

<b>CLASS - X</b>	<b>TOPIC- CHAP. 3</b> <b>Properties of Metals and Non-metals</b>
<b>SUBJECT- CHEMISTRY</b>	<b>Prepared by- RS/ 11/08/2021</b>

**Directions** *In the following questions a statement of Assertion is followed by a statement of Reason. Mark the correct choice as*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) If Assertion is true but Reason is false.

(d) If Reason is true but Assertion is false.

(e) If both Assertion and Reason are false.

**Q1. Assertion (A):** Magnesium chloride is an ionic compound.

**Reason (R):** Metals and non-metals react by mutual transfer of electrons.

**Q2. Assertion (A):** MgCl<sub>2</sub> is a covalent compound.

**Reason (R):** MgCl<sub>2</sub> is a good conductor of electricity in molten state.

**Q3. Assertion:** MgO exists in liquid state.

**Reason:** The electrostatic forces of attraction between Mg<sup>2+</sup> and O<sup>2-</sup> ions constitute ionic bond.

**Q4. Assertion:** Electrovalency of Na is +1.

**Reason:** The number of electrons which an atom either loses or gains in the formation of an ionic bond is known as its valency.

**Q5. Assertion:** Ionic compounds have high melting and boiling points.

**Reason:** A large amount of energy is required to break the strong inter-ionic attraction in ionic compounds.

**Q6. Assertion:** Metals in general have very high melting and boiling points.

**Reason:** Metals have the strongest chemical bonds which are metallic in nature.

7. Which statement about metallic bonds is true?

a. They form between metals and nonmetals.

b. They form between negative and positive ions.

c. They form a lattice-like structure.

d. two of the above

8. Which statement is true about all metals?

a. They have one valence electron.

b. They have freely moving electrons.

c. They have more electrons than protons.

d. They always gain electrons.

9. Because of metallic bonds, metals

a. are good conductors of electricity.

b. can change shape without breaking.

c. are ductile and malleable.

d. all of the above

10. Which of the following metals are obtained by electrolysis of their chlorides in molten state?

(i) Na

(ii) Ca

(iii) Fe

(iv) Cu

(a) (i) and (iv)

(b) (iii) and (iv)

(c) (i) and (iii)

(d) (i) and (ii)

11. Generally, non-metals are not conductors of electricity. Which of the following is a good conductor of electricity?

(a) Diamond

(b) Graphite

(c) Sulphur

(d) Fullerene

12. The atomic numbers of four elements A, B, C and D are 6, 8, 10 and 12 respectively. The two elements which can react to form ionic bonds (or ionic compound) are:

(a) A and D

(b) B and C

(c) A and C

(d) B and D.

13. Which of the following are not ionic compound?

(a). KCl, HCl

(b) HCl, CCl<sub>4</sub>.

(c)  $\text{CCl}_4$ ,  $\text{NaCl}$

(d)  $\text{KCl}$ ,  $\text{CCl}_4$

14. Which of the following property is not generally exhibited by Ionic compound?

(a). Solubility in water

(b). Electrical conductivity in solid state

(c). High melting and boiling points

(d). Electrical conductivity in molten state

15. From amongst the metals sodium, calcium, aluminium, copper and magnesium, name the metal

(i) metal reacts with water only on boiling and

(ii) another metal which does not react even with steam. (CBSE 2008)

The options are-

(a) Magnesium, sodium, aluminium

(b) copper, calcium, magnesium

(c) Magnesium and copper.

(d) none of the above.

16. Name any one metal which react neither with cold water nor with hot water, but react with heated steam to produce hydrogen gas.

(a) Iron

(b) Magnesium

(c) Sodium

(d) all of the above.

17. Name two metal which react with very dilute  $\text{HNO}_3$  to evolve hydrogen gas.

(a) Magnesium and manganese

(b) Copper and zinc

(c) Magnesium and copper.

(d) Manganese and barium

18. Choose the amphoteric oxides amongst the Following:  $\text{Na}_2\text{O}$ ,  $\text{ZnO}$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$

(a)  $\text{ZnO}$  and  $\text{Al}_2\text{O}_3$

(b)  $\text{CO}_2$ ,  $\text{H}_2\text{O}$

(c)  $\text{CO}_2$ ,  $\text{H}_2\text{O}$

(d) none of the above.

19. In the formation of sodium chloride, \_\_\_\_\_ loses the electron(s) to attain stable electronic configuration of \_\_\_\_\_.

(a) Sodium, Neon

(b) Chlorine, argon

(c) Sodium, argon

(d) none of the above.

20. Name the metal which has very low melting point and can melt with the heat of your palm.

(a) Calcium /Mercury

(b) Gallium/Caesium.

(c) Mercury/Bromine.

(d) none of the above.

21. Read the following and answer any four questions from 21(i) to 21(iv).

The arrangement of metals in a vertical column in the decreasing order of their reactivities is called the reactivity series or activity series of metals. The most reactive metal is at the top position of the reactivity series. The least reactive metal is at the bottom of the reactivity series.

Hydrogen, though a non-metal, has been included in the activity series of metals only for comparison. Apart from it, the hydrogen atom also has tendency to lose its valence electron and form cation which behaves like metal.

(i) Which metal can be displaced by copper from its salt solution?

(a) Zinc

(b) Silver

(c) Iron

(d) Lead

(ii) ) An element 'X' after reacting with acids liberates hydrogen gas and can displace lead and mercury from their salt solutions. The metal 'X' is

(a) copper

(b) gold

(c) calcium

(d) hydrogen.

(iii) The most reactive metal is

(a) potassium

(b) barium

(c) zinc

(d) calcium.

(iv) The metal which does not liberate hydrogen gas after reacting with acid is

(a) zinc

(b) lead

(c) iron

(d) gold

22. Read the following and answer any four questions from 22(i) to 22(v).

Metals as we know, are very useful in a field, industries in particular. Non-metals are no less in any way. Oxygen present in air is essential for breathing as well as for combustion. Non-metals form a large number of compounds which are extremely useful, *e.g.*, ammonia, nitric acid, sulphuric acid, etc.

Non-metals are found to exist in three states of matter. Only solid non-metals are expected to be hard however, they have low density and are brittle. They usually have low melting and boiling points and are poor conductors of electricity.

(i) \_\_\_ is a non-metal but is lustrous.

- (a) Phosphorus      (b) Sulphur      (c) Bromine      (d) Iodine

(ii) ) Which of the following is known as 'King of chemicals'?

- (a) Urea      (b) Ammonia  
(c) Sulphuric acid      (d) Nitric acid

(iii) Which of the following non-metals is a liquid?

- (a) Carbon      (b) Bromine      (c) Iodine      (d) Sulphur

(iv) Hydrogen is used

- (a) for the synthesis of ammonia  
(b) in welding torches  
(c) for the synthesis of methyl alcohol  
(d) all of these.

(v) Generally, non-metals are bad conductors of electricity but 'X' which is a form of carbon is a good conductor of electricity and is an exceptional non-metal 'X' is

- (a) diamond      (b) graphite      (c) coal      (d) coke