



GRADE 8 SCIENCE
CHAPTER 4: METALS AND NON-METALS
QUESTION BANK

A. Multiple choice questions

Choose the correct options. There may be more than one correct option for some questions.

- All metals except _____ are solids at room temperature.
a. mercury b. bromine c. chlorine d. iodine
- Generally, non-metals are soft and brittle except _____, the hardest substance known.
a. sulphur b. diamond c. iodine d. graphite
- _____ is a neutral oxide.
a. carbon dioxide b. sulphur dioxide c. sodium oxide d. carbon monoxide
- _____ reacts vigorously with cold water to liberate hydrogen gas.
a. copper b. zinc c. sodium d. magnesium
- _____ is used as an electrode in dry cells.
a. zinc b. chromium c. lead d. copper

Ans: 1. a 2. b 3. d 4. c 5. a

B. Answer in brief.

- Sometimes, elements occur in the free state.* What does this statement mean?

Ans: Sometimes, elements are not combined with any other element in nature. They are then said to occur in the *free state*.

- (i) What are GI pipes?
(ii) Name the metals that float on water.
(iii) Which is the only non-metal that can conduct electricity?

Ans: (i) Iron pipes used for water supply are given a coat of zinc to prevent rusting. Such pipes are called galvanised iron (GI) pipes.

(ii) Sodium and potassium have densities lower than that of water. These metals float on water.

(iii) Graphite is the non-metal that conducts electricity.

- What property of aluminium makes it suitable for making high-voltage electric

lines?

Ans: Aluminium being lightweight and a good conductor of electricity, it is used for making high-voltage electric lines.

4. Why do copper objects turn green over time?

Ans: Copper objects develop a green coating when exposed to moist air for a long time. The green coating is formed due to the reaction of copper with carbon dioxide and water vapour present in the air to form copper carbonate and copper hydroxide.

5. What is the activity series of metals? How is it useful?

Ans: Activity series of metals is the arrangement of metals in decreasing order of their reactivity. It means that a metal which is placed higher in the activity series is more reactive than those placed below it. The activity series helps to predict which metal can displace another metal from its salt solution. A more reactive metal will replace a less reactive metal from its salt solution.

6. Which of the following undergo chemical reactions? Describe the reactions and write their equation.

(i) Iron and copper sulphate

(ii) Copper and ferrous sulphate

(iii) Magnesium and zinc sulphate

(iv) Zinc and magnesium sulphate

Ans: (i) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

Iron displaces copper from its salt solution as iron is more reactive than copper. This is an example of a displacement reaction.

(ii) No reaction will take place, as copper is less reactive than iron and cannot displace iron from its salt solution (iron sulphate).

(iii) $\text{Mg} + \text{ZnSO}_4 \rightarrow \text{MgSO}_4 + \text{Zn}$

Magnesium being more reactive than zinc, it displaces zinc from its salt solution (zinc sulphate).

(iv) No reaction will take place, as zinc is less reactive than magnesium and cannot displace magnesium from its salt solution (magnesium sulphate).

C. Answer in detail.

1. Describe the conditions required for iron to react with water. Name the products formed and write the balanced chemical equation for the reaction.

Ans: Iron reacts with steam when heated strongly. The products formed are iron oxide and hydrogen gas.

metal + water \rightarrow metal oxide + hydrogen gas

2. How are non-metals used as fertilisers and pesticides?

Ans: (i) Sulphur is used to make pesticides used in agriculture.

(ii) Nitrogen is used in the manufacture of nitrogenous fertilisers like urea, ammonium nitrate and ammonium sulphate.

(iii) Phosphorous is used in the manufacture of fertilisers called superphosphates.

3. Why do aluminium vessels not corrode?

Ans: Aluminium forms a protective coating of aluminium oxide on its surface on exposure to air and does not allow further oxidation to take place. Hence aluminium vessels do not corrode.

D. Give one word or phrase for the following.

1. These are rocks from which minerals can be extracted profitably
2. A metal that can be cut with a knife
3. A metal that burns with a dazzling bright flame, leaving behind a white powder
4. Metal that is stored in kerosene
5. A non-metal with a metallic lustre

Ans: 1. ores 2. sodium/potassium 3. magnesium 4. sodium/potassium
5. iodine/graphite

E. Your teacher set up an experiment to find out the conditions required for iron to rust. He/she set up four test tubes and left them undisturbed for 4 days.

Test tubes	Conditions	Observations
1	Iron nail in salt water	Nail is severely rusted
2	Iron nail in boiled water + oil layer	Nail is not rusted
3	Iron nail in dil. hydrochloric acid	Nail is slightly rusted
4	Iron nail coated with zinc	Nail is not rusted

Answer the following questions.

- (i) The nail rusted in salt water but did not rust in boiled water. Why?
- (ii) In test tube 3, the iron nail reacted with the acid. Name the gas formed.
- (iii) Why did the nail not rust when coated with zinc?

Ans: (i) Boiled water is devoid of oxygen and the oil layer prevents fresh oxygen getting dissolved in water.

(ii) Hydrogen

(iii) Zinc forms a protective oxide coating on the surface, which prevents rusting.