Metal Chemistry Questions with Solutions

Q1. What are group 1 and group 2 elements called? And why?

Answer: Group 1 elements are called alkali metals and Group 2 elements are called alkaline earth metals. The elements of group 1 react with water and form alkaline solutions, thus they are called alkali metals. The elements of group 2 are found in the earth's crust. The oxides and hydroxides of these metals form basic solutions when dissolved in water. Thus, they are called alkaline earth metals.

Q2. Explain the properties of metals.

Answer: The properties of metals are:
(a) Metals have lustre.
(b) Metals are good conductors of heat and electricity.
(c) Metals are malleable i.e they can be rolled into sheets.
(d) Metals are ductile, i.e. they can be drawn into wires.
(e) Under the bunsen flame, all alkali metals have a characteristic flame color.
(f) Metals have high melting and boiling points.
(g) Metals lose electrons easily.

Q3. Which is the densest and the heaviest metal on the periodic table?

Answer: Osmium is the most dense metal and Plutonium is the most heavy metal on the periodic table.

Q4. Arrange the following alkali metals Li, Na, K, Rb, Cs in decreasing order of their melting points.

Answer: The melting point of alkali metals decreases on going down the group. Thus, Li > Na > K > Rb > Cs is the decreasing order of their melting points.

Q5. Define Hess's law.

Answer: Hess's law states that the change in energy occurring during a reaction depends only on the energy of the reactants and the energy of the products. The change in energy is independent of the reaction mechanism.

Q6. What is the product formed when lithium oxide reacts with water?

Answer: Lithium hydroxide is formed when lithium oxide reacts with water. The chemical equation is:

$Li_2O + H_2O \rightarrow 2\ LiOH$.

Q7. Match the following items of column 1 with column 2 and choose the correct answer:

Column 1	Column 2
1) Magnesium	a) Transition metal
2) Francium	b) Inner Transition metal
3) Uranium	c) Alkali Metal
4) Lanthanum	d) Alkaline Earth Metal

Answer:

Column 1	Column 2
1) Magnesium	d) Alkaline Earth Metal
2) Francium	c) Alkali Metal
3) Copper	a) Transition metal
4) Lanthanum	b) Inner Transition metal

Q8. Which gas is released when metal hydride reacts with water?

Answer: Hydrogen gas is released when metal hydride reacts with water.a

Q9. What is the colour of lithium metal under bunsen flame?

Answer: The colour of the flame of lithium metal is red.

Q10. Which is the hardest metal in the alkali metal group?

(a) Na
(b) K
(c) Ca
(d) Li

Answer: (d)

Q11. Which elements from group 1 and group 2 share a diagonal relationship?

Answer: Lithium and Magnesium share a diagonal relationship. The properties of lithium are similar to magnesium.

Q12. How many valence electrons does alkaline earth metals have?

Answer: The alkaline earth metals have two valence electrons.

Q13. Arrange the following group 2 elements in decreasing order of their atomic size.

Answer: The atomic size increases on going down the group. Thus Ra > Ba > Sr > Ca > Mg > Be is the decreasing order of their atomic size.

Q14. Do metals react with acids?

Answer: Yes, metals react with acids and liberate hydrogen gas.

Q15. What is hard water?

Answer: The water which contains dissolved metal carbonates bicarbonates and sulfates is called hard water. Generally, salts of magnesium and calcium make the water hard.

Practice Questions on Metal

Q1. What is slaked lime?

Answer: Calcium hydroxide ($Ca(OH)_2$) is called slaked lime.

Q2. The oxide of which element is called quick lime?

Answer: Calcium oxide is called quick lime.

Q3. What is the product of decomposition of calcium carbonate in the presence of heat?

Answer: Calcium carbonate decomposes to calcium oxide and carbon dioxide in the presence of heat.

Q4. Explain the trend in basicity of group 2 elements.

Answer: The basicity of group 2 elements increases on going down the group.

Q5. Which alkaline earth metal ion is found in chlorophyll?

Answer: Mg^{2+} ions are an important component in chlorophyll.