

QUIZ: PROPERTIES OF METALS AND NON-METALS

1. Following table contains four sets of properties of a substance. Identify the set that comprises the general properties of metals.

Table

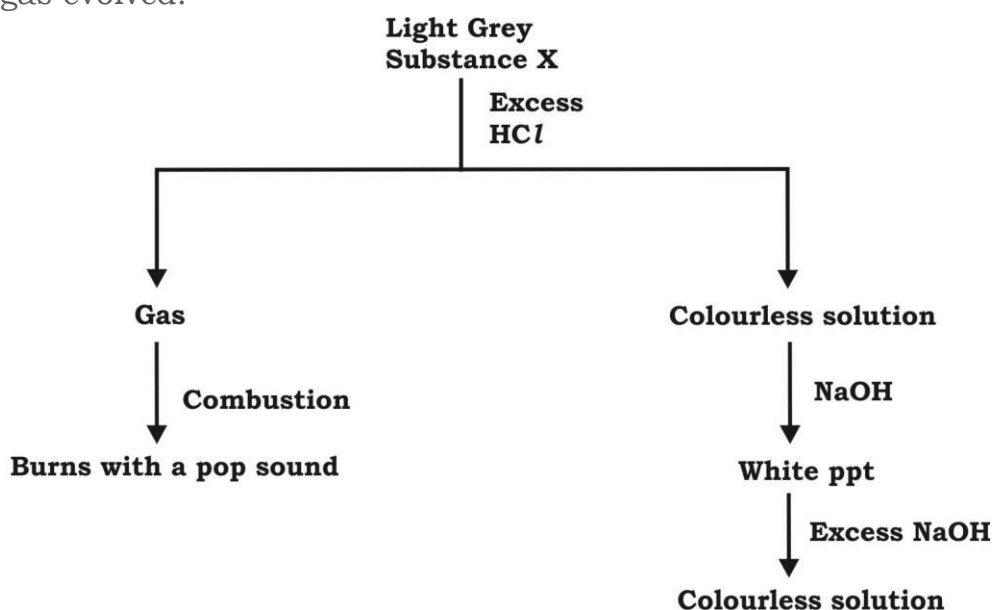
Set	Properties
(a)	Low melting and boiling points, malleable, non-ductile, poor conductors of electricity
(b)	Non lustrous, non-malleable, non-ductile, poor conductors of electricity
(c)	Metallic lusture, malleable, ductile, good conductor of electricity
(d)	Hard, Non-malleable, non-ductile, low m.p., good conductor of electricity

2. A substance X was burnt in air. The gaseous product so obtained was passed through water. The aqueous solution so obtained turned blue litmus paper red. The gaseous product is formed by the combustion of
- Magnesium
 - Calcium
 - Sulphur
 - Potassium
3. Given below are the conditions under which metals W, X, Y and Z react with water.
- W: Reacts with hot water to produce metal hydroxide and hydrogen.
- X: Reacts with cold water violently to produce metal hydroxide and hydrogen.
- Y: Reacts with water when steam is passed over the red hot metal surface.
- Z: Reacts with cold water but less violently to produce metal oxide and hydrogen gas.

Arrange the four metals in increasing order of their reactivity.

- $W < X < Y < Z$
- $X < Y < Z < W$
- $Y < W < Z < X$
- $W < Y < Z < X$

4. Dilute sulphuric acid was added to a test tube containing an unknown powder. Vigorous effervescences were produced and the gas evolved burnt with a pop sound. A light green coloured solution was formed in the test tube. The powder contained in the test tube may be
- Iron powder
 - Sodium carbonate
 - Calcium sulphate
 - Calcium carbonate
5. Consider the figure given below and identify the substance and the gas evolved.



- Iron, hydrogen
- Copper, hydrogen
- Aluminum, hydrogen
- Copper carbonate, carbon dioxide

Answers:

1. (c)

Options:

- Low melting and boiling points, non- ductile and poor conductor of electricity are the properties of non-metals.
- All the properties of Set (b) are the properties of non-metals.
- Correct. As given in questionnaire sheet
- Non-malleable, non-ductile, low m.p are the properties of non-metals.

Explanation: Metals in general are hard and possess all the properties listed in set (c)

Note for teachers:

- (i) The same table may be used to identify the properties of non-metals.
- (ii) List the properties of a set and ask learners to classify the properties of (i) Metals and (ii) Non-metals.

2. (c)

Explanation: The combustion of magnesium, calcium and potassium would produce metallic oxides on combustion. Sulphur would produce sulphur dioxide. This oxide is acidic and would turn blue litmus red.

Note for teachers: The teacher may frame similar questions for metals. Metal oxides are basic in nature.

3. (c)

Explanation: The reaction conditions of metals with the same reactant indicate about the relative reactivity of metals. The metal that requires the most vigorous reaction conditions is the least reactive. The metal that reacts even with cold water violently is the most reactive.

4. (a)

Explanation: Iron powder is the only metal among the four options. The metals react with acids to produce a gas, hydrogen which burns with a pop sound. Thus (a) is correct. Sodium carbonate and calcium carbonate would react with acids to produce carbon dioxide which extinguishes fire; calcium sulphate does not react with acids.

5. (c)

Explanation: Of the four given options, iron is black in colour, copper is brownish, aluminum is light grey while copper carbonate is bluish. Thus, the colour gives an idea that substance X is aluminum. Metals react with acids to produce hydrogen gas which burns with a pop sound. Therefore, the gas evolved is hydrogen. The metal aluminum reacts with excess of HCl to produce hydrogen gas and a colourless solution of aluminum chloride.

Aluminum chloride reacts with NaOH as follows,



Note for teachers: If the learner finds the question difficult, a hint may be given regarding the substance X, that X is a metal and forms an amphoteric oxide.