



# CHEMISTRY

## BOOKS - A N EXCEL PUBLICATION

### THE S-BLOCK ELEMENTS

#### Question Bank

1. The group 1 metals of the periodic table of elements are collectively called alkali metals.

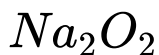
Alkali metals are never found free in nature.

Give reason.



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2. Find the oxidation state of sodium in



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3. Explain why Na is less reactive than K?



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4. Compare alkali metals and alkaline earth metals with respect to ionisation enthalpy, basicity of oxides and solubility of hydroxides.



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5. Explain why alkali and alkaline earth metals cannot be obtained by chemical reduction methods?



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6. Why are potassium and caesium, rather than lithium used in photoelectric cells?



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7. When an alkali metal dissolves in liquid ammonia the solution can acquire different colours. Explain the reasons for this type of colour change



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**8.** Beryllium and magnesium do not give colour to flame whereas other alkaline earth metals do so, why?



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**9.** Potassium carbonate cannot be prepared by Solvay process. Why?



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10.  $Li_2CO_3$  decomposes at a lower temperature whereas  $Na_2CO_3$  at higher temperature.why?



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11. Starting with NaCl how would you proceed to prepare Na metal



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12. Starting with NaCl how would you proceed to prepare Na metal



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13. Starting with NaCl how would you proceed to prepare  $Na_2O_2$



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14. Starting with NaCl how would you proceed to prepare



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15. A piece of magnesium is burned in air. What do you observe ?



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**16.** What happens when quick lime is heated with silica



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**17.** What happens when slaked lime is treated with dry chlorine?



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**18.** What happens when calcium nitrate is heated?



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**19.** Draw the structure of

*BeCl<sub>2</sub>*(vapour)



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20. Alkali metals and alkaline earth metals belong to the s-block of the periodic table. Draw the chain structure of beryllium chloride in solid state.



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21. The hydroxides and carbonates of Na and K are soluble in the water while those of Mg and Ca are sparingly soluble. Explain.



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**22.** Why are lithium salts commonly hydrated and those of other alkali metal ions usually anhydrous?



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**23.** Why is LiF almost insoluble in the water while LiCl is soluble not only in water but also in acetone?



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**24.** What happens when

Na is dropped in water



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**25.** What happens when

Na is heated in free supply of air



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26. What happens when

sodium peroxide dissolves in water?



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27. Comment on the following observation

The mobility of alkali metal ions in aqueous

solution is  $Li^+ < Na^+ < K^+ < Rb^+$



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**28.** Comment on the following observations

Lithium is the only alkali metal which forms nitride directly.



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**29.** State as to why

a solution of  $Na_2CO_3$  is alkaline



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**30.** why alkali metals are prepared by electrolysis of their fused halides



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**31.** Which of the alkali metals is having least melting point?



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32. Which of the following gives hydrated salts. Li, Na, K, or Cs?



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33. which of the most thermally stable carbonate among  $MgCO_3$ ,  $CaCO_3$ ,  $SrCO_3$  and  $BaCO_3$ ?



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**34.** The group 1 metals of the periodic table of elements are collectively called alkali metals. Write the general electronic configuration of alkali metals



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**35.** The group 1 metals of the periodic table of elements are collectively called alkali metals. Identify the alkali metal exhibiting anomalous properties. Explain.





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**36.** The group 1 metals of the periodic table of elements are collectively called alkali metals.

Alkali metals are normally kept in kerosene.

Why?



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**37.** The group 1 metals of the periodic table of elements are collectively called alkali metals.

Alkali metals are never found free in nature.

Give reason.



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**38.** Say whether the following are true or false:

a) On moving across a period ionization enthalpy decreases.

b) Mg is bigger than Cl.

c) Ionization enthalpy of Li is less than that of K.



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**39.** The group 1 metals of the periodic table of elements are collectively called alkali metals.

Alkali metals are never found free in nature.

Give reason.



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**40.** State whether the following sentences are true or false:

Baking soda is chemically sodium hydrogen carbonate



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**41.** State whether the following sentences are true or false:

Portland cement is basically silicates and aluminates of calcium



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**42.** The chemical formula of Plaster of Paris is



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**43.** Beryllium shows a diagonal relationship with aluminium. Mention any two similarities between beryllium and aluminium



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**44.** The metal present in the chlorophyll of plants is \_\_\_\_\_.



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**45.** Fill in the blanks: (a) Molecular formula of Plaster of Paris \_\_\_\_\_. (b) Beryllium shows diagonal relationship with \_\_\_\_\_. (c) The metal present in chlorophyll is \_\_\_\_\_. (d) Solvay process is associated with the preparation of \_\_\_\_\_.



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**46.** Monovalent  $Na^+$ ,  $K^+$  ions and divalent  $Ca^{2+}$ ,  $Mg^{2+}$  ions are found in large proportions in biological fluids. In which part



of our body are sodium and potassium ions prominently located?



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**47.** Monovalent  $Na^+$ ,  $K^+$  ions and divalent  $Ca^{2+}$ ,  $Mg^{2+}$  ions are found in large proportions in biological fluids. What are the major roles of these Na and K ions in our body ?

A.

B.

C.

D.

**Answer:**



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**48.** Monovalent  $Na^+$ ,  $K^+$  ions and divalent  $Ca^{2+}$ ,  $Mg^{2+}$  ions are found in large proportions in biological fluids. For making

which parts of our body, calcium is mainly used?

A.

B.

C.

D.

**Answer:**



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49. Monovalent  $Na^+$ ,  $K^+$  ions and divalent  $Ca^{2+}$ ,  $Mg^{2+}$  ions are found in large proportions in biological fluids. Give the name of the metal present in Chloro phyll.

A.

B.

C.

D.

**Answer:**



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50. Beryllium shows a diagonal relationship with aluminium. Mention any two similarities between beryllium and aluminium



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51. Match the following:

A	B
Sodium carbonate	Chain structure in the solid state
Beryllium chloride	Mild antiseptic
Sodium hydroxide	Solvay process
Sodium hydrogen carbonate	Castner-Kellner cell



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**52.** Lithium and Magnesium belong to 1st and 2nd groups in the periodic table. They resemble each other in many respects.(i) Name such relationship.(ii) Give any one similarity between Li and Mg.



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**53.** Lithium and Magnesium belong to 1st and 2nd groups in the periodic table. They resemble each other in many respects.(i) Name such relationship.(ii) Give any one similarity between Li and Mg.



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**54.** A compound of calcium is used for immobilising the fractured bones of body.

Write down the common name and molecular formula of the compound.



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**55.** compound of calcium is used in hospitals for setting fracture of bones.(i) Write the name and formula of the above compound. (ii) What is dead burnt plaster?



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**56.** Alkali metals and alkaline earth metals belong to the s-block of the periodic table.

Name the process used for the industrial preparation of sodium carbonate.



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**57.** Alkali metals and alkaline earth metals belong to the s-block of the periodic table.

Name the process used for the industrial preparation of sodium carbonate.





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**58.** Alkali metals and alkaline earth metals belong to the s-block of the periodic table. Draw the chain structure of beryllium chloride in solid state.



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**59.** Alkali metals and alkaline earth metals belong to the s-block of the periodic table.

Write the chemical equation showing the preparation of Plaster of Paris from gypsum.



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**60.** Fill in the blanks

The suspension of a magnesium compound in water is used as an antacid. The compound is

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**61.** Fill in the blanks : (i) The suspension of a magnesium compound in water is used as an antacid. The compound is \_\_\_\_\_. (ii) A mixture of calcium oxide (Quick lime) and Soda (NaOH) is called \_\_\_\_\_.



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**62.** On passing  $CO_2$  through lime water, milkiness appears. On further passing  $CO_2$ ,

milky appearance disappears. What is the Chemistry behind it?



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**63.** Give reasons

$KO_2$  is paramagnetic



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**64.** Alkali metals dissolve in liquid ammonia to give blue coloured solutions. Why?



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65. Match the following:

A	B
Quick lime	$\text{Ca}(\text{OCl})_2$
Plaster of Paris	$\text{CaO}$
Bleaching powder	$\text{Ca}(\text{OH})_2$
Slaked lime	$\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$
	$\text{CaCl}_2$
	$\text{CaCO}_3$



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**66.** The metal present in the chlorophyll of plants is \_\_\_\_\_.



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**67.** Give any two uses of caustic soda



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**68.** When sodium metal dissolves in liquid ammonia, it gives a deep blue coloured

solution. Explain the reason.



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**69.** Alkali metals dissolve in liquid ammonia to give blue coloured solutions. Why?



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**70.** Plaster of Paris is an important compound of Calcium. (i) Give the chemical formula of plaster of Paris.





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**71.** Plaster of Paris is an important compound of Calcium

Identify the property of plaster of Paris which helps in plastering of broken bones.



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