

**Class: 11**  
**Subject: Chemistry**  
**Topic: The s-Block elements**  
**No. of Questions: 20**

Q1. What are s- block elements?

Sol. s-block elements are those in which the last electron enters the outermost s-orbital. As the s-orbital can accommodate only two electrons, two groups (1 & 2) belong to the s-block of the Periodic Table.

Q2. Name the elements present in the 1st Group of the Periodic Table.

Sol. Lithium, sodium, potassium, rubidium, caesium and francium. They are collectively known as the alkali metals.

Q3. Why I group elements are called alkali metals?

Sol. These are called so because they form hydroxides on reaction with water which are strongly alkaline in nature.

Q4. Name the elements present in the 2nd Group of the Periodic Table.

Sol. Beryllium, magnesium, calcium, strontium, barium and radium. These elements with the exceptions of beryllium are commonly known as the alkaline earth metals.

Q5. Why II group elements are called alkaline earth metals?

Sol. These are called so because their oxides and hydroxides are alkaline in nature and these metal oxides are found in the earth's crust.

Q6. What is the reason for the diagonal relationship?

Sol. Diagonal relationship is due to the similarity in ionic sizes and /or charge/radius ratio of the elements.

Q7. Which is smaller in size between a metal ion and its parent atom?

Sol. The monovalent ions ( $M^+$ ) are smaller than the parent atom.

Q8. Which group elements show very low ionization enthalpy in the periodic table?

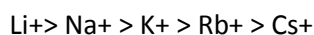
Sol. First group elements (alkali metals)

Q9. How the ionization enthalpy varies in alkali metals

Sol. Ionization enthalpy decrease down the group from Li to Cs.

Q10. Arrange the first group elements in the decreasing order of Hydration Enthalpy

Sol. The hydration enthalpies of alkali metal ions decrease with increase in ionic sizes.



Q11. Why Li salts are hydrated?

Sol.  $\text{Li}^+$  has maximum degree of hydration and for this reason lithium salts are mostly hydrated, e.g.,  $\text{LiCl} \cdot 2\text{H}_2\text{O}$

Q12. Write the chemical composition of washing soda.

Sol.  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

Q13. Give reason for the higher melting point and boiling point of alkali earth metals than alkali metals.

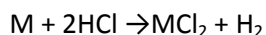
Sol. The melting and boiling points of these metals are higher than the corresponding alkali metals due to smaller sizes.

Q14. Why Be and Mg do not impart colour to the flame?

Sol. The electrons in beryllium and magnesium are too strongly bound to get excited by flame. Hence, these elements do not impart any colour to the flame.

Q15. Name the gas liberated when alkali metals react with dilute acid?

Sol. The alkaline earth metals readily react with acids liberating dihydrogen gas.



Q16. Name the alkaline earth metal used in radio therapy.

Sol. Radium salts are used in radiotherapy, for example, in the treatment of cancer

Q17. Give reason why the compounds of alkaline earth metals are less ionic than alkali metals

Sol. This is due to increased nuclear charge and smaller size.

Q18. How is Calcium Hydroxide (Slaked lime),  $\text{Ca(OH)}_2$  Prepared?

Sol. Calcium hydroxide is prepared by adding water to quick lime,  $\text{CaO}$ .

Q19. Write the general electronic configuration of s-block elements.

Sol.  $[\text{noble gas}]ns^1$  for alkali metals and  
 $[\text{noble gas}] ns^2$  for alkaline earth metals

Q20. With which elements Lithium and beryllium shows the similarity

Sol. Lithium shows similarities to magnesium and beryllium to aluminium in many of their properties. This type of diagonal similarity is commonly referred to as diagonal relationship in the periodic table.