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Class - 10

Chapter - 3

Metals And Non-Metals

Part-7

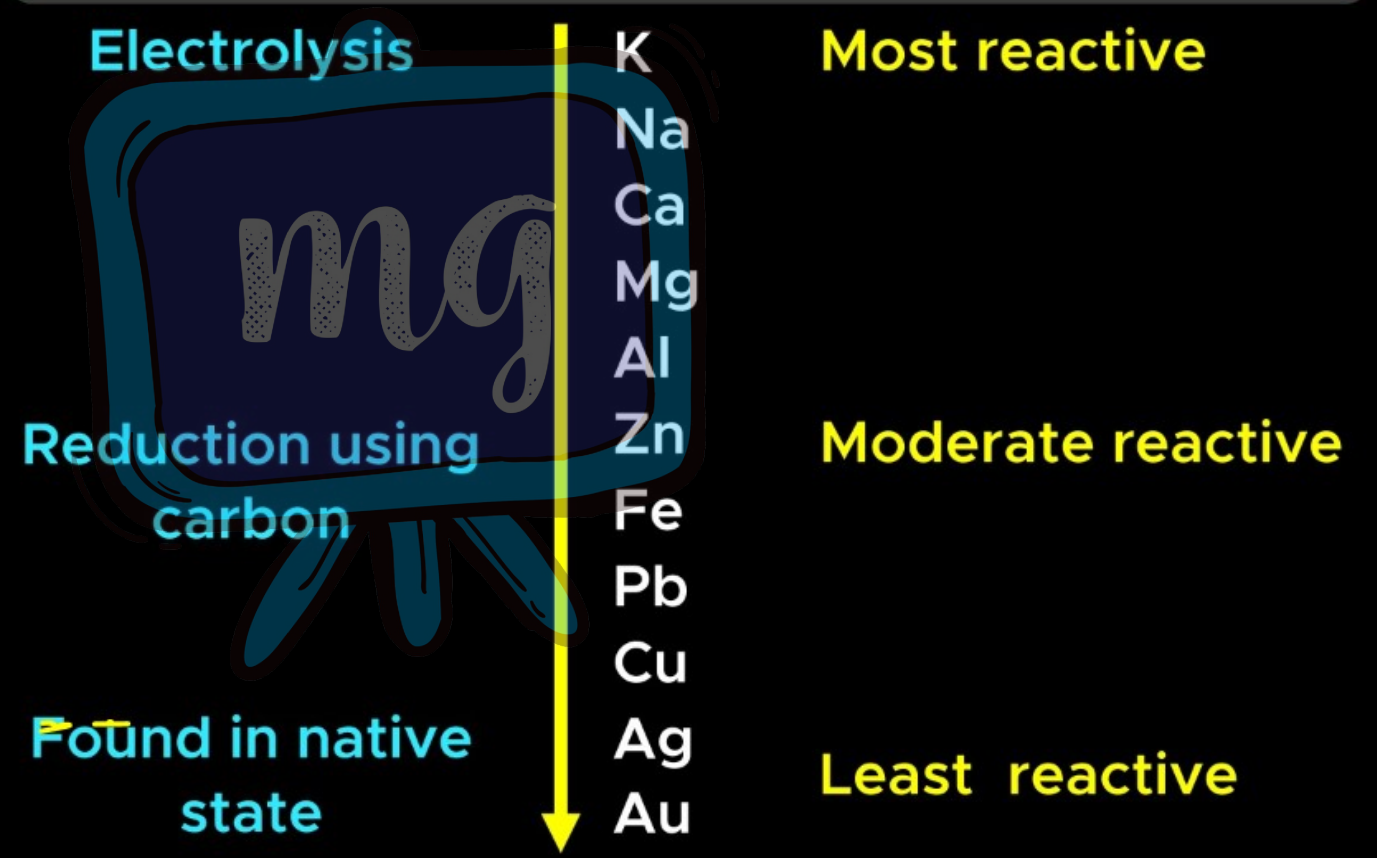
Metallurgy and Corrosion

Disha Didi (DD)

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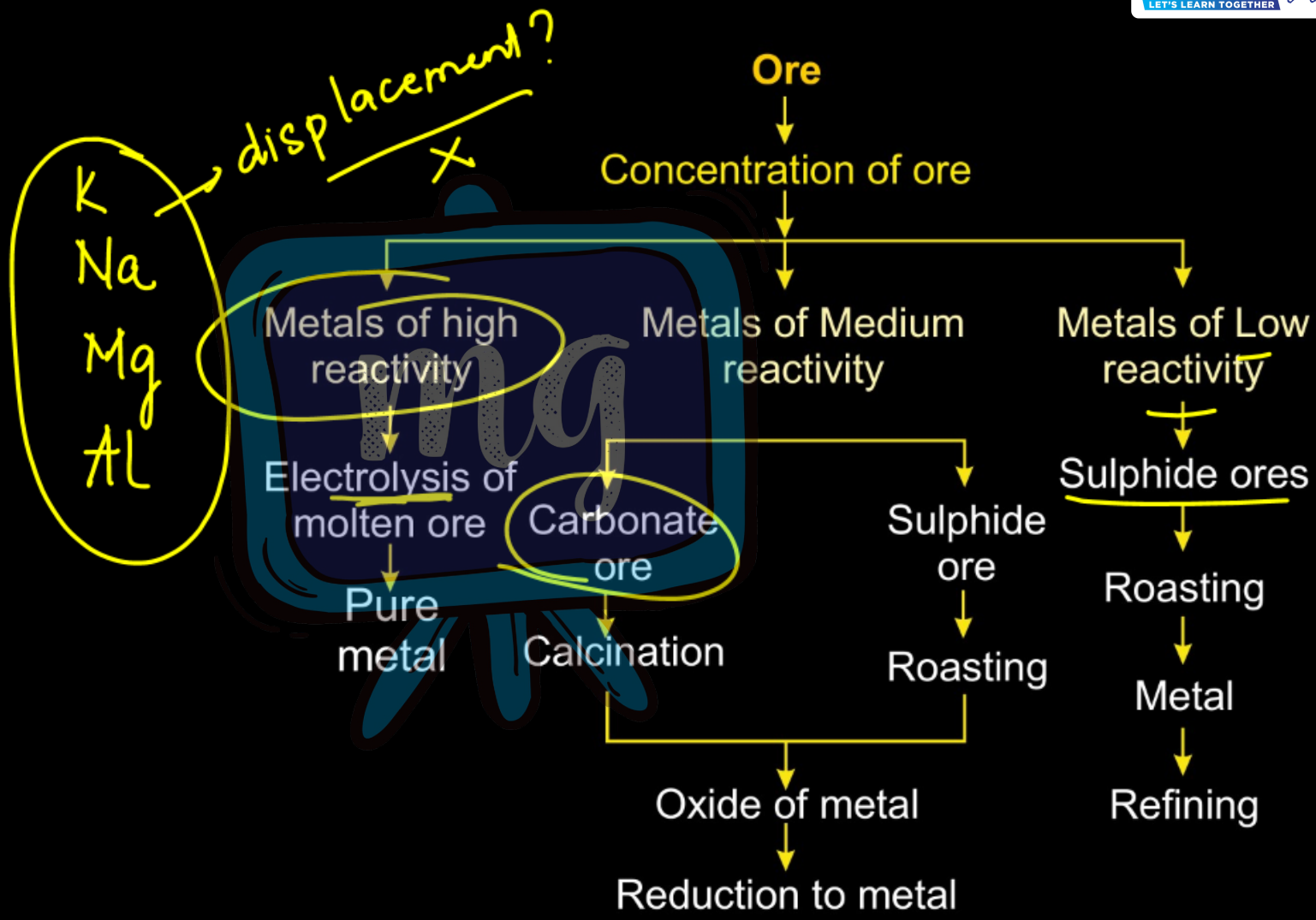
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Activity series and related metallurgy



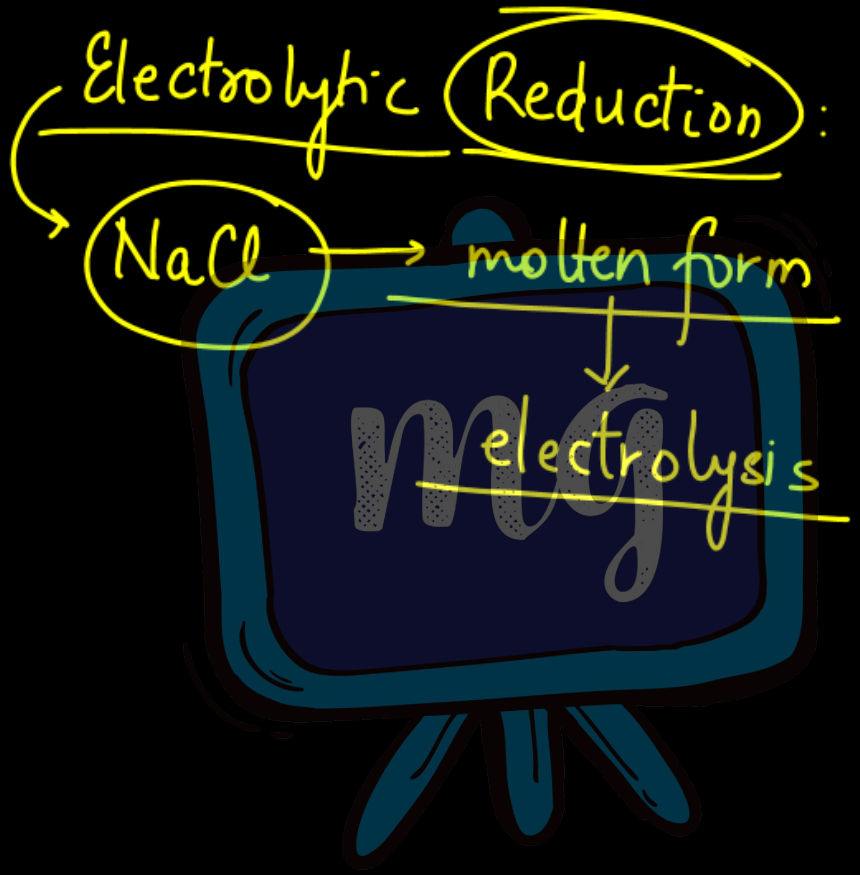
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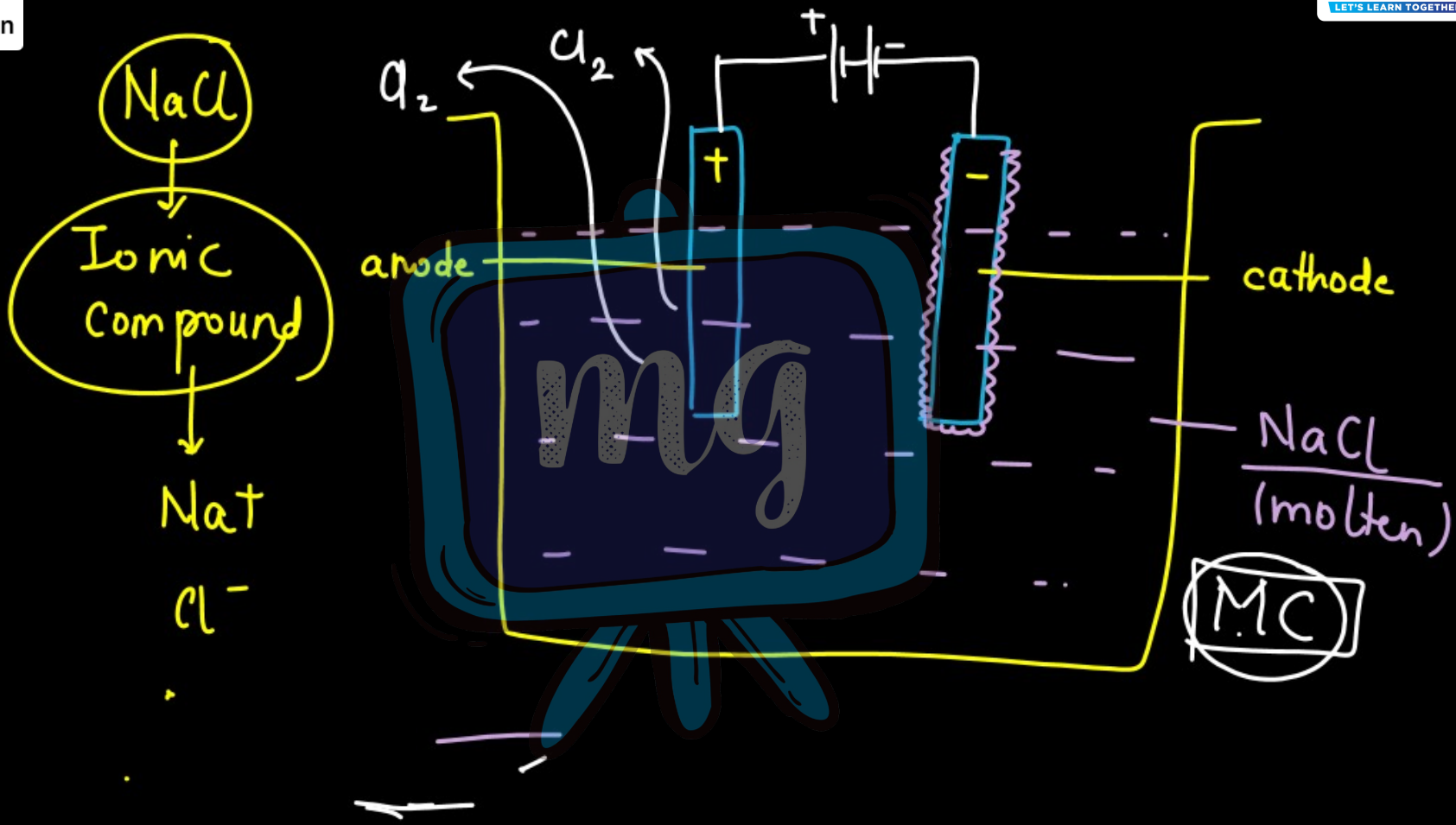
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Anode (+)

$2Cl^- \longrightarrow 2e^- + Cl_2 (\uparrow)$

$2e^-$ → anode

$Cl_2 (\uparrow)$

metals

Cathode (−)

$Na^+ + e^- \rightarrow Na$

Reduction → Electricity

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$ZnO + C \rightarrow Zn + CO$

(c) Extracting Metals towards the Top of the Activity Series

- Carbon cannot reduce the oxides of sodium, magnesium, calcium, aluminium, etc., to the respective metals.
- These metals have more affinity for oxygen than carbon.

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- These metals are obtained by electrolytic reduction.

Example : sodium, magnesium and calcium are obtained by the electrolysis of their molten chlorides.

- The metals are deposited at the cathode, whereas, chlorine is liberated at the anode.

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NaCl

Al_2O_3

Reduction

At cathode $Na^+ + e^- \rightarrow Na$

At anode $2Cl^- \rightarrow Cl_2 + 2e^-$

- Aluminium is obtained by the electrolytic reduction of aluminium oxide.

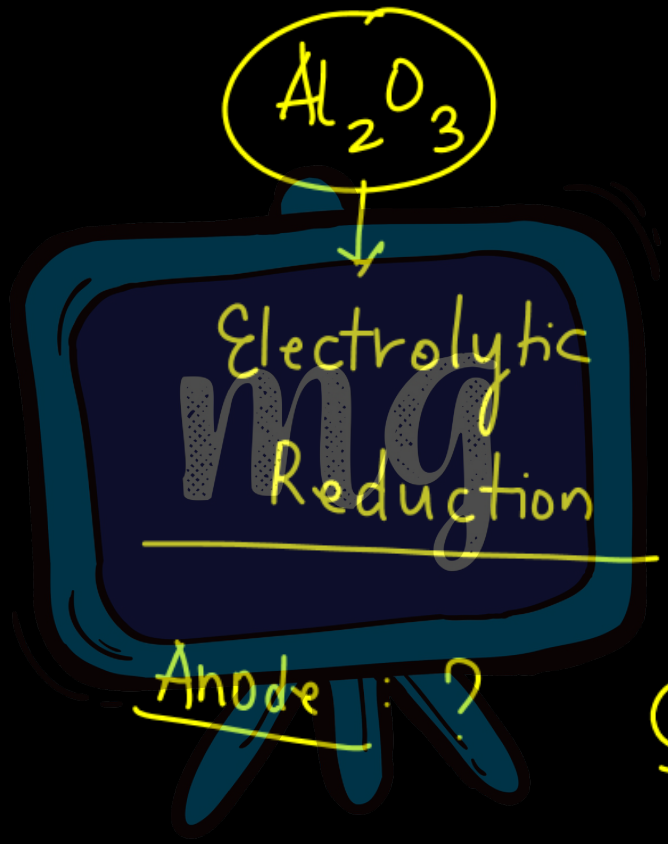
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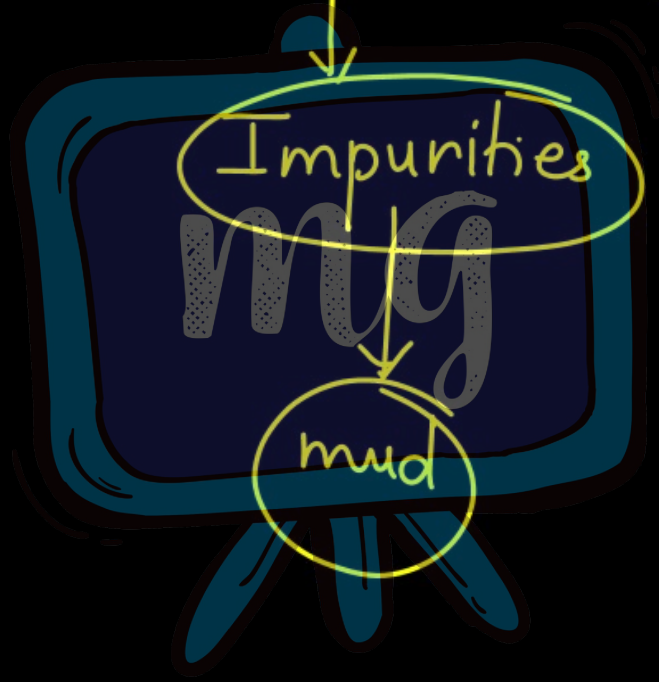


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Na

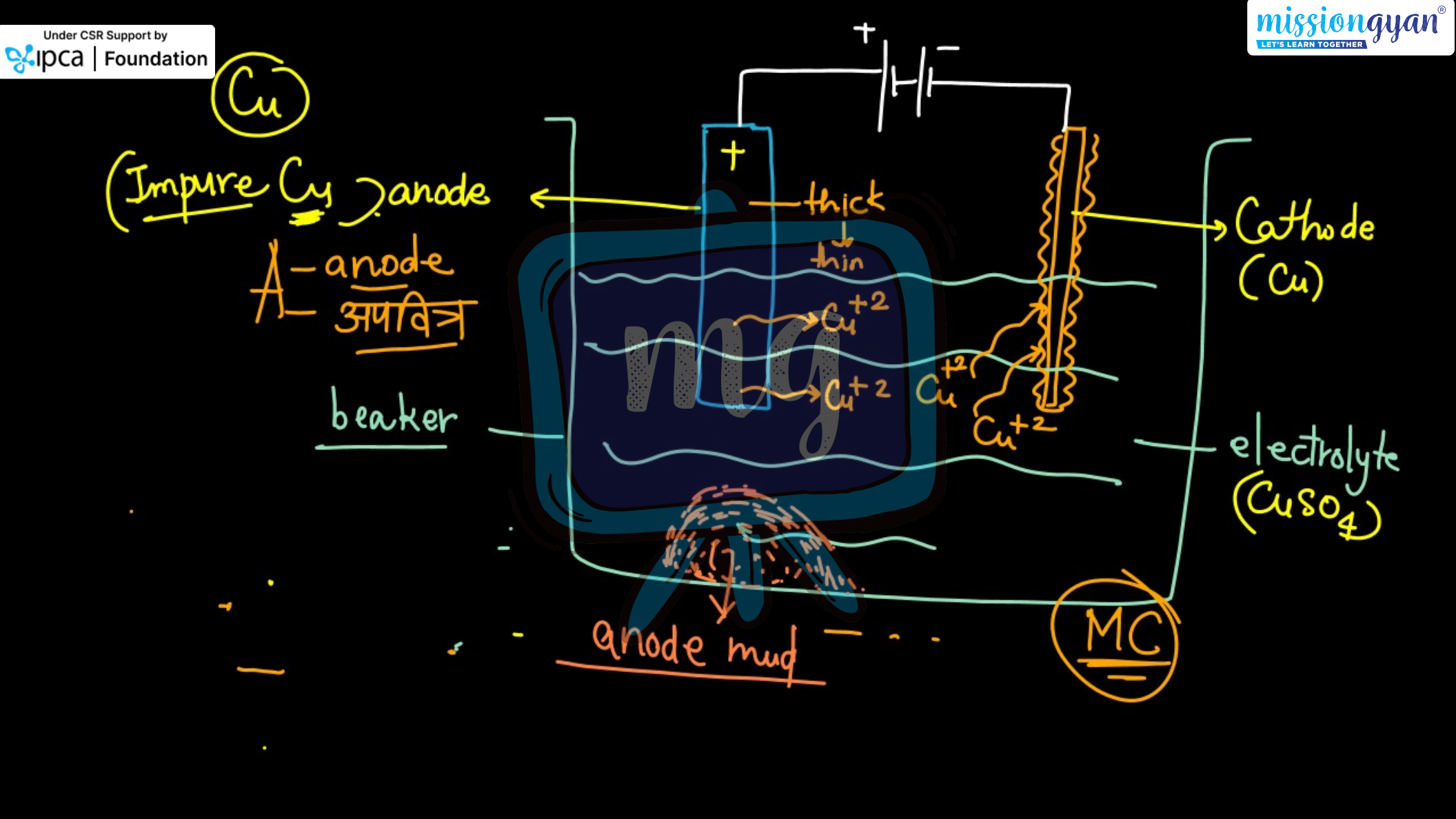
Electrolytic Refining



Cu
Zn
Sn
Ni
Ag
Au

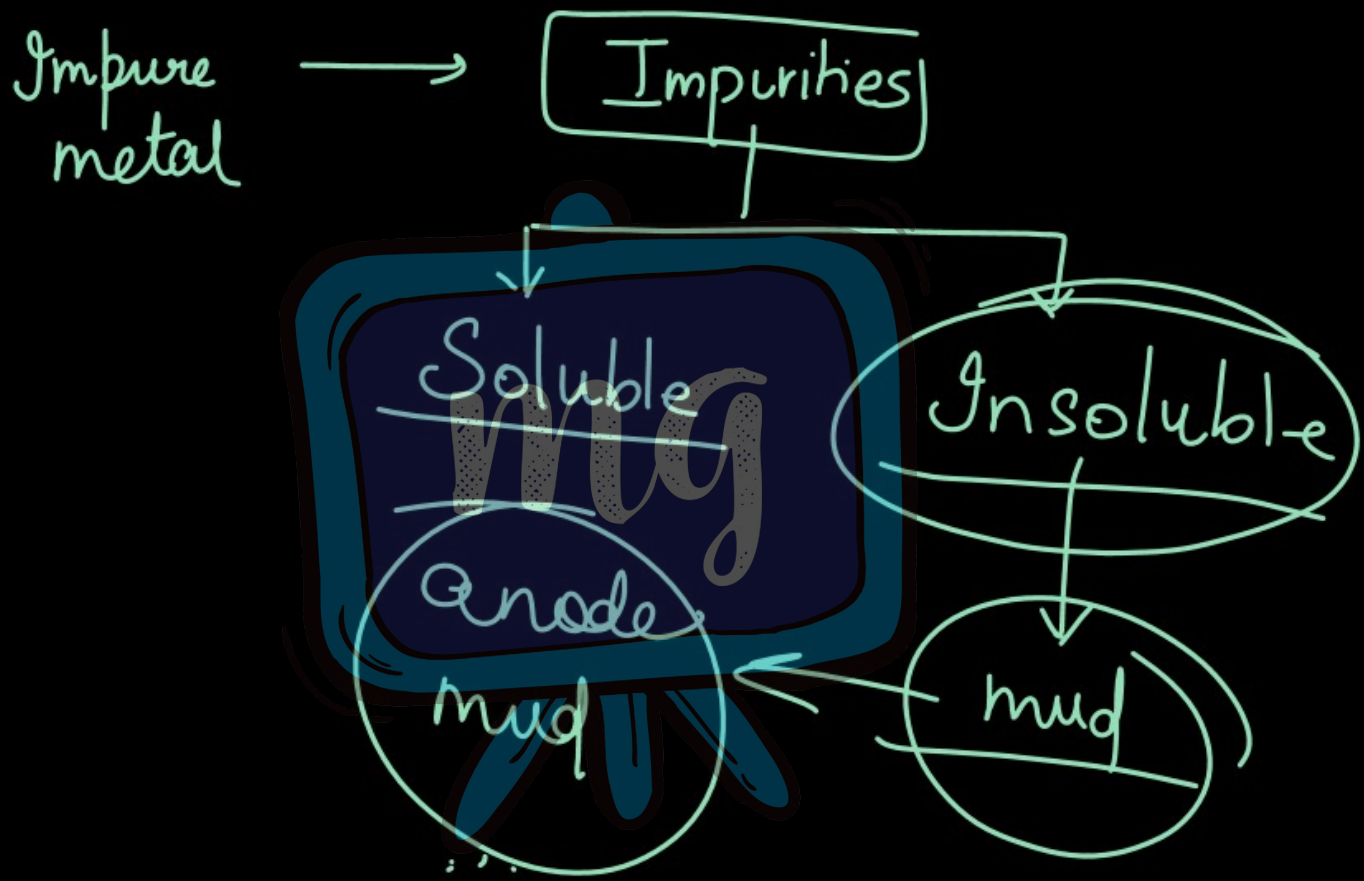
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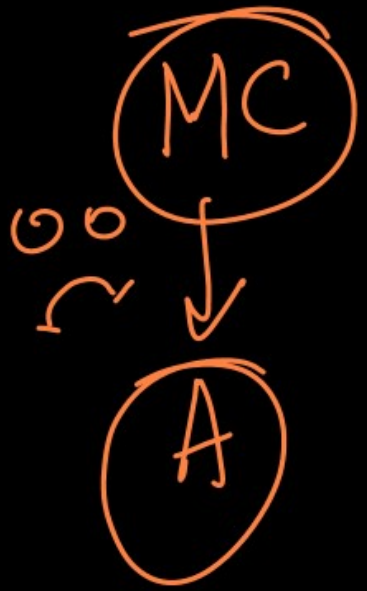
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Refining of Metals

- Metals extracted from various methods contains some impurities, thus, they are required to be refined.
- Most of the metals are refined using electrolytic refining.

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Electrolytic Refining :

- In the process of electrolytic refining, a lump of impure metal and a thin strip of pure metal are dipped in the salt solution of metal to be refined.
- When an electric current is passed through the solution, pure metal is deposited over a thin strip of pure metal.

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- Impure metal is used as anode and pure metal is used as a cathode.



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Electrolytic Refining of Copper :

- A lump of impure copper metal and a thin strip of pure copper are dipped in the solution of copper sulphate.

