7. Metals and Nonmetals

Q 1) Complete the table.

Property of metal	Use in everyday life
i. Ductility	
ii. Malleability	
iii. Conduction of heat	
iv. Conduction of electricity	
v. Sonority	

Ans.

Property of metal	Use in everyday life
i. Ductility	Electric wire, ornaments.
ii. Malleability	Making utensils.
iii. Conduction of heat	Ironing clothes, cooking food.
iv. Conduction of electricity	Electric wires.
v. Sonority	School bell.

Q 2) Identify the odd term

a. Gold, silver, iron, diamond.

Ans. Diamond (Diamond is a nonmetal while others are metals)

b. Ductility, brittleness, sonority, malleability.

Ans. Brittleness (Brittleness is the physical property of non-metals while others are the physical properties of metals.

c. Carbon, bromine, Sulphur, phosphorous.

Ans. Bromine (Bromine is a nonmetal in liquid state while others are nonmetals in solid state).

d. Brass, bronze, iron, steel.

Ans. Iron (Iron is a metal while others are alloys).

Q 3) Write scientific reasons.

a. The stainless steel vessels in kitchen have copper coating on the bottom.

Ans. Stainless steel is an alloy of iron which contains carbon, chromium and nickel.

Copper is a better conductor of heat than the stainless steel. Copper heats uniformly and faster. Fuel is saved as the time for cooking is reduced. Hence, the stainless steel vessels in kitchen have copper coating on the bottom.

b. Copper and brass vessels are cleaned with lemon.

Ans.(1) Copper reacts with moist carbon dioxide in air to form copper carbonate gains a green coat. This green substance is copper carbonate. Copper undergoes oxidation in air to form black copper oxide.s(2) The citric acid present in lemon neutralizes the copper carbonate. The acid dissolves the green coating of basic copper carbonate present on the surface of a tarnished copper and brass vessels and makes them shiny again.

c. Sodium metal is kept in kerosene.

Ans. 1) Sodium is a highly reactive metal and reacts with water vapour present in air to form sodium hydroxide and hydrogen. The hydrogen released catches fire in the presence of oxygen. 2) Sodium does not react with kerosene and sinks in it. To protect sodium and to prevent accidental fires sodium is always kept in kerosene.

Q 4) Answer the following.

a. What is done to prevent corrosion of metals?

Ans. 1) To prevent corrosion of metals, layers of oil, grease, varnish and paint are applied on metals. 2) Also electroplating with another non corroding metal is done on some metals. 3) Iron is

coated with thin layer of zinc, which loses the contact of metal surface with air and corrosion is prevented.

b. What are the metals that make the alloys brass and bronze?

Ans. i) The alloy brass is formed of metals copper and zinc ii) The alloy bronze is formed from copper and tin.

c. What are the adverse effects of corrosion?

Ans. 1) Gases present in the air react with metals in the presence of moisture to metal compounds. The metal get affected by this reaction and undergo a process called corrosion. A reddish coloured deposit (rust) is formed on iron by reaction with oxygen gas. A greenish coloured deposit (copper carbonate) is formed on copper by reaction with carbon dioxide. A blackish coloured deposit is formed (silver sulphide) on silver.

2) Corrosion causes damages to metallic equipment's ,car bodies, bridges, iron railings, and ships specially those of iron, silver articles and copper vessels.

3) It leads to contamination of products.

4) Loss of valuable materials by blockage of pipes and mechanical damage of underground water pipes.

d. What are uses of Noble metals?

Ans.Uses of Noble metals,

i) Gold, silver and platinum are used to prepare ornaments.

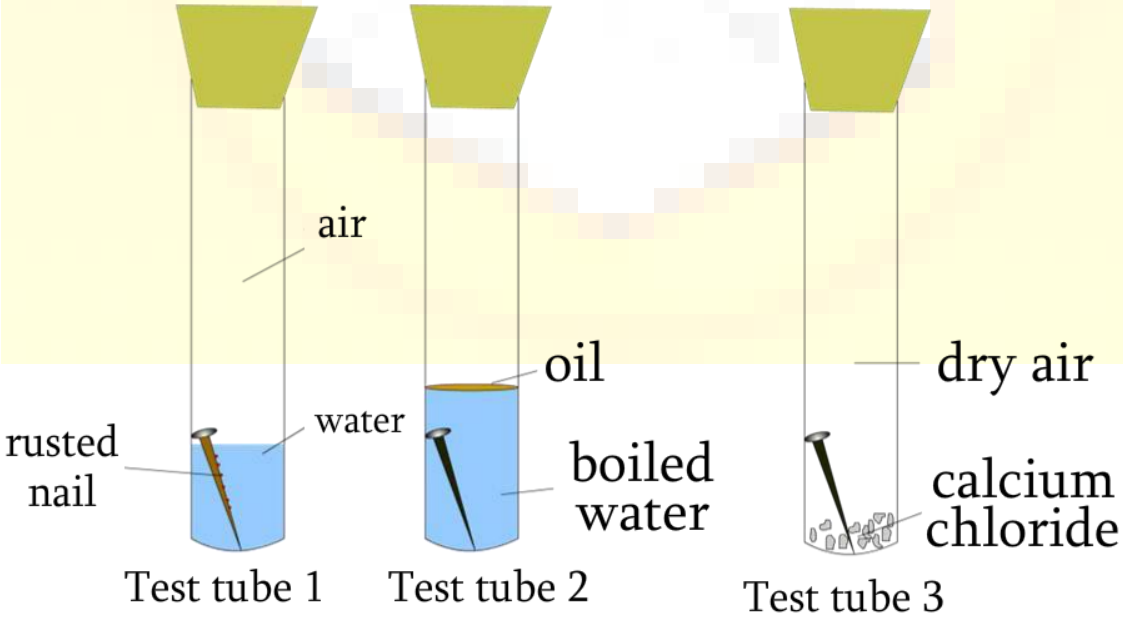
ii) Silver used in medicines as it has anti-bacterial property.

iii) Gold and silver also used to make metals.

iv) Gold and silver also used to make few electronic devices.

v) Platinum, palladium metals are used as catalyst in various chemical reactions.

Q 5) Three experiments to study the process of rusting are given below. Observe the three test tubes and answer the following questions.



a. Why the nail in the test tube 2 is not rusted?

Ans. i) Iron and steel rust when they come in contact with water and oxygen. Both water and oxygen are needed for rusting to occur. ii) In test tube 2 due to the oil layer the nail is not in contact with air at all thus it is not rusted.

b.Why is the nail in the test tube 1 is rusted highly?

Ans. i) The nail in the test tube 1 is in contact with water as well as air.ii) Both water and oxygen in air is needed for rusting to occur.iii) Hence it is rusted highly

c. Would the nail in the test tube 3 get rusted?

Ans. i) Calcium chloride is drying agent. It will absorb all the moisture present in the air of the test tube. ii) Thus the nail present in test tube 3 does not rust at all.

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