

## NCERT Solutions for Class 8 Science Chapter 4

### Materials : Metals and Non-Metals

**Exercise :** Solutions of Questions on Page Number : 53

**Q1 :**

Which of the following can be beaten into thin sheets?

(a) Zinc (b) Phosphorus (c) Sulphur (d) Oxygen

**Answer :**

(a) Zinc

**Q2 :**

Which of the following statements is correct?

(a) All metals are ductile.

(b) All non-metals are ductile.

(c) Generally, metals are ductile.

(d) Some non-metals are ductile.

**Answer :**

(c) Generally, metals are ductile

However, mercury metal- a liquid at room temperature - cannot be drawn into wires and is not ductile.

**Q3 :**

Fill in the blanks:

(a) Phosphorus is a very \_\_\_\_\_ non-metal.

(b) Metals are \_\_\_\_\_ conductors of heat and \_\_\_\_\_.

(c) Iron is \_\_\_\_\_ reactive than copper.

(d) Metals react with acids to produce \_\_\_\_\_ gas.

**Answer :**

(a) Phosphorus is a very reactive non-metal.

(b) Metals are good conductors of heat and electricity.

(c) Iron is more reactive than copper.

(d) Metals react with acids to produce hydrogen gas.

**Q4 :**

Mark 'T' if the statement is true and 'F' if it is false.

(a) Generally, non-metals react with acids. ( )

- (b) Sodium is a very reactive metal. ( )
- (c) Copper displaces zinc from zinc sulphate solution. ( )
- (d) Coal can be drawn into wires. ( )

**Answer :**

- (i) Generally, non-metals react with acids. (F)
- (ii) Sodium is a very reactive metal. (T)
- (iii) Copper displaces zinc from zinc sulphate solution. (F)
- (iv) Coal can be drawn into wires. (F)

**Answer :**

Properties	Metals	Non-metals
1. Appearance	Lustrous	Dull
2. Hardness	Hard	Soft
3. Malleability	Can be beaten into thin sheets	Cannot be beaten into thin sheets
4. Ductility	Can be drawn into wires	Cannot be drawn into wires
5. Heat conduction	Good conductors of heat	Poor conductors of heat
6. Conduction of electricity	Good conductors of electricity	Poor conductors of electricity

**Q5 :**

Some properties are listed in the following Table. Distinguish between metals and non-metals on the basis of these properties.

Properties	Metals	Non-metals
1. Appearance		
2. Hardness		
3. Malleability		
4. Ductility		
5. Heat Conduction		
6. Conduction of Electricity		

**Q6 :**

Give reasons for the following.

- (a) Aluminium foils are used to wrap food items.
- (b) Immersion rods for heating liquids are made up of metallic substances.

(c) Copper cannot displace zinc from its salt solution.

(d) Sodium and potassium are stored in kerosene.

**Answer :**

(a) Aluminium foils are used to wrap food items because aluminium metal is malleable. Therefore, it can be beaten into thin foils.

(b) Metals are good conductors of heat and electricity. Therefore, immersion rods for heating liquids are made of metallic substances.

(c) A metal can displace a less reactive metal from its salt in an aqueous solution. But zinc is more reactive than copper. Therefore, copper cannot displace zinc from its salt solution.

$\text{Cu}_{(s)} + \text{ZnSO}_{4(aq)} \rightarrow \text{No reaction}$

(d) Sodium and potassium are stored in kerosene because they are highly reactive elements. They can easily catch fire even when in contact with air.

**Q7 :**

**Can you store lemon pickle in an aluminium utensil? Explain.**

**Answer :**

Lemon pickle cannot be stored in aluminium utensils because lemon pickle contains acids, which can react with aluminium (metal) liberating hydrogen gas. This can lead to the spoiling of the pickle.

**Q8 :**

**Match the substances given in Column A with their uses given in Column B.**

A		B	
(i)	Gold	(a)	Thermometers
(ii)	Iron	(b)	Electric wire
(iii)	Aluminium	(c)	Wrapping food
(iv)	Carbon	(d)	Jewellery
(v)	Copper	(e)	Machinery
(vi)	Mercury	(f)	Fuel

**Answer :**

A		B	
(i)	Gold	(d)	Jewellery

**Q9 :**

**What happens when**

(ii)	Iron	(c)	Machinery
(iii)	Aluminium	(c)	Wrapping food
(iv)	Carbon	(f)	Fuel
(v)	Copper	(b)	Electric wire
(vi)	Mercury	(a)	Thermometers

(a) Dilute sulphuric acid is poured on a copper plate?

(b) Iron nails are placed in copper sulphate solution?

Write word equations of the reactions involved.

**Answer :**

(a) When dilute sulphuric acid is poured on a copper plate, there will be no reaction between copper and dilute sulphuric acid as copper is less reactive and hence no products will be formed.

(b) Iron being more reactive displaces copper from copper sulphate solution. In this reaction, the blue colour of copper sulphate fades and there is deposition of copper on the iron nail.



**Q10 :**

Saloni took a piece of burning charcoal and collected the gas evolved in a test tube.

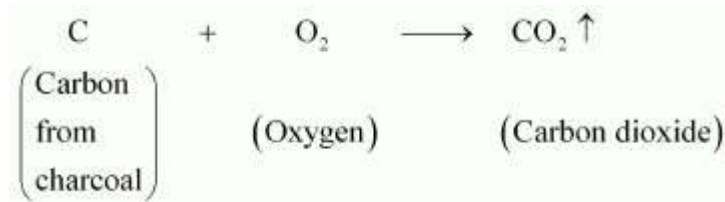
(a) How will she find the nature of the gas?

(b) Write down word equations of all the reactions taking place in this process.

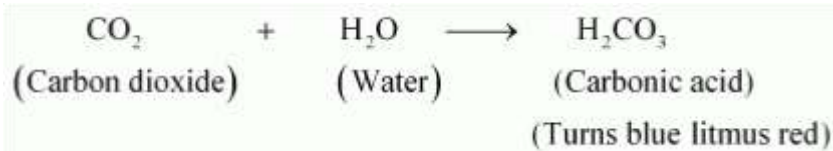
**Answer :**

(a) Add a few drops of water in the test tube containing gas. Now, cover the test tube and shake it well. After shaking, test the solution with blue litmus and red litmus. It will turn blue litmus red. Thus, the gas is acidic in nature.

(b) Charcoal reacts with oxygen to form carbon dioxide gas.



Carbon dioxide reacts with water to form carbonic acid, which turns blue litmus paper red.



**Q11 :**

**One day Reeta went to a jeweller's shop with her mother. Her mother gave an old gold jewellery to the goldsmith to polish. Next day when they brought the jewellery back, they found that there was a slight loss in its weight. Can you suggest a reason for the loss in weight?**

**Answer :**

To polish a gold ornament, it is dipped in a liquid called aqua regia (a mixture of hydrochloric acid and nitric acid). On getting the environment of aqua regia, the outer layer of gold dissolves and the inner shiny layer appears. The dissolving of the layer causes a reduction in the weight of the jewellery.