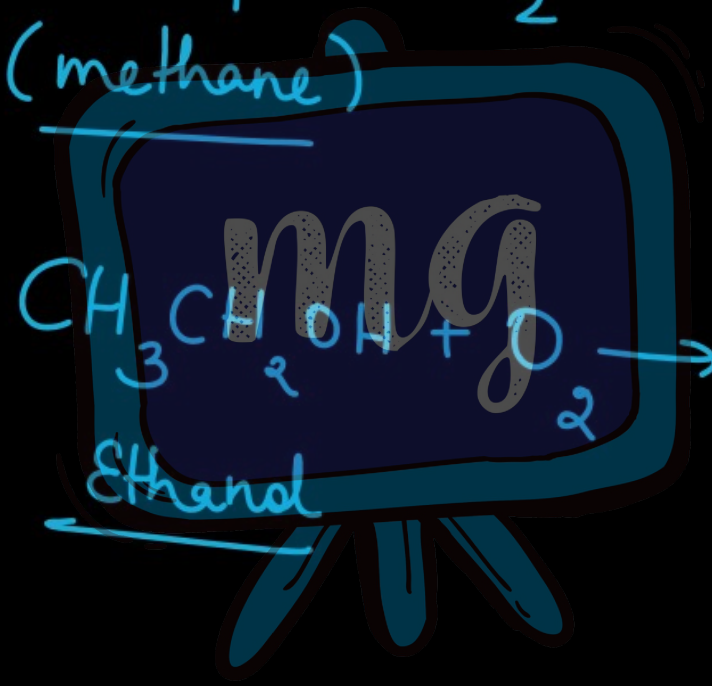
Carbon → combustion

$C + O_2 \xrightarrow{\Delta} CO_2 + \underline{heat} + \underline{light}$

(coal)

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$$CH_4 + O_2 \longrightarrow CO_2 + H_2O + \triangle + \text{light}$$

(methane)

$$CH_3CH_2OH + O_2 \longrightarrow CO_2 + H_2O + \triangle + \text{light}$$

Ethanol

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Carbon Compounds :

1) Saturated (Alkanes)
   ↓ burn
   Clean flame
   ↓
   Blue

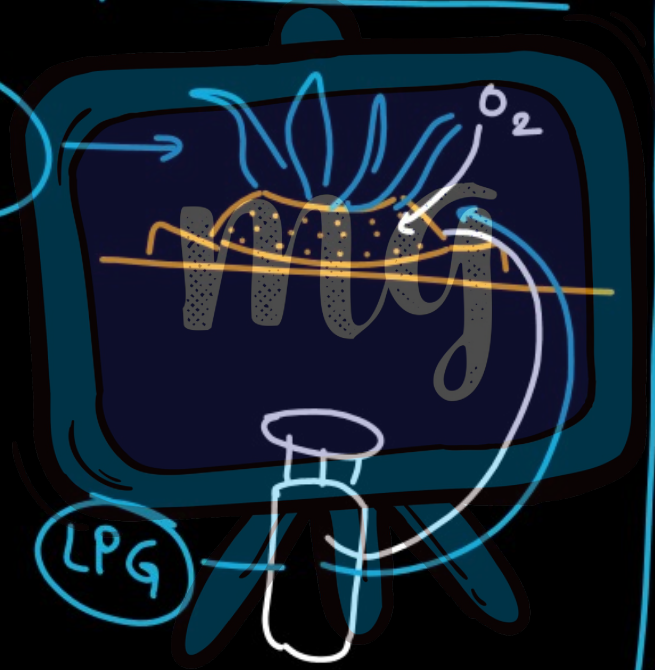
2) Unsaturated
   (Alkene
   Alkynes)
   ↓
   black sooty flame
   yellow flame

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Complete combustion

blue



→ limited O_2 supply

Gas

less O_2

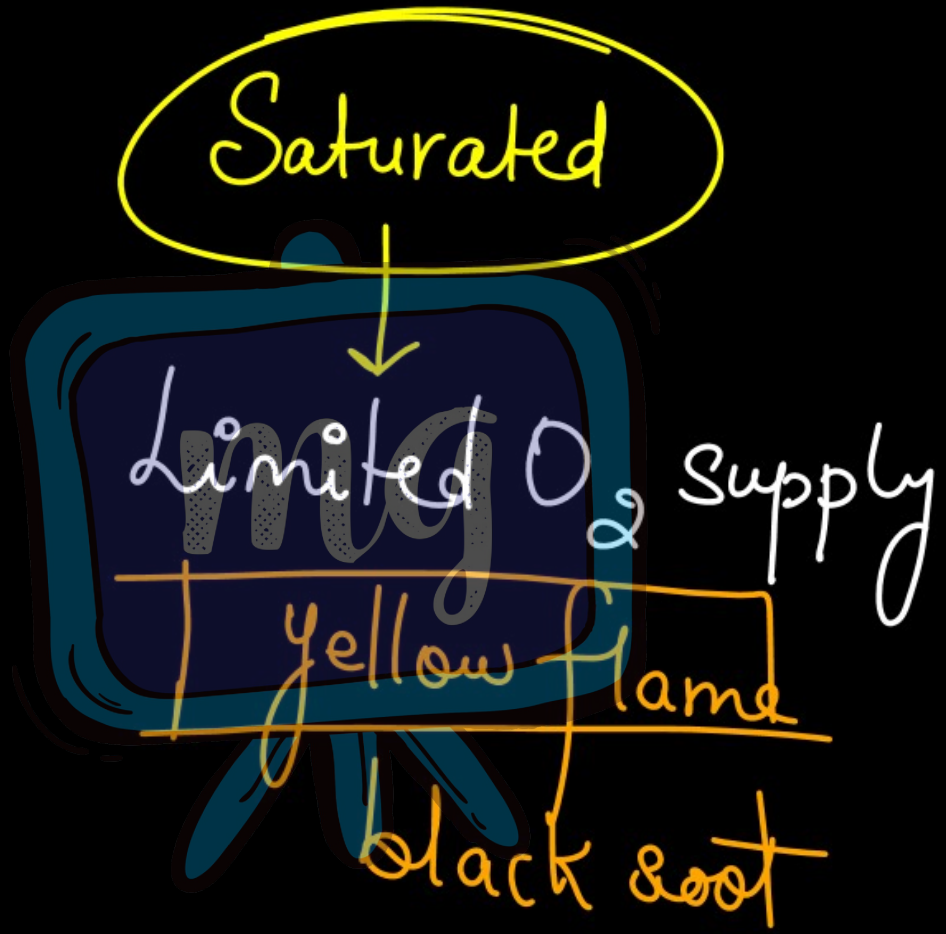
fuel waste

Incomplete Combustion

→ black soot

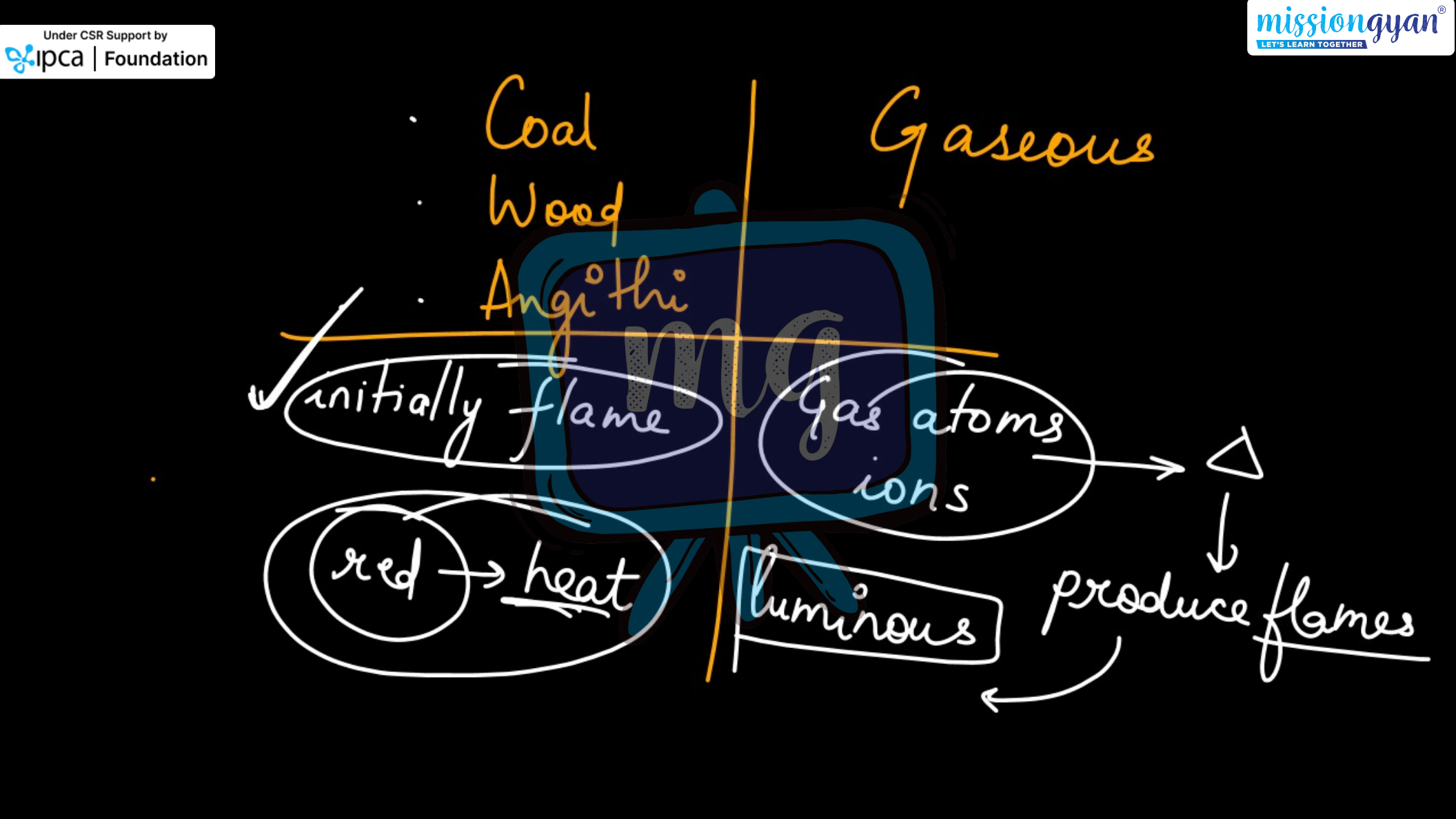
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I. Combustion

- Burn in air
- Releasing lot of heat energy

$C + O_2 \rightarrow CO_2 + Heat + light$

$CH_3CH_2OH + O_2 \rightarrow CO_2 + H_2O + Heat + light$

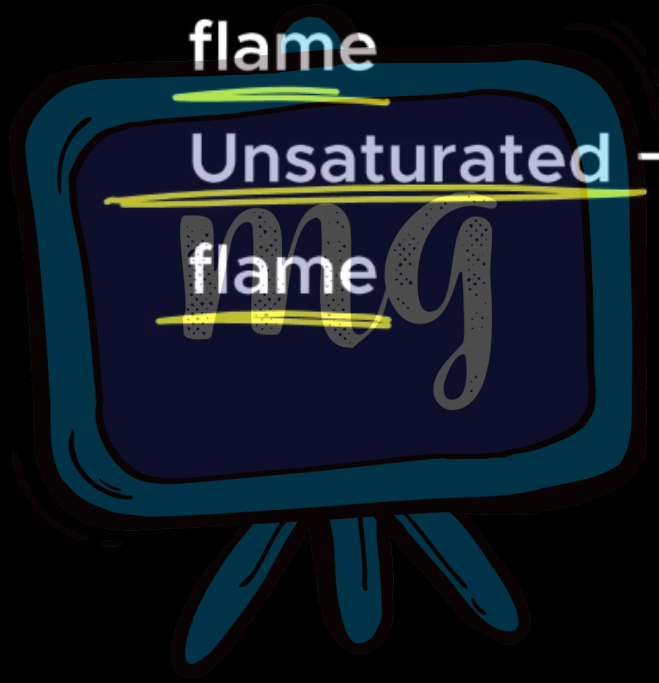
$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O + Heat + light$

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Saturated → blue and non sooty flame

Unsaturated → yellow sooty flame



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Limiting the oxygen supply → incomplete combustion

- gives sooty flame
- If bottom of cooking vessels getting blackened means incomplete combustion

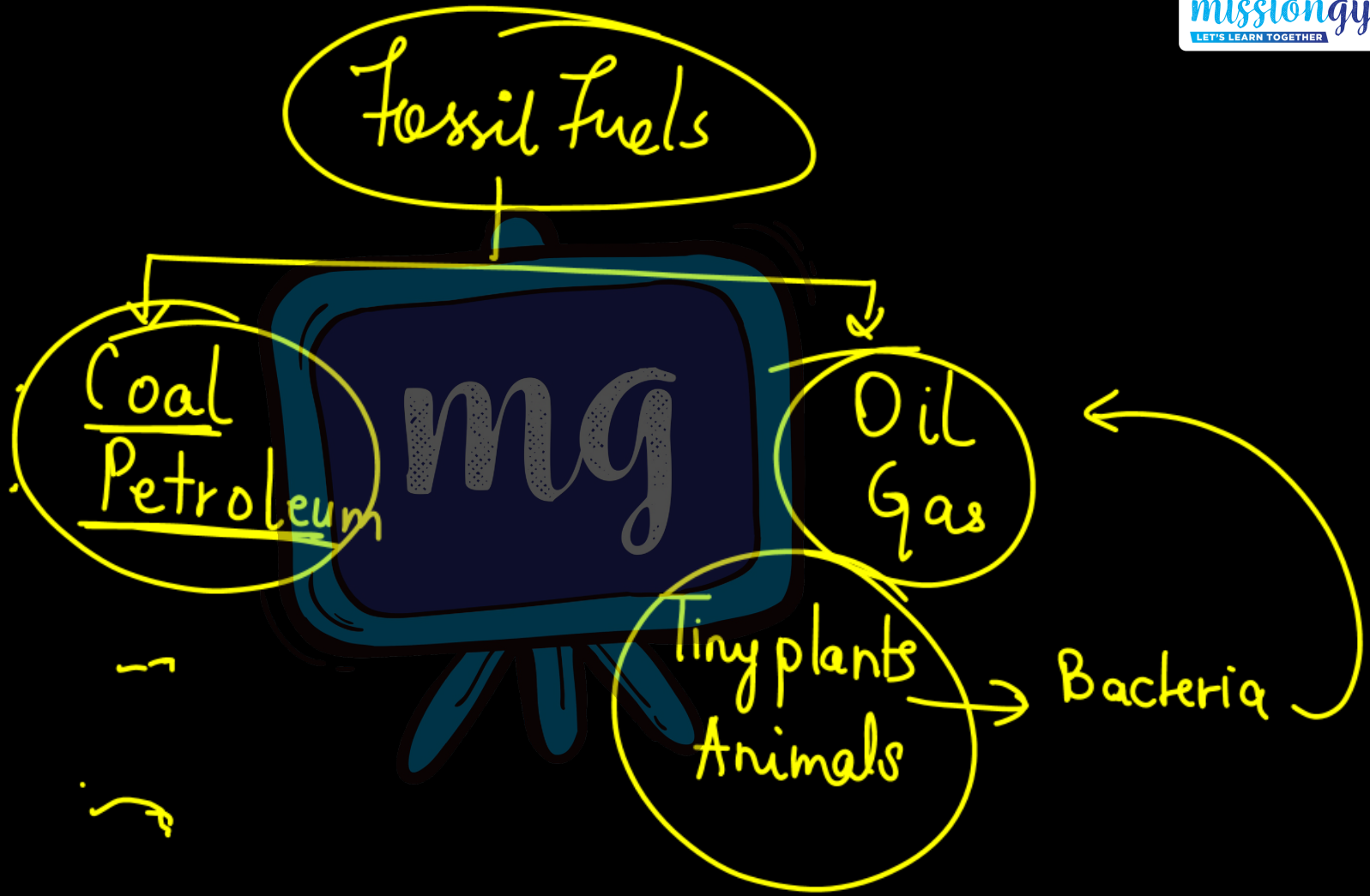
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- Coal & petroleum have some amount of nitrogen and sulphur
- Result formation of oxides of sulphur and nitrogen
- Flame is only produced when gaseous substance burn

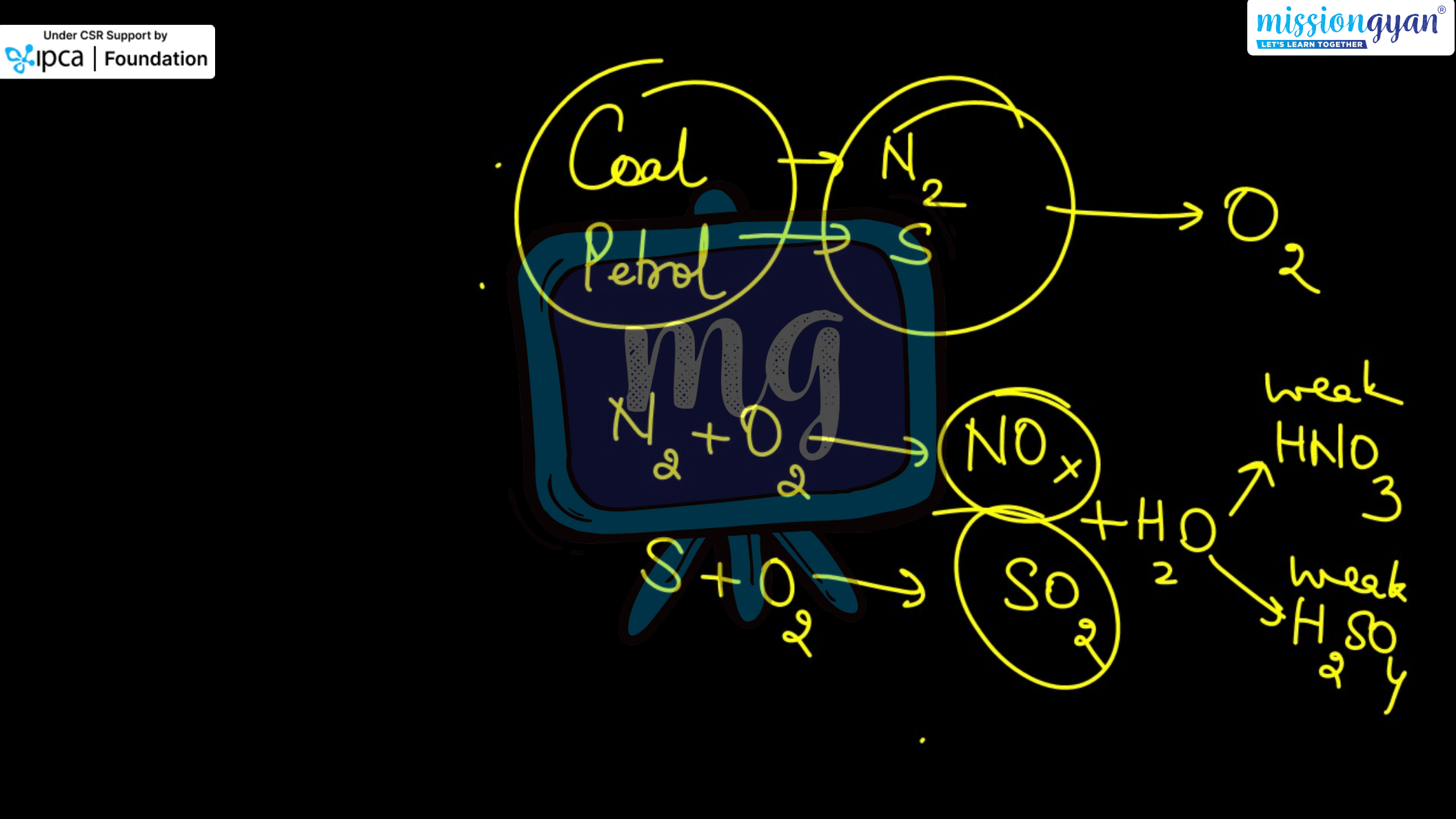
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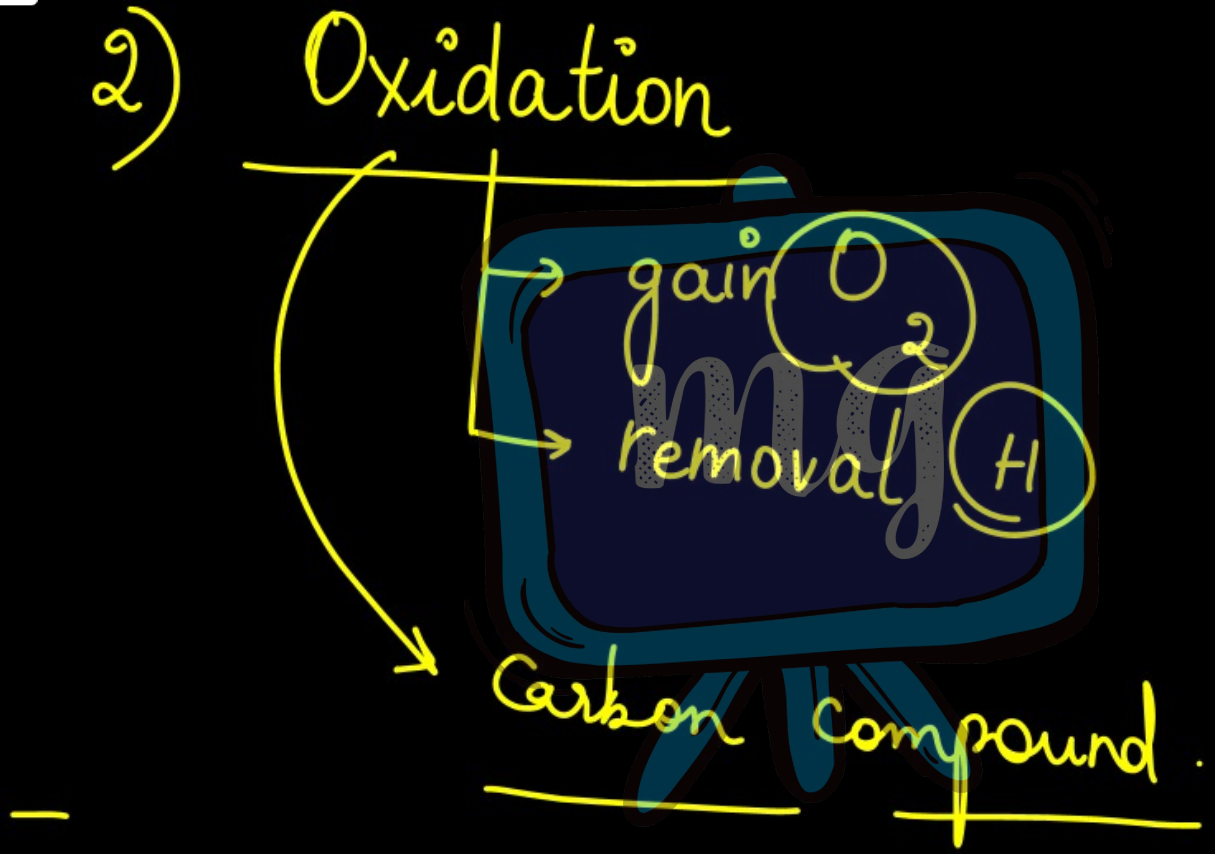
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