



Metals and Non-Metals, Class 10 CBSE Notes

1. Physical Properties

1. Metals:

Lustrous: Metals are shiny (e.g., gold, silver).

Malleability: Can be hammered into thin sheets (e.g., aluminium foil).

Ductility: Can be drawn into wires (e.g., copper wires).

Good Conductors: Excellent conductors of heat and electricity (e.g., silver, copper).

High Melting and Boiling Points: Except for mercury (a liquid metal).

Sonorous: Produce a ringing sound when struck.

2. Non-Metals:

Non-lustrous: Except iodine.

Brittle: Breaks easily (e.g., sulfur).

Poor Conductors: Except graphite (good conductor of electricity).

Low Melting and Boiling Points: Generally lower than metals.

In-text Question:

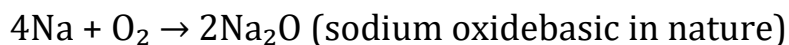
Q1: Why is gold used for making jewelry?

Answer: Gold is highly malleable, ductile, and resistant to corrosion.

2. Chemical Properties of Metals

1. Reaction with Oxygen:

Metals form metal oxides.

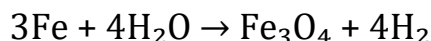


2. Reaction with Water:

Metals like sodium and potassium react vigorously with water.

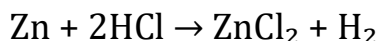


Less reactive metals like iron react with steam:



3. Reaction with Acids:

Metals react with acids to produce hydrogen gas.



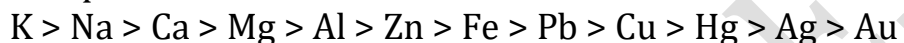
In-text Question:

Q2: Why does sodium react more vigorously with water than iron?

3. Reactivity Series

Definition: Arrangement of metals in order of their reactivity.

Examples:



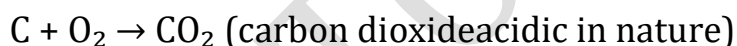
In-text Question:

Q3: Why does copper not displace zinc from zinc sulfate solution?

4. Chemical Properties of Non-Metals

1. Reaction with Oxygen:

Non-metals form acidic or neutral oxides.



2. Reaction with Water:

Non-metals do not react with water, as they cannot displace hydrogen.

3. Reaction with Acids:

Non-metals generally do not react with acids.

In-text Question:

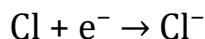
Q4: Why does carbon dioxide turn lime water milky?

5. Ionic Compounds

1. Definition:

Formed by the transfer of electrons between metals and non-metals.

Example: Sodium chloride (NaCl):



Resulting compound: $\text{Na}^+ + \text{Cl}^- \rightarrow \text{NaCl}$

2. Properties:

High melting and boiling points.

Conduct electricity in molten or aqueous state.

In-text Question:

Q5: Why do ionic compounds conduct electricity in the molten state but not in the solid state?

6. Corrosion

1. Definition:

Gradual destruction of metals due to environmental factors like oxygen and moisture.

Example: Rusting of iron:



2. Prevention:

Painting, oiling, galvanization, and alloying.

In-text Question:

Q6: Why does galvanized iron not rust?

7. Alloys

1. Definition:

A homogeneous mixture of metals or a metal with a non-metal.

Example: Brass (copper + zinc), Bronze (copper + tin).

2. Uses:

Stainless steel (iron, chromium, nickel) for utensils.

Bronze for statues and coins.

In-text Question:

Q7: Why are alloys harder than pure metals?

Practice Questions

1. Write the balanced chemical equation for the reaction of aluminium with hydrochloric acid.
2. Differentiate between ionic and covalent bonds.
3. Explain why silver does not react with dilute hydrochloric acid.

