

4

The World of Metals and Non-metals

Chapter Notes:

Metals & Non-Metals

- Elements are classified as metals and non-metals based on their properties.
- Examples of metals: Iron, Aluminium, Copper.
- Examples of non-metals: Sulphur, Carbon, Oxygen.

Physical Properties of Metals

- Lustrous (shiny) appearance.
- Hard and strong, with high density.
- Malleable: Can be beaten into sheets.
- Ductile: Can be drawn into wires.
- Good conductors of heat and electricity.
- Sonorous: Produce sound when struck.

Physical Properties of Non-metals

- Dull appearance (except iodine).
- Brittle and non-malleable.
- Poor conductors of heat and electricity (except graphite).

Chemical Properties

Metals:

- React with oxygen to form metal oxides (usually basic).
- React with water to form metal hydroxide and hydrogen gas.
- React with acids to produce salt and hydrogen gas.

Non-metals:

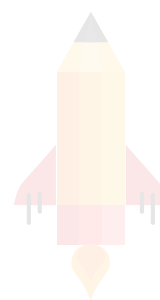
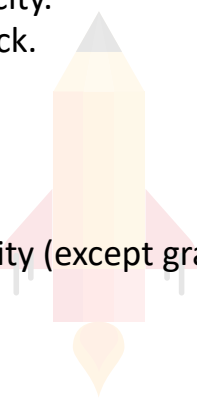
- React with oxygen to form non-metal oxides (usually acidic).
- Generally do not react with water or acids.

Uses of Metals

- Iron: Construction, tools.
- Copper: Electrical wiring.
- Aluminium: Utensils, aircraft bodies.
- Gold, Silver: Jewellery.

Uses of Non-metals

- Oxygen: Respiration.
- Carbon: Fuel.
- Nitrogen: Fertilizers.
- Sulphur: Vulcanisation of rubber.



One Point Learning

Fill in the blanks

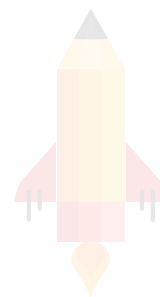
1. Metals are good _____ of heat and electricity.
2. Non-metals are _____ conductors of electricity.
3. Iron reacts with sulphur to form _____.
4. A metal is _____ if it can be drawn into wires.
5. _____ is a non-metal used in fertilizers.

Multiple Choice Questions (MCQs)

1. Which of the following is a metal?
a) Oxygen b) Sulphur
c) Aluminium d) Carbon
2. Which of the following is a good conductor of electricity?
a) Sulphur b) Graphite
c) Phosphorus d) Plastic
3. What is formed when iron reacts with sulphur?
a) Iron oxide b) Iron sulphide
c) Iron chloride d) Iron carbonate
4. Which metal is used to make utensils?
a) Gold b) Aluminium
c) Sodium d) Lead
5. Which gas is produced when a metal reacts with acid?
a) Oxygen b) Carbon dioxide
c) Hydrogen d) Nitrogen

True or False

1. All metals are hard and brittle.
2. Non-metals do not conduct electricity.
3. Gold is a ductile metal.
4. Graphite is a good conductor though it is a non-metal.
5. Magnesium reacts with acid to produce hydrogen gas.



One Point Learning

Short Answer Questions

Q1. What is ductility?

Ans: _____

Q2. Why is copper used in electrical wiring?

Ans: _____

Q3. Give an example of a metal that reacts with cold water.

Ans: _____

Q4. Why are non-metals not used for making utensils?

Ans: _____

Q5. What do you understand by the term 'sonorous'?

Ans: _____

Q6. Why are cooking vessels made of metal but handles are not?

Ans: _____

Q7. What is corrosion?

Ans: _____

More Questions

Q1. Differentiate between metals and non-metals based on five properties.

Ans: _____

Q2. Explain the experiment that proves metals are good conductors of heat.

Ans: _____

Q3. What happens when magnesium ribbon is burned in air?

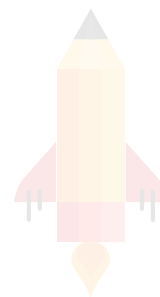
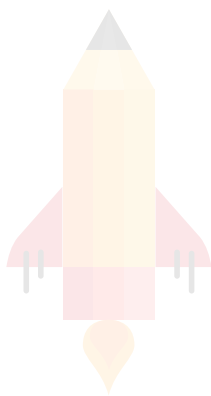
Ans: _____

Q4. Why does sulfur dioxide turn red litmus paper red?

Ans: _____

Q5. Why is graphite used in electric circuits despite being a non-metal?

Ans: _____



Answers

Fill in the Blanks

1. conductors
2. poor
3. iron sulphide
4. ductile
5. Nitrogen

Multiple Choice Questions (MCQs)

1. → c) Aluminium
2. → b) Graphite
3. → b) Iron sulphide
4. → b) Aluminium
5. → c) Hydrogen

True or False

1. → False
2. → True
3. → True
4. → True
5. → True

Short Answer Questions

Q1. Ans: Ductility is the property of a metal to be drawn into wires.

Q2. Ans: Because it is a good conductor of electricity.

Q3. Ans: Sodium reacts vigorously with cold water.

Q4. Ans: Because they are brittle and poor conductors of heat.

Q5. Ans: A material is sonorous if it produces a ringing sound when struck.

Q6. Ans: Metals are good conductors of heat, whereas handles are made from poor conductors like plastic or wood to prevent burns.

Q7. Ans: Corrosion is the gradual destruction of metals due to reactions with air, water, or chemicals.

Extra Question

Q1. Differentiate between metals and non-metals based on five properties.

Property	Metals	Non-metals
Appearance	Lustrous	Dull (except iodine)
Malleability	Malleable	Brittle
Ductility	Ductile	Non-ductile
Conductivity	Good conductors	Poor conductors (except graphite)
Nature of oxides	Basic	Acidic

Q2. Ans: In an experiment, a metal spoon and a wooden spoon are placed in hot water. After some time, the metal spoon becomes hotter than the wooden one. This shows metals conduct heat well, while wood does not.

Q3. Ans: Magnesium burns with a bright white flame to form white ash called magnesium oxide, which is basic in nature.

Q4. Ans: Sulfur dioxide dissolves in water to form sulfurous acid, which is acidic in nature and turns red litmus paper red.

Q5. Ans: Graphite conducts electricity because of its free-moving electrons, making it an exception among non-metals.