

# Metallurgy

## Chapter 7: Metallurgy · Topic 1

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### Key Concept

Ores are naturally occurring minerals from which metals can be economically extracted, requiring concentration to remove unwanted impurities (gangue).

Reactive metals are extracted by electrolysis (like aluminium), while moderately reactive metals are extracted by reduction with carbon or other reducing agents (like iron).

The blast furnace is used for extracting iron from its ore (haematite), using coke, limestone, and hot air to reduce iron oxide to iron.

After extraction, metals often need refining to remove remaining impurities, using techniques like electrolytic refining for high-purity requirements.

### Quick Revision Notes

- Ores: minerals from which metals are extracted.
- Concentration removes gangue (impurities).
- Reactive metals extracted by electrolysis (e.g. aluminium).
- Moderately reactive metals: reduction with carbon (e.g. iron).
- Blast furnace extracts iron from haematite.
- Uses coke, limestone, hot air.
- Refining removes remaining impurities.
- Electrolytic refining gives high purity.

### Practice Questions

- 1 Describe the concentration process for removing gangue.
- 2 Discuss why aluminium is extracted by electrolysis.
- 3 Describe the blast furnace process for extracting iron.
- 4 Research electrolytic refining of copper.
- 5 Compare extraction methods for reactive vs moderately reactive metals.
- 6 Explain metallurgy basics in your own words.