CHAPTER 3

Metals and Non-metals

CBSE · Science · Class 10

WHAT THIS CHAPTER DOES

Boards prep that builds confidence, not anxiety.

TODAY'S MISSION

By the end of this chapter you will

WHY THIS MATTERS

Why this chapter matters

TOPIC

A

Part A — Physical and chemical properties

TOPIC

Physical properties — metals vs non-metals, with the famous exceptions

POINT 1	POINT 2	POINT 3	POINT 4

TOPIC

Metal vs non-metal — at-a-glance comparison

TRY IT · SOLVE BEFORE YOU PEEK

Quick check — spot the exception

Work it out before you flip the answer.

SOLUTION

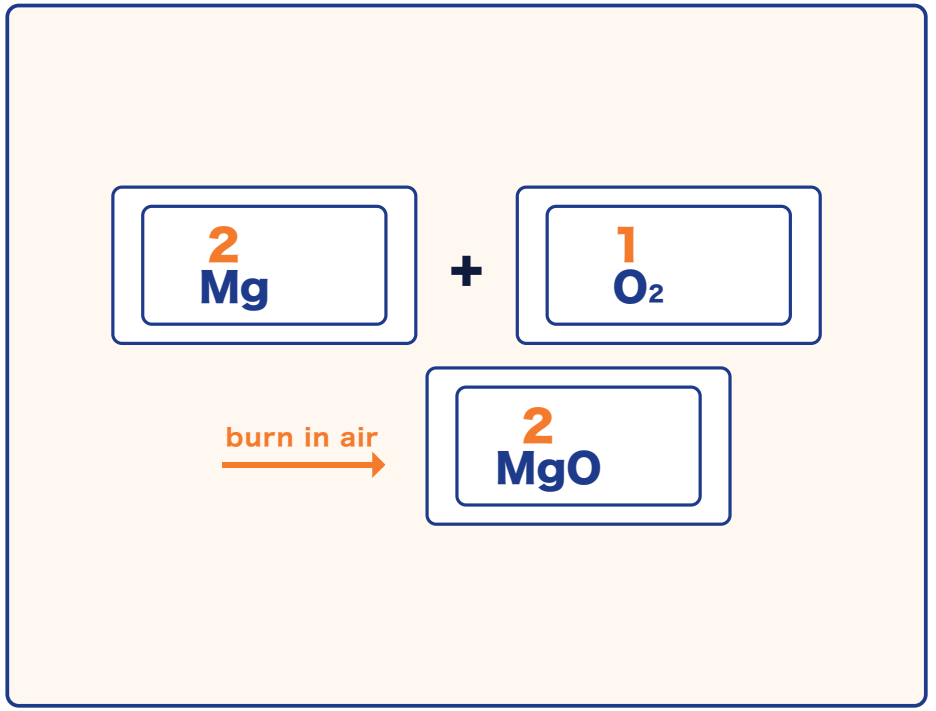
TOPIC

B

Part B — Chemical reactions of metals

WORKED EXAMPLE

Metal + Oxygen — a balanced-equation drill



TOPIC

Metal + Water — vigour follows the reactivity series

POINT 1	POINT 2	POINT 3	POINT 4

WORKED EXAMPLE

Displacement reaction — the visual confirmation

TOPIC

Mid-chapter consolidation — can you do all of these in 60 seconds?

TOPIC

The reactivity series — memorise this ladder COLD

TOPIC

C

Part C — Ionic compounds, extraction and corrosion

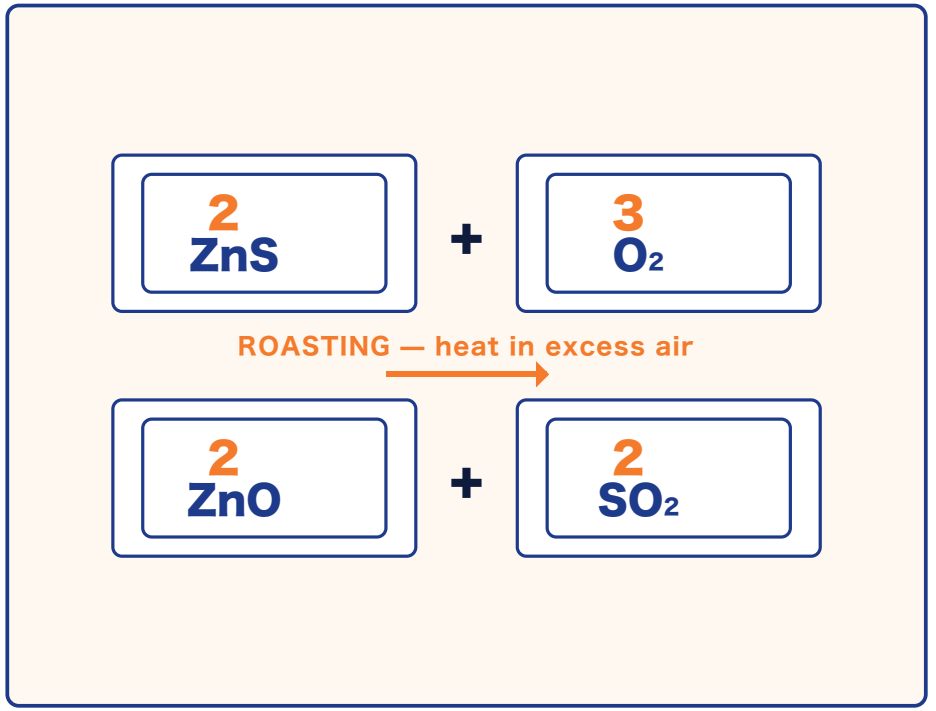
TOPIC

Ionic bond formation — the NaCl case

POINT 1	POINT 2	POINT 3	POINT 4

WORKED EXAMPLE

Extraction of zinc from zinc blende — three equations you will be asked



TOPIC

Roasting vs Calcination — the single most-confused pair

POINT 1	POINT 2	POINT 3	POINT 4

TOPPER TEMPLATE · MARK-BY-MARK

Topper's 5-mark frame — Extraction of zinc

1. **STEP 1 — IDENTIFY THE ORE AND CONCENTRATION**
2. **STEP 2 — CONVERT SULPHIDE TO OXIDE BY ROASTING**
3. **STEP 3 — REDUCE THE OXIDE TO THE METAL**
4. **STEP 4 — REFINE BY ELECTROLYSIS**

TOPIC

Corrosion — slow death of a metal

POINT 1	POINT 2	POINT 3	POINT 4

TOPIC

Common alloys — composition + use

PYQ PATTERNS

What CBSE has actually asked (2018–2024)

MARKS DISTRIBUTION

Where the marks LIVE inside Chapter 3

TOPIC

Last 10-minute checklist before you close the book

PYQ PATTERNS

Top PYQ patterns to drill

#1	Extraction of moderately reactive metal (Zn/Fe/Cu)	roasting + reduction + refining (5 marks) — 90%
#2	Reactivity series	predict displacement + explain extraction route (5 marks) — 95%
#3	Corrosion / rusting	two conditions + two prevention methods (3 marks) — 85%
#4	Properties of ionic compounds (high m.p., conductivity in molten state) (3 marks)	75%
#5	Amphoteric oxides	Al_2O_3 / ZnO react with BOTH

RECAP · MEMORISE THESE

Chapter in one screen

1 Metals = lustrous, malleable, ductile, sonorous, good conductors (except Hg liquid, Na/K soft).

2 Non-metals = dull, brittle, poor conductors (except graphite conducts; iodine lustrous).

3 Reactivity series K > Na > Ca > Mg > Al > Zn > Fe > Pb > H > Cu > Hg > Ag > Au decides reactions and extraction method.

4 Extraction: top metals by electrolysis; middle by C-reduction of oxide (after roasting/

5 Rust = hydrated Fe_2O_3; needs both O_2 and H_2O; prevent by galvanisation, painting, alloying.

6 Alloys are homogeneous MIXTURES — steel, brass, bronze,

WHAT'S NEXT

Up next — Chapter 4 — Carbon and its Compounds

→ Why carbon forms 10 million compounds — catenation, tetravalency

→ Covalent bonding (electrons SHARED, not transferred — contrast with this chapter's ionic bond)

→ Saturated and unsaturated hydrocarbons; functional groups; soaps and detergents

Lock this chapter in tonight

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