Metals and Non-metals

Physical Properties (Questions 1-5)

1. List four physical properties that distinguish metals from non-metals. Give examples to support your answer.
2. What is malleability and ductility? Name two metals that show these properties and two non-metals that are brittle.
3. Why are metals good conductors of heat and electricity while non-metals are not? Explain with examples.
4. Explain why metals have lustre while non-metals are generally dull. Name one non-metal that shows lustre.
5. Most metals are solid at room temperature except one. Name this metal and explain why it is liquid at room temperature.

Chemical Properties (Questions 6-12)

6. What happens when metals react with oxygen? Write chemical equations for the reaction of magnesium and copper with oxygen.
7. Explain why sodium and potassium are stored under kerosene oil.
8. What happens when metals react with water? Write the chemical equation for the reaction of sodium with water.
9. Describe what happens when metals react with acids. Write the chemical equation for the reaction between zinc and hydrochloric acid.
10. What is meant by displacement reaction? Why can zinc displace copper from copper sulphate solution but copper cannot displace zinc from zinc sulphate solution?
11. Arrange the following metals in decreasing order of their reactivity: Iron, Zinc, Sodium, Magnesium, Copper. Justify your arrangement.
12. What happens when non-metals react with oxygen? Write the chemical equation for burning of sulphur in air.

Occurrence and Extraction (Questions 13-17)

13. What are minerals and ores? Explain with examples. Why are some metals found in free state in nature?
14. Name the most abundant metal in the Earth's crust. Why was this metal not used by early humans despite being abundant?

15. Explain the process of extracting metals from their ores. What is meant by roasting and calcination?
16. Describe the extraction of iron from its ore. Write the chemical equations involved in the process.
17. What is thermite reaction? Write the chemical equation and mention its practical application.

Corrosion and Prevention (Questions 18-20)

18. What is corrosion? Explain why iron rusts and write the chemical equation for rusting. How can rusting be prevented?
19. Why is corrosion of copper different from that of iron? What is the green coating formed on copper vessels called?
20. Explain the process of galvanization. Why is it an effective method to prevent rusting of iron?

Application-Based Questions:

Bonus Questions for Practice:

- Why are ionic compounds formed when metals react with non-metals? Explain with an example.
- A metal X forms an oxide with formula X_2O_3. Write the formula of its chloride and sulphate.
- Why do metals generally form basic oxides while non-metals form acidic oxides?
- Explain why aluminium is used for making cooking utensils and aircraft bodies.
- What is an alloy? Why are alloys preferred over pure metals? Give two examples.