

Chapter 3 – Metals and Non-Metals (30 Important Q&A)

Basic Concepts

Q1. Define a metal.

Ans: Elements that are generally hard, shiny, malleable, ductile, and good conductors of heat and electricity.

Q2. Define a non-metal.

Ans: Elements that are generally soft or brittle, dull in appearance, and poor conductors of heat and electricity.

Q3. Give one example of a metal and a non-metal.

Ans: Metal – Iron (Fe), Non-metal – Sulphur (S)

Q4. Which is more reactive: sodium or copper?

Ans: Sodium (more reactive)

Q5. Which is more reactive: chlorine or iodine?

Ans: Chlorine (more reactive)

Physical Properties

Q6. Why are metals good conductors of electricity?

Ans: Metals have free-moving delocalized electrons that carry electric current.

Q7. Why are non-metals poor conductors?

Ans: Non-metals lack free electrons.

Q8. Name a metal that is liquid at room temperature.

Ans: Mercury (Hg)

Q9. Why are metals malleable?

Ans: Their layers of atoms can slide over each other without breaking metallic bonds.

Q10. Why are non-metals brittle?

Ans: Their bonds break easily under stress; they cannot change shape without breaking.

Chemical Properties

Q11. Reaction of metal with oxygen is called:

Ans: Oxidation

Q12. Write the reaction of magnesium with oxygen.

Ans: $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

Q13. Reaction of non-metal with oxygen produces:

Ans: Acidic oxides

Q14. Write the reaction of sulphur with oxygen.

Ans: $\text{S} + \text{O}_2 \rightarrow \text{SO}_2$

Q15. Metals react with water to produce:

Ans: Metal hydroxide + H_2 (if metal is reactive)

Example: $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$

Reaction with Acids and Bases

Q16. What happens when zinc reacts with dilute HCl?

Ans: Zinc displaces hydrogen to form zinc chloride and H_2 gas: $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2 \uparrow$

Q17. Do non-metals react with acids?

Ans: Generally, non-metals do not react with acids.

Q18. Which metal reacts with cold water to form hydroxide and hydrogen?

Ans: Sodium, Potassium, Calcium

Q19. Which metal reacts slowly with cold water but fast with steam?

Ans: Iron ($\text{Fe} + \text{H}_2\text{O}/\text{steam} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$)

Q20. Which non-metal reacts with metals to form ionic compounds?

Ans: Chlorine reacts with metals (e.g., $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$)

Reactivity Series

Q21. Name the most reactive metal among Na, Mg, and Fe.

Ans: Sodium (Na)

Q22. Name a less reactive metal that does not react with water.

Ans: Copper (Cu)

Q23. Why is potassium stored in kerosene?

Ans: It reacts violently with water and moisture in air; kerosene prevents contact.

Q24. Why is gold called a noble metal?

Ans: It does not react easily with air, water, or acids.

Q25. Which non-metal is highly reactive and used in bleaching?

Ans: Chlorine

Alloys and Uses

Q26. What is an alloy? Give one example.

Ans: A mixture of two or more metals, or metal and non-metal. Example: Brass = Cu + Zn

Q27. Why are alloys harder than pure metals?

Ans: Different sized atoms disturb the regular lattice, making slipping difficult.

Q28. Name a metal used in making electrical wires.

Ans: Copper (Cu)

Q29. Which metal is used in making thermite mixture?

Ans: Aluminium (Al)

Q30. Why is aluminium used for making aircraft?

Ans: Light, strong, and resistant to corrosion (forms protective oxide layer).
