INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VII	**DEPARTMENT: SCIENCE 2025- 26**	**DATE: 19/10/2025**
WORKSHEET NO: 7	**TOPIC: THE WORLD OF METALS & NON-METALS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO:**

I. OBJECTIVE-TYPE QUESTIONS

1. Which of the following is a typical feature of metals?

   (a) They are brittle.
   (b) They are malleable.
   (c) They are poor conductors of heat.
   (d) They are poor conductors of electricity.

2. Consider the following statements about the properties of metals and non-metals. Select the correct ones.

   I. Metals are malleable and ductile.
   II. Non-metals are good conductors of heat.
   III. Non-metals are brittle.
   IV. Metals are generally shiny.

   Choose the correct option:
   (a) I, II, and III
   (b) II and III
   (c) I, III, and IV
   (d) II, III, and IV

3. Select the incorrect match pair regarding metals and non-metals.
   (a) Iron – Metal
   (b) Oxygen – Non-metal
   (c) Coal – Metal
   (d) Sulphur – Non-metal

4. Which among the following is the most ductile metal?
   (a) Aluminium
   (b) Gold
   (c) Copper
   (d) Iron

5. Which of the following substances is most likely to rust in the presence of air and moisture?
   (a) Copper
   (b) Iron
   (c) Aluminium
   (d) Sulphur

6. Choose the correct option that represents the rusting of iron.
   a) Iron + Oxygen + Water → Rust
   b) Iron + Heat → Iron oxide
   c) Iron + Acid → Rust
   d) Iron + Sunlight → Brown flakes

7. Which among the following are the most malleable metals?
   a) Aluminium & copper
   b) Gold & silver
   c) Copper & iron
   d) Sodium & mercury

For the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below:
i) Both A and R are true, and R is the correct explanation of the assertion.
ii) Both A and R are true, but R is not the correct explanation of the assertion.
iii) A is true, but R is false.
iv) A is false, but R is true

8. **Assertion (A):** Aluminium is used to make foils and cooking utensils.

   Reason (R): Aluminium is malleable and a good conductor of heat.

9. **Assertion (A):** Coal cannot be drawn into wires.

   Reason (R): Coal is brittle and not ductile.

10. **Assertion (A):** Sulfur dioxide turns red litmus paper blue.

Reason (R): Sulfur dioxide is acidic in nature.

II. VERY SHORT ANSWER TYPE QUESTIONS (2 M):

1. Define malleability with an example.

[Hint: The property by which materials can be beaten into thin sheets is called malleability. Most metals possess this property.

E.g., aluminium foil used for wrapping food items.]

2. What is sonority? Give examples.

[Hint: The property of metals that enables them to produce a ringing sound is called sonority, and metals are said to be sonorous in nature.

E.g., the ringing sound of the school bell and the ringing sound of ghungroos are due to the sonority of metals.]

3. What are the conditions necessary for rusting to take place?

[Hint: The presence of both water and air is essential for rusting. In other words, we can say, moist air is responsible for the development of rust on objects made of iron.]

4. Give reason:

a) Metals like copper and aluminium are commonly used for making electrical wires.

b) Handles of cooking utensils are made of wood or plastic.

c) Sodium metal is stored in kerosene.

d) Sulfur dioxide turns blue litmus paper red.

[Hint: a) Both copper and aluminium are good conductors of electricity, which means they allow electric current to pass through them easily. They are also ductile, meaning they can be drawn into thin wires without breaking.

b) Wood and plastic are poor conductors of heat (insulators). Therefore, they prevent heat from reaching our hands when we touch the handles, keeping us safe from burns.

c) **Sodium is a highly reactive metal that reacts quickly with air and water, producing heat and even fire. Storing it in kerosene prevents it from coming into contact with air or moisture, keeping it safe and stable.**

d) **Sulfur dioxide dissolves in water to form sulfurous acid, which is acidic in nature and turns blue litmus paper red.]**

5. a) Which metal is liquid at room temperature?

b) Which metals can be cut with a knife?

c) Name the most malleable metals.

d) What happens when a magnesium ribbon is heated in the presence of air?

[Hint:

a) **Mercury**

b) **Sodium and potassium**

c) **Gold and silver**

d) **Magnesium ribbon burns with a dazzling white flame and changes into a white powder.]**

6. What are oxides? Write the nature of metallic and non-metallic oxides.

[Hint: Oxides are compounds formed when an element reacts with oxygen.

Metallic oxides (e.g., Magnesium Oxide) are basic in nature, while non-metallic oxides (e.g.: Sulfur dioxide) They are acidic in nature.

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. What is ductility? Give some practical applications of the ductility of metals.

[Hint: Ductility is the property of a material that allows it to be drawn into wires. The property of ductility is mainly possessed by metals.

- **Copper & aluminium wires are essential for electrical installations.**
- **Gold is used for making thin jewellery.**
- **Metal wires are also used in musical instruments like the veena, sitar & guitar.**
- **Steel wire supports heavy loads in suspension bridges & cranes.]**

2. Which property is related to metals like those used in ghungroos? Explain.

[Hint: The property of metals related to ghungroos (small bells used in dance) is sonority.

Explanation:

- **Sonority is the ability of a metal to produce a clear, ringing sound when struck.**
- **Metal like copper is commonly used for ghungroos because they are sonorous.]**

3. Why are ropes made of metal wires, such as steel, used in suspension bridges and cranes? Which property of metals is used here?

   [Hint: Ropes made of steel [a mixture of metal (iron) and non-metal (carbon)] wires can support heavy loads without breaking. Therefore, steel wire ropes are ideal for cranes and suspension bridges where high strength and safety are needed. The property of metals used here is ductility.

4. Write the differences between metals and non-metals based on their physical properties.

   [Hint:

Metals	Non-metals
1. Lustrous.	1. Non-lustrous.
2. Hard, except sodium and potassium.	2. Not as hard as metals.
3. Malleable and ductile.	3. Neither malleable nor ductile.
4. Sonorous.	4. Not sonorous.
5. Good conductors of heat & electricity	5. Poor conductors of heat & electricity.

5. What is corrosion? Explain with examples from metals like copper and silver.

   [Hint: Gradual deterioration of metal surfaces caused by air, water, or other substances is known as corrosion.

   Eg, the formation of a green coating on the surface of copper objects or a black coating on the surface of silver objects]

6. Complete the following table.

Test Solution	Effect on Red Litmus Paper	Effect on Blue Litmus Paper	Inference
Magnesium Oxide	(a)	(b)	Basic
Sulphur dioxide	(c)	Turns Red	(d)

[Hint:

Test Solution	Effect on Red Litmus Paper	Effect on Blue Litmus Paper	Inference
Magnesium Oxide	**(TURNS BLUE)**	**(NO CHANGE)**	Basic
Sulphur dioxide	**(NO CHANGE)**	Turns Red	**(ACIDIC)**

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. You are given five materials: **a copper wire, a plastic ruler, an iron nail, a piece of coal, and aluminium foil**. If each of these is connected in a simple electric circuit one at a time, in which cases will the bulb light up, and in which cases will it not? Explain with reason.

   [Hint: Each material is connected in a simple electric circuit to test whether it allows electric current to pass through it.

- **The bulb will light up with copper wire, an iron nail, and aluminium foil.**
- **The bulb will not light up with a plastic ruler and coal.**

  Reason.

  Metals like copper, iron, and aluminium allow electric current to pass through them, so the bulb lights up. Non-metals like plastic and coal do not allow electric current to pass, so the bulb does not glow. Hence, metals are good conductors, and non-metals are poor conductors of electricity.

2. Write a short note on everyday uses of non-metals.

[Hint: Oxygen: Essential for breathing, supports combustion, used in hospitals (oxygen cylinders).

Carbon: Building block of all life forms. It is a key component of proteins, fats, and carbohydrates, which are necessary for growth and energy.

Nitrogen: Used in the manufacturing of fertilisers. It is an essential nutrient for the growth of plants. It makes up 78% of Earth's atmosphere.

Chlorine: Used in water purification.

Iodine: Used as an antiseptic for wound treatment.]

V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS

Tanvi, Raghav, and Simran are in their science lab, observing a piece of iron exposed to air and moisture. Over time, they notice a brownish, flaky substance forming on the surface. Tanvi explains that this is rust, which forms when iron reacts with oxygen and water. This chemical reaction creates iron oxide, which weakens the iron, making it brittle and less durable. Raghav notices that rusted iron becomes flaky and crumbles, pointing out how rusting weakens tools, vehicles, and structures. Simran asks how rusting can be prevented, and Tanvi explains that iron can be protected by galvanization, where it is coated with zinc. This prevents air and moisture from reaching the iron, stopping rust formation. Tanvi also mentions that painting iron or applying oil or grease can also help protect it from rust.

1. What is the main cause of rusting in iron?

[Hint: Exposure to air and water]

2. What is rusting, and what causes it to happen?

[Hint: Rusting is the process where iron reacts with oxygen and moisture in the air, forming a reddish-brown compound called rust, which weakens the iron.]

3. Explain how galvanization helps prevent rusting in iron.

[Hint: Galvanization involves coating iron with a layer of zinc to prevent exposure to air and moisture, which stops rust from forming and protects the iron from corrosion.]

ANSWERS FOR OBJECTIVE TYPE QUESTIONS [1 to 10]:

1. (b) 2. (c) 3. (c) 4. (b) 5. (b) 6. (a) 7. (b) 8. (i) 9. (i) 10. (iv)

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