

**CBSE Class–VIII Science**  
**NCERT SOLUTION**  
**Chapter-4**  
**Materials: Metals and Non-Metals**

**1. Which of the following can be beaten into thin sheets?**

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

**Ans. (a) Zinc**

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**2. 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.**

**Ans. (c) Generally, metals are ductile.**

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**3. 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.**

**Ans. Fill in the blanks.**

**(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.

4. 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. ( )

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

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

(b) Sodium is a very reactive metal. ( T )

(c) Copper displaces zinc from zinc sulphate solution. ( F )

(d) Coal can be drawn into wires. ( F )

5. 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		

**Ans.**

Properties	Metals	Non-Metals
1. Appearance	Shiny	Dull
2. Hardness	Very hard	Hard or Soft
3. Malleability	Can be beaten into thin sheets	Can not be beaten into thin sheets
4. Ductility	Can be drawn into wires	Can not be drawn into wires
5. Heat conduction	Good conductors of heat	Poor conductors of heat
6. Conduction of Electricity	Good conductor of electricity	Poor conductors of electricity

**6. 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.**

**Ans.** (a) Aluminium is one of the least reactive metals, so it does not react with food items and does not alter the taste. Moreover, being a metal; aluminium is highly malleable and can be made into very thin foils which are perfect for wrapping food.

(b) Immersion rods for heating liquids are made up of metallic substances because metals are good conductors of heat and electricity. The immersion rod needs electric supply to get heated and in turn to heat liquids.

(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.

$\text{Cu(s)} + \text{ZnSO}_4 \text{ (aq)} \rightarrow \text{No reaction}$

(d) Sodium and potassium are highly reactive metals. If kept in open, they readily react with oxygen in the atmosphere. The reaction is so quick and that sodium and potassium easily catch fire when exposed to air. To prevent accidental fire, they are stored in kerosene.

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

**Ans.** Aluminium is a metal. Metals are more reactive with acids. So acidic foodstuffs like lemon pickles can not be stored in aluminium utensils.

**8. 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

**Ans.**

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

## 9. What happens when

**(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.**

**Ans. (a)** (a) When dilute sulphuric acid is poured on a copper plate, bubbles appear on the surface of plate. This happens because sulphuric acid reacts with copper to produce hydrogen gas. This can be shown by following equation:

Sulphuric acid(Dilute) + Copper → Copper sulphate + Hydrogen (gas)

**(b)** When iron nails are placed in copper sulphate solution, the blue colour of copper sulphate solution fades and turns into light green. This happens because iron displaces copper from copper sulphate solution. This can be shown by following equation:

Copper sulphate + Iron → Iron sulphate + Copper

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## 10. Soloni 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.**

**Ans. (a)** For this, the evolved gas should be passed into a test tube which is filled with lime water. If the lime water turns milky, it shows that the evolved gas is carbon dioxide.gas.

**(b)** Carbon + Oxygen → Carbon dioxide + Heat.

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**11. 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?**

**Ans.** The goldsmith use a mixture of acids to clean jewellery. Gold usually doesn't react with acids. But the mixture which is used by goldsmith is Aqua regia which can even dissolve gold. Due to this, some gold is lost during the polishing process.