

St. Andrews Scots School

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Session: 2026 – 2027

(Answer Key)

Class: VII

Subject: Science

Chapter: The World of Metals and Non-Metals

Critical Thinking: (Page No. 41)

Copper was discovered and used before iron because it is found in nature in a pure form and can be easily shaped or melted using simple tools.

Iron, on the other hand, is found in the form of ores and requires high temperatures and special techniques to extract it.

Therefore, early humans could hammer and shape copper easily to make tools and ornaments long before they learned how to extract and use iron.

Look Beyond: (Page No. 44)

Yes, sometimes iron objects like gates, nails or tools look dull, flaky or rusty.

This happens because iron reacts with oxygen and moisture in the air to form a reddish-brown substance called rust (iron oxide).

Rusting makes iron weak and flaky, which is why such objects lose their shine and strength over time.

Self-Assessment: (Page No. 47)

A. Multiple Choice Questions:

Tick the correct options:

1. (d)
2. (c)

B. Assertion-Reason Based Questions:

1. (a)
2. (a)
3. (b) **Explanation:** Magnesium is a metal and burns with a bright white flame when heated because it reacts strongly with oxygen, not just because it is a metal.

SECTION-A

A. Oral Questions:

1. The property of a material that allows it to be beaten into thin sheets is called malleability.
2. Copper is used in making wires.

B. Multiple Choice Questions:

1. (c)
2. (b)
3. (b)
4. (b)
5. (a)
6. (a)

C. Assertion-Reason Based Question:

1. (a)

D. Case-Based Questions:

Case 1:

1. The nail in Bottle C turned brown because iron reacted with water and oxygen from the air to form rust (iron oxide).
2. This experiment shows that both air (oxygen) and water (moisture) are necessary for rusting to occur.

Case 2:

1. The term is sonorous.
2. This experiment explains the sonorous nature of metals.
3. Non-metals like wood do not produce a ringing sound because they are not sonorous and do not vibrate freely when struck.

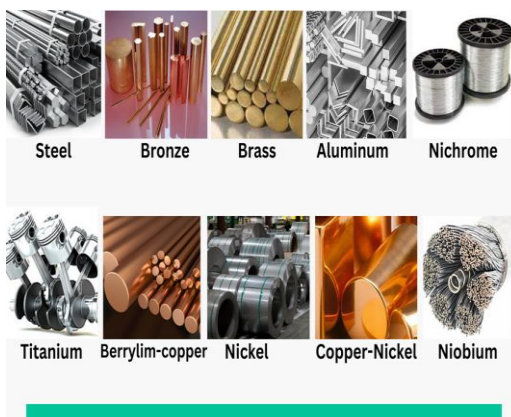
SECTION-B

A. Very Short Answer Questions:

1. Ductility is the property of a material that allows it to be drawn into thin wires.
2. Corrosion is the slow wearing away of metals due to reaction with air and moisture. Example: Rusting of iron.
3. Aluminium foil is used to wrap food because it is non-toxic, lightweight and prevents heat and moisture from escaping, keeping food fresh.
4. Two ways to prevent rusting are:
 - (a) Painting or oiling the metal surface.
 - (b) Galvanisation (coating iron with a layer of zinc).

B. Short Answer Questions:

1. No, not all metals are hard. Sodium and potassium are soft metals that can be cut with a knife, while metals like iron and copper are hard.
2. No, not all non-metals are poor conductors. Most non-metals are poor conductors, but graphite, a form of carbon, is a good conductor of electricity.
3. Alloys are mixtures of two or more metals or of a metal and a non-metal. They are used to improve strength, durability and resistance to rust. Examples:
 - (a) **Brass** (copper + zinc) — used in decorative items.
 - (b) **Steel** (iron + carbon) — used in machinery and tools.



C. Long Answer Questions:

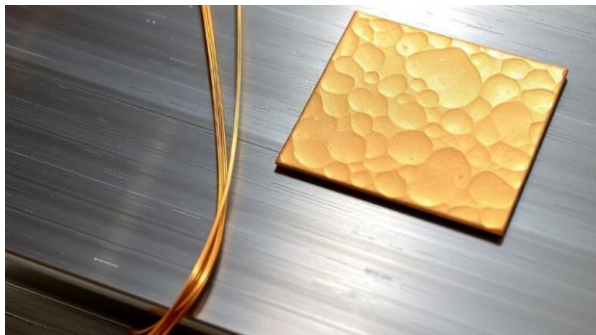
1. (a) **Sonority:** Metals like iron and copper produce a ringing sound when struck.
Exception: Mercury is a metal but is not sonorous because it is liquid.
 - (b) **Lustre:** Metals like gold and aluminium are shiny and used in jewellery and utensils.
Exception: Some metals lose lustre when exposed to air (e.g., iron rusts).
 - (c) **Hardness:** Most metals are hard, while non-metals like sulphur and phosphorus are soft.
Exception: Sodium and potassium are soft metals.
2. Wood is a non-metal. It is dull, non-sonorous and a poor conductor of heat and electricity.

Properties of Wood:

- (a) Non-lustrous and non-malleable.
- (b) Poor conductor of heat and electricity.
- (c) Light in weight and easily cut.

3. **Malleability** is the ability of a metal to be beaten into thin sheets (e.g., aluminium foil).

Ductility is the ability of a metal to be drawn into wires (e.g., copper wire).

**D. Application-Based Questions:**

- 1. Cooking pans are made of metal because metals are good conductors of heat, allowing food to cook evenly. Their handles are made of plastic or wood because these are insulators and prevent burns.
- 2. Electric wires are coated with plastic because plastic is an insulator. It prevents electric shocks and short circuits by keeping the current inside the wire.

E. Picture-Based Questions:

- 1. The metal spoon gets hotter.
- 2. This activity shows the conductivity of heat — metals are good conductors of heat, allowing heat to pass quickly through them.

