

PARAGON CONVENT SCHOOL

SECTOR: 24 B, CHANDIGARH

Lesson - 4

Materials:Metals and Non-metals

Summary:

- A substance that cannot be broken down further into simpler substances is called an element.
- Elements are classified into metals, non-metals and metalloids.
- Metals are hard, shiny, ductile, malleable, sonorous and good conductors of heat and electricity.
- Non-metals are soft, dull, brittle and bad conductors of heat and electricity.
- Metals react with oxygen to form metal oxides which are basic in nature.
- Metals react with water to form metal hydroxides and hydrogen gas.
- Metals react with dilute acids to form salts and hydrogen gas.
- In a displacement reaction, a more reactive metal displaces a less reactive metal from its salt solution.
- Less reactive metals like copper, silver and gold do not react with dilute acids.
- Corrosion is the slow wasting away of a metal on exposure to air and water.
- An alloy is a mixture of two or more metals, made to improve the properties of the metals.

Multiple Choice Questions (Page No.58)

- 1.(a) 2. (c) 3. (c) 4. (a) 5.(d)

Multiple Choice Questions (Page No.65)

1. (a) 2. (c) 3. (a) 4. (a) 5. (d)

SECTION

Oral questions:

Q1.- Name : a) a solid metal b) a liquid metal at room temperature.

Ans.- (a) Gold, silver, copper, tin, iron.

(b) Mercury.

Q2.- What is the chemical nature of rust?

Ans.- Rust is basic in nature.

Science quiz:

Q1.- Name two metals which are poor conductors of heat.

Ans.- Bismuth, tungsten

Q2.- What will be the change in colour of copper sulphate solution when magnesium is added to it?

Ans.- When magnesium is added to the copper sulphate solution, the blue-coloured copper sulphate solution changes to a colourless solution.

Q3.- Write the name of the metal which is used in household electric wiring.

Ans.- Copper.

Q4.- Name one metal which is highly unreactive.

Ans.- Gold.

WORKSHEET

Tick (✓) the correct options

1. (c) 2. (c) 3. (c) 4. (a)

Circle the odd ones. Give reasons for your choice

1. Copper Aluminium Sodium Gold

Ans.- Sodium → It can easily be cut with knife, whereas others are hard metals.

2. Aluminium Iron Copper Bismuth

Ans.- Bismuth → It is a poor conductor of heat, whereas others are good conductors of heat.

3. Iodine Hydrogen Chlorine Nitrogen

Ans.- Iodine → It is a lustrous non-metal, whereas others are non-lustrous non-metals.

Fill in the blanks

1. ductility 2. bismuth/tungsten 3. Diamond 4. Graphite

SECTION B

Multiple Choice Questions

1. (c) 2. (a) 3. (a)

Very Short Answer Questions

Q1.- What happens when copper vessel is exposed to moist air for a long time?

Ans.- The copper vessel on reacting slowly with carbon dioxide and water of air loses its shine on being exposed to moist air for a long time.

Q2.- What is meant by 'rusting of iron' ?

Ans.- When an iron object is left in damp air for a considerable time, it gets covered with a reddish-brown flaky substance called rust. This is called rusting of iron.

Q3.- What is formed when non-metal reacts with oxygen?

Ans.- Acidic oxides.

Short Answer Type-I Questions

Q1.- What happens when the following metals react with dilute hydrochloric acid?

- a) Magnesium b) Aluminium

Ans.- (a) Magnesium reacts with dilute hydrochloric acid to form magnesium chloride and hydrogen gas.

(b) Aluminium reacts with dilute hydrochloric acid to form aluminium chloride and hydrogen gas.

Q2.- Objects made of silver become black with the passage of time. Explain.

Ans.- Objects made of silver become black with the passage of time due to the formation of a thin silver sulphide layer on their surface by the action of hydrogen sulphide present in the air.

Q3.- What is meant by 'reactivity series of metals'?

Ans.- Arrangement of metals in a vertical column in the order of their decreasing reactivities is called reactivity series of metals.

Short Answer Type-II Questions

Q1.- Give reason for the following:

- a) The electric wires are made of copper.
b) Gold and silver are used for making jewellery.
c) Graphite is used for making electrodes in electric cells.

Ans.- (a) Electric wires are made of copper because it is ductile and a good conductor of electricity.

(b) Gold and silver are used for making jewellery because they are lustrous, highly malleable and ductile.

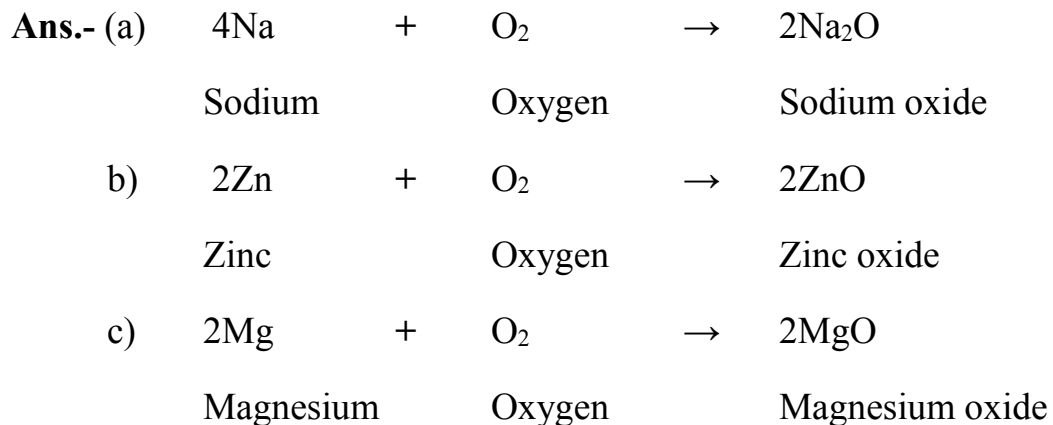
(c) Graphite is a good conductor of electricity, that is why, it is used for making electrodes in electric cells.

Q2.- What happens when the following metals react with oxygen (write chemical equation)?

a) Sodium

b) Zinc

c) Magnesium

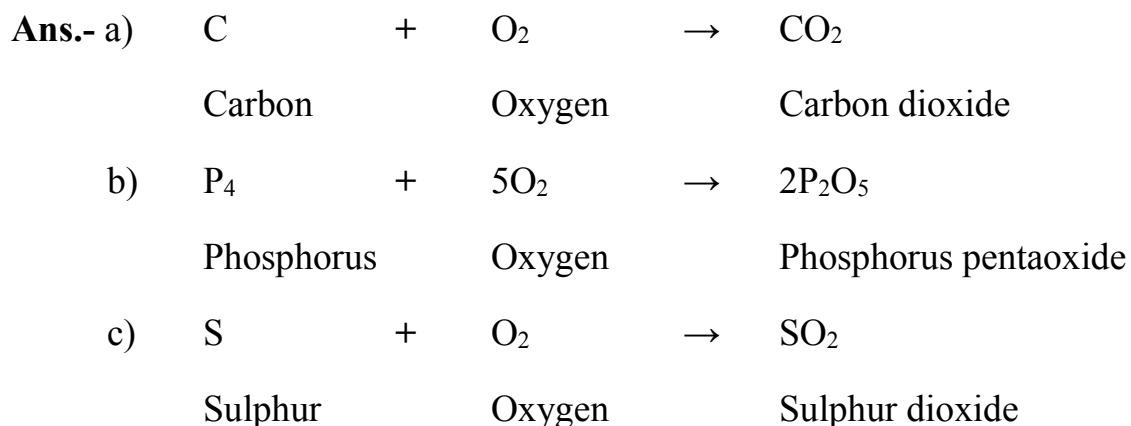


Q3.- What happens when the following nonmetals react with oxygen (give chemical equation)

a) Carbon

b) Phosphorus

c) Sulphur



Q4.- In the evening, Sonu plays guitar for the poor children of his colony. They all enjoy listening to guitar. Sonu even teaches some of them how to play guitar, free of cost.

a) Name the property because of which strings in guitar have to be of metal.

b) What do we learn from Sonu?

Ans.- (a) Sonority

(b) We learn care and concern for the poor and needy and also spreading happiness and love with simple gestures.

Q5.- Which non-metal is used as the disinfectant to purify and clean water?

Ans.- Chlorine is used as disinfectant to purify and clean water.

Q6.- Which of the following elements would form acidic oxides?

a) Carbon b) Magnesium c) Sulphur d) Zinc e) Iron

Ans.- Carbon and sulphur will form acidic oxides because these two are non-metals.

Long Answer Questions

Q1.- State any five physical properties on the basis of which metals can be distinguished from nonmetals.

Ans.- (i) Metals are solid at room temperature, except mercury which is liquid at room temperature.

(ii) Metals are malleable, i.e. they can be beaten into thin sheets.

(iii) Metals are ductile, i.e. they can be drawn into thin wires.

(iv) Metals are lustrous.

(v) Metals are hard.

(vi) All metals are good conductors of electricity.

(vii) Metals have high tensile strength.

Q2.- Give reason for the following:

a) Wires cannot be drawn from the wood.

b) Oxygen is not brittle.

c) Sulphur cannot be used for making pipes.

d) Diamonds are used for making jewellery.

e) Sodium is stored in kerosene oil.

Ans.- (a) Wires cannot be drawn from wood because it is non-ductile and also, an insulator.

(b) Oxygen is not brittle because it is a gas.

(c) Sulphur cannot be used for making pipes because it is a non-metal and is brittle.

(d) Diamond is used for making jewellery because it sparkles.

(e) Sodium is a very reactive metal, i.e. it can catch fire on reacting with air, that is why, it is stored in kerosene oil.

Q3.- State any three physical and two chemical properties that prove that copper is a metal.

Ans.- Physical properties:

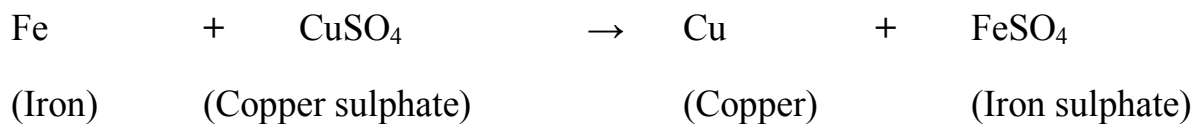
(i) Copper is malleable.

(ii) Copper is ductile.

(iii) Copper is a good conductor of heat and electricity.

Chemical properties:

(i) Copper shows displacement reaction.



(ii) Copper reacts with oxygen to form basic oxides.

