



# CHEMISTRY

## BOOKS - R SHARMA CHEMISTRY (HINGLISH)

### THE S BLOCK ELEMENTS

#### Follow Up Test 1

1. The s- block elements of the periodic table are those in which the last electron enters the

s-subshell of the \_\_\_ shell.

- A. penultimate
- B. antepenultimate
- C. outermost
- D. foremost

**Answer: C**



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2. How many groups belong to the s-block of the periodic table ?

A. Twelve

B. Two

C. Six

D. Ten

**Answer: B**



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3. How many *s*-block elements are known ?

A. 14

B. 13

C. 12

D. 11

**Answer: C**



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4. Which of the following is incorrect regarding s-block elements ?

A. They do not occur in the free state.

B. They are scarcely distributed in nature in the combined state.

C. Alkali metals mostly occur as halides, oxides, silicates, borates, and nitrates.

D. Alkaline earth metals mainly occur as silicates, carbonates, sulphates, and

phosphates.

**Answer: B**



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5. Which of the following minerals contains both alkali and alkaline earth metals ?

A. Dolomite

B. Carnallite

C. Both (1) and (2)

D. None of these

**Answer: B**



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**6.** The most abundant alkali metal (in earth's crust) is

A. Rb

B. K

C. Na

D. Li

**Answer: C**



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7. The most abundant alkaline earth metal (in earth's crust) is

A. Ba

B. Sr

C. Mg



D. Ca

**Answer: D**



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**8. The radioactive s-block elements are**

A. Ra and Ba

B. Ra and Fr

C. Fr and Cs

D. Rb and Sr

**Answer: B**



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**9. Which of the following compounds contains both magnesium and silicon as constituents ?**

A. Micas

B. Talc

C. Olivine

D. All of these

**Answer: D**



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**10. Kieserite is an ore of**

A. K

B. Ca

C. Mg

D. Na

**Answer: C**



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## Follow Up Test 2

1. If the atomic number of lithium is 3, then the atomic number of francium will be

A. 87

B. 86

C. 85

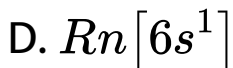
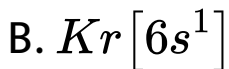
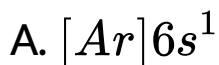
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**Answer: A**



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2. The electronic configuration of caesium (Cs) can be represented as



**Answer: C**



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3. Above  $380^{\circ}C$ , lithium is miscible with molten

A. Na

B. K

C. Rb

D. all of these

**Answer: A**



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4. The second ionization enthalpies ( $\Delta_i H_2$ ) of alkali metals are

A. very low

B. low

C. high

D. very high

**Answer: D**



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5. The \_\_\_ salts are mostly hydrated.

A. Cs

B. Li

C. K

D. Na

**Answer: B**





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6. Which of the following oxidation numbers (Ons) are exhibited by the alkali metals ?

A. 0 and + 1

B. + 1 and + 2

C. *only* + 1

D. 0, + 1, and + 2

**Answer: A**



7. Which of the following statements is incorrect for the alkali metals ?

A. The metallic (or electropositive)

character increases down the group.

B. When freshly out, they are silvery white

and on exposure to air, they are

tarnished (i.e., become dull).

C. They assume a face-centered cubic lattice structure.

D. They are soft and can be cut with a knife.

**Answer: C**



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**8.** which of the following has the lowest melting point ?

A. Na

B. Li

C. K

D. Cs

**Answer: D**



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**9. Which of the alkali metals has the lowest density ?**

A. Na

B. K

C. Rb

D. Cs

**Answer: B**



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**10.** All the alkali metals and their salts (particularly chlorides due to their more volatile nature ) impart a characteristic color to the oxidizing flame of Bunsen burner. Which

of the following imparts yellow color in a flame test?

A. Li

B. K

C. Na

D. Cs

**Answer: C**



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11. Which of the following alkali metals is frequently used as a cathode in the photoelectric cells ?

A. Cs

B. K

C. Na

D. Li

**Answer: A**



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## Follow Up Test 3

1. Alkali metals are

A. strong reducing agents

B. strong oxidizing agents

C. both strong reducing and oxidizing agents

D. neither strong reducing nor strong oxidizing agents

**Answer: A**





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2. Which of the following is the most powerful reducing agent in the gas phase ?

A. Cs

B. Li

C. K

D. Na

**Answer: A**



3. Which of the following is the least powerful reducing agent in aqueous solution ?

A. Cs

B. Rb

C. Na

D. K

**Answer: C**



4. Which of the following is incorrect regarding the reactivity of alkali metals with water ?

A. All alkali metals react with water, liberating  $H_2$  forming alkaline aqueous solution.

B. The reactivity decreases on moving down the group

C. Li liberates more energy than the other metals when it reacts with water.

D. Li metal does not catch fire during its reaction with water.

**Answer: B**



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5. Chemically, group I elements are very reactive and tarnish rapidly in air due to the formation of

A. oxides

B. hydroxides

C. carbonates

D. all of these

**Answer: D**



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**6.** Alkali metals such as sodium are stored under

A. kerosene oil

B. acetone

C. chloroform

D. alcohol

**Answer: A**



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**7. Which of the following is incorrect ?**

- A. Li is the only alkali metal that reacts with  $N_2$  to form a nitride.
- B. Li nitride is a colorless covalent solid.
- C. Li nitride decomposes to the elements on heating to a high temperature.
- D. Li nitride gives ammonia on reaction with water.

**Answer: B**



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8. When heated in excess of air, alkali metals form different types of oxides depending upon the nature of the metal. Which of the following alkali metals form superoxides ?

- A. All alkali metals except Li
- B. All alkali metals except Li and Na
- C. All alkali metals except Li, Na and K
- D. All alkali metals except Fr

**Answer: B**



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9. Which of the following is incorrect regarding the reaction of alkali metals with hydrogen ?

A. All the alkali metals react with dihydrogen on heating to form colorless crystalline ionic hydrides  $M^+ H^-$ .

B. The order of reactivity of the alkali metals towards dihydrogen increases as we go down the group.

C. The ionic character of the hydrides decreases from Li to Cs.

D. The stability of these hydrides decreases from LiH to CsH.

**Answer: B**



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**10. Which of the following is not correct about the hydrides of alkali metals ?**

A. They are ionic solids with high melting points.

B. They behave as strong reducing agents and their reducing power increases down the group.

C. These hydrides contain the hydride ion and liberate dihydrogen at the cathode during electrolysis.

D. They react with water and other compounds containing active H atom to

liberate dihydrogen.

**Answer: C**



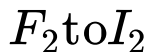
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**11.** Which of the following is correct regarding the reaction of alkali metals with halogens ?

A. Alkali metals react vigorously with halogens to form ionic halides  $M^+ X^-$ ,

B. The reactivity of alkali metals towards a particular halogen increases as we move down the group from Li to Cs.

C. The reactivity of halogens towards a particular alkali metal decreases from



D. All of these.

**Answer: D**



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12. Which of the following is the most covalent in nature ?

A. LiF

B. LiCl

C. LiBr

D. LiI

**Answer: D**



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13. Which of the following is known as sylvite ?

A. KCl

B. KF

C. KBr

D. KI

**Answer: A**



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14. All alkali metals dissolve in liquid ammonia giving highly conducting \_\_\_\_ solutions.

A. colorless

B. deep blue

C. yellow

D. black

**Answer: B**



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15. Which of the following is incorrect regarding the solutions of alkali in liquid  $NH_3$  ?

A. As the concentration increases above 3 M, the color of solution changes from dark blue to copper-bronze.

B. Blue colored solutions as well as bronze-colored solutions are paramagnetic.

C. These solutions conduct electricity better than any salt in any liquid and the

conductivity is similar to that of pure metals.

D. These solutions act as powerful reducing agents for the elements of groups 14, 15, and 16 for many compounds and coordination complexes. They even reduce an aromatic ring.

**Answer: B**



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## Follow Up Test 4

1. Which of the following is correct for monoxides (normal oxides) of alkali metals ?

A. They are ionic and strongly basic oxides.

B. They are pure white solids.

C. They have anti-fluorite structures.

D. All of these.

**Answer: A**



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2. On combustion in excess of air, lithium forms

A. normal oxides

B. peroxides

C. superoxides

D. both (1) and (2)

**Answer: A**



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3. Which of the following is incorrect for the hydroxides of alkali metals ?

A. They are white crystalline solids.

B. These caustic alkalies are the strongest bases known in aqueous solution.

C. They readily dissolve in water with the evolution much heat. The solubility in water decreases as move down the group.

D. The basic strength of hydroxides increases on moving down the group.

**Answer: C**



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4. All alkali metal peroxides contain the  $[-O-O]^{2-}$  ion. They are

A. diamagnetic and are colored compounds

B. paramagnetic and are colored compounds

C. paramagnetic and are oxidizing agents

D. diamagnetic and are oxidizing agents

**Answer: D**



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5. All alkali metal superoxides contain the ion  $[O_2]$ . They are

- A. paramagnetic
- B. colored compounds
- C. oxidizing agents
- D. all of these

**Answer: D**



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6. The alkali metal halides (MX) are all high melting, colorless crystalline solids which can be conveniently prepared by the reaction of



the appropriate \_\_\_ with aqueous hydrohalic acids (HX).

A. oxide

B. hydroxide

C. carbonate

D. all of these

**Answer: D**



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7. Alkali metal halides have high negative enthalpies of formation. The  $\Delta_f H^\circ$  values for \_\_\_\_\_ become less negative as we go down the group.

A. iodides

B. bromides

C. chlorides

D. fluorides

**Answer: D**



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8. The magnitude of enthalpy of formation of alkali metal halides decreases in the order

A. iodide > bromide > chloride >

fluoride

B. bromide gt iodide gt fluoride gt chloride

C. fluoride gt chloride gt iodide gt bromide

D. fluoride gt chloride gt bromide gt iodide

**Answer: D**



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9. Which of the following is soluble in organic solvents like ethanol ?

A. LiCl

B. NaCl

C. KCl

D. RbCl

**Answer: A**



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10. Which of the following has the maximum melting point but minimum solubility in water ?

A. KCl

B. NaCl

C. CsCl

D. RbCl

**Answer: B**



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11. Which of the following is the correct order of hydrated ionic radii ?



**Answer: C**



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12. Which of the following compounds is almost insoluble in water ?

A. LiF

B. LiCl

C. LiBr

D. LiI

**Answer: A**



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13. The melting and boiling points of alkali metal halides always follow the trend ,

A. Iodide > bromide > chloride > fluoride

B. Bromide > chloride > iodide > fluoride

C. Fluoride > chloride > bromide > iodide

D. Chloride > fluoride > bromide > iodide

**Answer: C**



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**14.** Which of the following are oxosalts ?

(i) Carbonates , (ii) Nitrates

(iii) Bicarbonates , (iv) Nitrites

A. (i), (ii), (iii), (iv)

B. (i), (ii), (iii)

C. (i), (iii)

D. (ii),(iv)

**Answer: A**



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15. Which of the following is not true?

- A. All alkali metal carbonates are remarkably stable up to  $1000^{\circ}\text{C}$  above which they first melt and then eventually decompose into oxides.
- B. The thermal stability of alkali metal carbonates increases as we move down the group.

C. The aqueous solution of alkali metals carbonates are mild alkalies.

D. None of these.

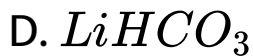
**Answer: A**



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**16.** Which of the following alkali metal carbonates doesnot existin the solid state?

A.  $RbHCO_3$

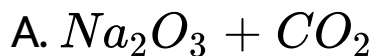


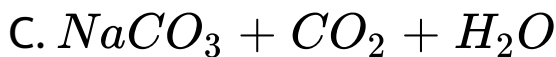
**Answer: D**



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**17. Sodium bicarbonate ( $NaHCO_3$ ) on gentle heating produces**





**Answer: C**



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**18.** Which of the following has the maximum solubility in water?



B.  $NaHCO_3$

C.  $KHCO_3$

D.  $RbHCO_3$

**Answer: D**



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**Follow Up Test 5**

1. Lithium the first element of group 1 differs from the rest of the elements of the group in

many respects. This anomalous behaviour of Li is due to

(i). Very small size of its atom and ions

(ii). High polarizing power (i.e., charge/radius ratio) of  $Li^{\oplus}$  ion

(iii). Relatively high electronegativity and high ionization enthalpy

(iv). Absence of vacant d-subshell in its outmost shell

A. (i),(ii)

B. (iii),(iv)

C. (i),(ii),(iii),(iv)

D. (i),(ii),(iii)

**Answer: C**



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2. Lithium is the \_\_\_\_\_ among all alkali metals.

A. most reactive and the strongest agent

B. least reactive but the weakest reducing agent



C. most reactive but the weakest reducing agent

D. least reactive and the weakest reducing agent

**Answer: B**



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**3. On combustion in air Li forms**

A.  $Li_2O$

B.  $Li_3N$

C.  $Li_2O_2$

D. both (1) and (2)

**Answer: D**



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4. Which of the following decomposes to form lithium oxide,  $Li_2O$ ?

A.  $LiOH$

B.  $Li_2CO_3$

C.  $LiNO_3$

D. all of these

**Answer: D**



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5. Which of the following is incorrect about lithium ??

A. LiOH is a strong base

B. Unlike other alkali metals, Li does not react with ethyne to form lithium ethynide.

C. Unlike other alkali metals, Li forms dilithium acetylide on heating with C.

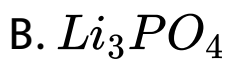
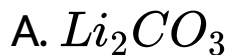
D. Lithium has a greater tendency to form complexes than other alkali metals.

**Answer: A**



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6. Which of the following is only sparingly soluble in water?



**Answer: D**



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7. The similarity between Li to group 1 and Mg of group 2 is called a diagonal relation. It arises because

A. Li and Mg atoms have similar sizes

B. Li and Mg ions have similar sizes

C. Li and Mg have similar sizes

D. all of these

**Answer: D**



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8. Which of the following is not correct regarding Li and Mg?

A. Both  $\text{LiOH}$  and  $\text{Mg}(\text{OH})_2$  are weak bases.

B. Both form ionic nitrides when heated in an atmosphere of  $\text{N}_2(\text{g})$ .

C. Carbonates of both metals decompose on heating to form the corresponding oxides.

D. Both Li and Mg form solid bicarbonates.

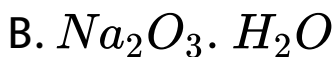
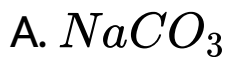
**Answer: D**



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## Follow Up Test 6

1. Which of the following is known as soda ash?







**Answer: A**



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2. sodium carbonate commonly known as washing soda is manufactured by

- A. ammonia-soda process
- B. Solvay-ammonia process
- C. Solvay process

D. all of these

**Answer: D**



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**3.** In the solvay process.

A. Brine solution is carbonated with  $CO_2$

to form  $NaHCO_3$  which on

decomposition at  $150^\circ C$  produces

$Na_2CO_3$

B. Sodium amalgam reacts with water to produce NaOH, which on treatment with  $CO_2$  gives  $Na_2CO_3$

C. Carbon dioxide is passed through ammoniacal brine to form  $NaHCO_3$  which on decomposition at  $150^\circ C$  produces  $Na_2CO_3$

D. brine solution is made to react with  $BaCO_3$  to produce  $Na_2CO_3$

**Answer: C**



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4. The function of ammonia in the Solvay process is to

A. make  $(NH_4)_2CO_3$

B. solution alkaline

C. produce a sufficient amount of  $HCO_3^-$

ion

D. none of these

**Answer: C**



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5. The raw materials of the Solvay process are

A.  $NaCl$ ,  $NH_3$ , and  $CaCO_3$

B.  $NaCl$ ,  $NH_3$ , and  $CaO$

C.  $NaCl$ ,  $NH_3$ , and  $CaCl_2$

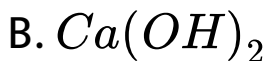
D.  $NaCl$ ,  $NH_3$ , and  $CO_2$

**Answer: A**



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6. Which of the following is the byproduct of the Solvay process ?



**Answer: C**



7. Potassium carbonate cannot be made by the Solvay process because

A. potassium hydrogen carbonate is unstable

B. potassium hydrogen carbonate is rather too soluble in water to be precipitated

C. potassium carbonate is insoluble in water

D. potassium carbonate is soluble in water

**Answer: B**

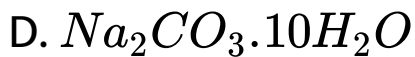


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**8.** Sodium carbonate is a white crystalline solid which crystallizes as







**Answer: D**



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9. On heating below 373 K, washing soda loses \_\_\_ molecules of water of crystallization.

A. nine

B. eight

C. ten

D. seven

**Answer: A**



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**10.** Which of the following is incorrect about sodium carbonate ?

A. With hot milk of lime, it reacts to form sodium hydroxide

B. It reacts with dilute mineral acids  
evolving  $CO_2(g)$

C. It undergoes hydrolysis to form an acidic  
solution

D. None of these

**Answer: C**



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**11. The fusion mixture is a mixture of**

A.  $NaHCO_3$  and  $KHCO_3$

B.  $Na_2CO_3$  and  $K_2CO_3$

C.  $NaHCO_3$  and  $K_2CO_3$

D.  $Na_2CO_3$  and  $KHCO_3$

**Answer: B**



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**12.** Sodium carbonate is used in \_\_\_ industries.

A. paper

B. paint

C. textile

D. all of these

**Answer: A**



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**Follow Up Test 7**

**1. Sodium hydroxide is manufactured by the**

A. Solvay process

B. Castner-Kellner process

C. Leblanc process

D. Downs process

**Answer: B**



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2. Which of the following serves as an intermediate electrode in Castner-Kellner's process ?

A. Mercury

B. Iron

C. Graphite

D. Platinum

**Answer: A**



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**3.** In Castner-Kellner's process, a brine solution is electrolyzed. Which of the following is obtained at the cathode ?

A. Na(Hg)

B. NaOH

C.  $H_2(g)$

D. All of these

**Answer: D**



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**4. Which of the following is incorrect about sodium hydroxide ?**

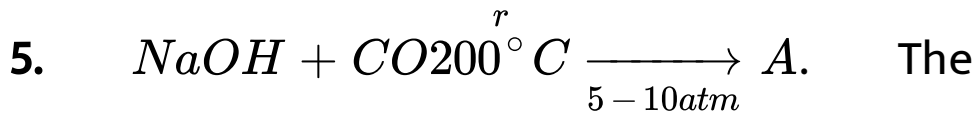


- A. It is a white, translucent crystalline solid.
- B. It is highly soluble in water to give a strong alkaline solution which is bitter in taste, corrosive, and soapy to touch.
- C. Crystals of NaOH are hygroscopic.
- D. It reacts with the  $CO_2$  in the atmosphere to form  $Na_2CO_3$ .

**Answer: C**



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product A is:

A.  $HCOONa$

B.  $Na_2CO_3$

C.  $NaHCO_3$

D.  $CO_2$

**Answer: A**



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6. Which of the following impurities present in sodium chloride are deliquescent ?

(i)  $Na_2SO_4$ , (ii)  $MgCl_2$

(iii)  $CaSO_4$ , (iv)  $CaCl_2$

A. (i),(iv)

B. (ii),(iv)

C. (i),(ii)

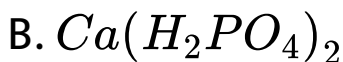
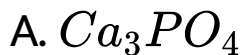
D. (iii),(iv)

**Answer: B**



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7. Which of the following is added to the table salt to prevent it from absorbing moisture and to make it flow freely in the rainy season ?



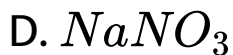
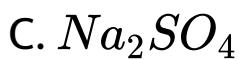
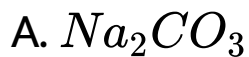
D. None of these

**Answer: C**



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8. Baking soda is



**Answer: B**



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9. Baking powder is a mixture of

(i)  $NaHCO_3$  , (ii) starch

(iii)  $Ca(H_2PO_4)_2$ , (iv)  $NaAl(SO_4)_2$

A. (i),(ii)

B. (i),(iii)

C. (i),(ii),(iii)

D. (i),(ii),(iii),(iv)

**Answer: D**



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10. Which of the following is the most abundant metal in the human body ?

A. Fe

B. Cu

C. K

D. Na

**Answer: C**



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**11.** Sodium and potassium, although so similar chemically, differ qualitatively in their

- A. ability to penetrate cell membranes
- B. transport mechanisms
- C. efficiency to activate enzymes
- D. all of these

**Answer: D**



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12.  $Na^+$  ions are found primarily on the outside of cells, being located in blood plasma and in the interstitial fluid which surrounds the cells, whilst  $K^+$  ions are present inside the cell.

These ions participate in

A. the transmission of nerve signals

B. regulating the flow of water across cell membranes

C. the transport of sugars and amino acids into cells

D. all of these

**Answer: D**



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## Follow Up Test 8

1. Group 2 of the periodic table consists of six elements. Except\_\_\_\_, they are commonly known as alkaline earth metals or simply, alkaline earths.

A. Be

B. Mg

C. Ca

D. Sr

**Answer: A**



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**2. beryllium is not very familiar because**

(i). It is not very abundant

(ii). It is inert

(iii). It is radioactive

(iv). It is difficult to extract

(v). It is difficult to extract

A. (i), (ii)

B. (i), (iii)

C. (i),(iv)

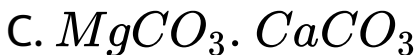
D. (ii),(iii)

**Answer: C**



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3. Mg is the sixth most abundant element (by weight) in the earth's crust. It is found as carbonate, sulphate, and silicate. Which of the following is known as magnesite?



**Answer: B**



**Watch Video Solution**

4. Calcium is the fifth most abundant element (by weight) in the earth's crust. Which of the following is called anhydrite?



**Answer: A**



**Watch Video Solution**

5. Celestite is an ore of

A. Ba

B. Mg

C. Sr

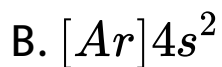
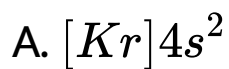
D. Ca

**Answer: C**



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6. The electronic configuration of Ca is



**Answer: B**



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7. Which of the following is a correct statement?

A. The first and second ionization enthalpies of group 2 elements are greater than those of group 1 elements

B. the first and second ionization enthalpies of group 2 elements are smaller than those of group 1 elements

C. the first ionization enthalpy of group 2 element greater but the second ionization enthalpy is small than those of group 1 elements.

D. The first ionization enthalpy of group 2 elements smaller but the second ionization enthalpy is greater than those of group 1 elements.

**Answer: C**



**Watch Video Solution**

8. Which of the following has the lowest first ionization energy?

A. Ca

B. Sr

C. Ba

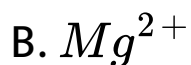
D. Ra

**Answer: C**



**Watch Video Solution**

9. Which of the following ions has the maximum hydration enthalpy?



**Answer: A**



**Watch Video Solution**

10. Which of the following alkaline earth metals are somewhat greyish?

A. Mg and Ca

B. Be and Mg

C. Ca and Sr

D. Sr and Ba

**Answer: B**



**Watch Video Solution**

11. Which of the following has the lowest melting point?

A. Be

B. Mg

C. Ca

D. Sr

**Answer: B**



**Watch Video Solution**

12. Which of the following has the highest boiling point?

A. Be

B. Mg

C. Ca

D. Sr

**Answer: A**



**Watch Video Solution**

13. Which of the following has the lowest density?

A. Be

B. Mg

C. Ca

D. Sr

**Answer: C**



**Watch Video Solution**



14. Which of the following alkaline earth metals imparts green color to the flame?

A. Ra

B. Ba

C. Sr

D. Ca

**Answer: B**



**Watch Video Solution**

15. Which of the following is incorrect ?

A. Alkaline earth metals like alkali metals have high electrical and thermal conductivities.

B. Alkaline earth metals are more electropositive (or metallic) than alkali metals.

C. The electropositive (or metallic) character of alkaline earth metals

increases down the group.

D. None of these

**Answer: B**



**Watch Video Solution**

**16.** Which of the following group 2 elements form covalent compounds in anhydrous state ?

A. Mg

B. Ca

C. Sr

D. Be

**Answer: D**



**Watch Video Solution**

**17.** Which of the following oxidation numbers are exhibited by group 2 elements ?

A. 0, + 1

B. 0, + 1, + 2

C. 0, + 2

D. + 1, + 2

**Answer: C**



**Watch Video Solution**

## Follow Up Test 9

1. Which of the following does not react with steam even at red heat ?

A. Be

B. Mg

C. Ca

D. Sr

**Answer: A**



**Watch Video Solution**

2. Which of the following does not react readily with water in spite of its favorable reduction potential ?

A. Ba

B. Sr

C. Ca

D. Mg

**Answer: D**



**Watch Video Solution**

**3. Which of the following reacts with cold water quite readily ?**

A. Ca

B. Sr

C. Be

D. All of these

**Answer: D**



**Watch Video Solution**

**4. Which of the following group 2 elements are stored in paraffin ?**



A. All group 2 elements

B. All group 2 elements except Be

C. All group 2 elements except Be and Mg

D. All group 2 elements except Be, Mg, and

Ca

**Answer: C**



**Watch Video Solution**

5. The reaction of which of the following groups 2 elements with oxygen is used to start a thermite reaction with  $Al$ ?

A. Be

B. Mg

C. Ca

D. Sr

**Answer: B**



**Watch Video Solution**

6. Which of the following group 2 elements does not form a nitride ?

A. Be

B. Mg

C. Ca

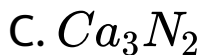
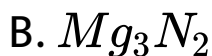
D. All group 2 elements form nitrides

**Answer: D**



**Watch Video Solution**

7. Which of the following reacts with water liberating  $NH_3$  ?



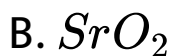
D. All of these

**Answer: D**



**Watch Video Solution**

8. Which of the following peroxides is not known ?



**Answer: D**



**Watch Video Solution**

9. Group 2 halides,  $MX_2$ , can be made by

A. heating the metals with the halogen

B. the action of halogen acid on the metal

C. the action of halogen acid on the metal

carbonate, metal hydroxide, and metal

oxide

D. all of these

**Answer: D**



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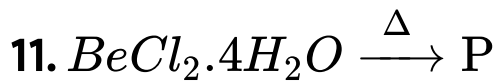
10. Which of the following is not true for the beryllium halides ?

- A. They are covalent.
- B. They are hygroscopic and fume in air.
- C. They sublime.
- D. They conduct electricity.

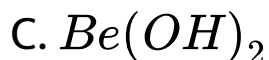
**Answer: D**



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The product P is



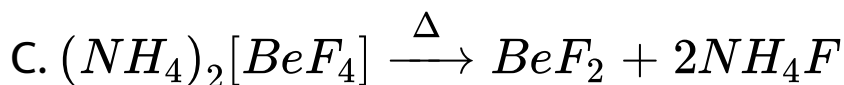
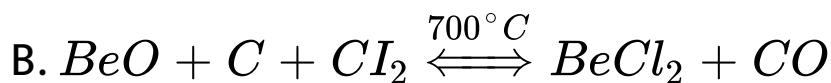
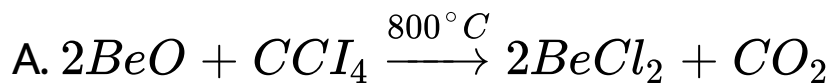
**Answer: C**



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12. Which of the following reactions is used to make anhydrous beryllium halides ?



D. All of these

**Answer: D**



**Watch Video Solution**

13. All the group 2 elements except \_\_\_ combine with dihydrogen upon heating to form their hydrides,  $MH_2$ .

A. Mg

B. Be

C. Ca

D. Sr

**Answer: B**



**Watch Video Solution**

14. Which of the following metals is rendered passive by conc.  $HNO_3$ ?

A. Ba

B. Mg

C. Ca

D. Be

**Answer: D**



**Watch Video Solution**

15. Which of the following metals is amphoteric ?

A. Be

B. Mg

C. Ca

D. Ba

**Answer: A**



**Watch Video Solution**

16. Which of the following is incorrect about group 2 metals ?

A. They all dissolve in liquid  $NH_3$ .

B. Dilute solutions of group 2 metals in liquid  $NH_3$  are bright blue in color but the concentrated solutions are bronze colored.

C. Solutions of group 2 metals in liquid  $NH_3$  decompose very slowly, forming amides and evolving  $H_2$ .

D. The evaporation of  $NH_3$  from the solutions of group 2 metals gives the metals.

**Answer: D**



**Watch Video Solution**

**17. Which of the following is not true?**

A. Group 2 elements are electropositive, strong reducing agents but not as

strong as group 1 elements.

B. The reducing power of groups 2 elements increases down the group.

C. Be has got the most negative standard reduction potential.

D. The magnesium cation is more easily reduced than the cations of the heavier members of the group.

**Answer: C**



**Watch Video Solution**

## Follow Up Test 10

1. All the group 2 elements burn in  $O_2$  to form oxides  $MO$ . These oxides can also be obtained by the thermal decomposition of

(i) carbonates , (ii) nitrates

(iii) sulphates, (iv) hydroxides

A. (i),(ii)

B. (i),(iii)



C. (i),(iv)

D. (i),(ii),(iii),(iv)

**Answer: D**



**Watch Video Solution**

2. Which of the following oxides has a 4:4 zinc sulphide (wurtzite) structure ?

A. BaO

B. BeO

C. CaO

D. SrO

**Answer: B**



**Watch Video Solution**

3. The enthalpies of formation of group 2 oxides are quite high (highly negative) and, consequently, they are stable to heat. Which of the following is the most stable ?

A. BeO

B. MgO

C. CaO

D. SrO

**Answer: C**



**Watch Video Solution**

4. Which of the following oxides react exothermically with water forming hydroxides ?

A. CaO

B. SrO

C. BaO

D. All of these

**Answer: D**



**Watch Video Solution**

5. Which of the following oxides of group 2 elements is amphoteric ?

A. SrO

B. BeO

C. MgO

D. CaO

**Answer: B**



**Watch Video Solution**

6. The hydroxide of \_\_\_ is obtained by treating the metal with cold water.

A. Ca

B. Sr

C. Ba

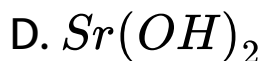
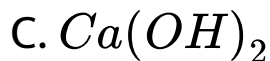
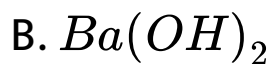
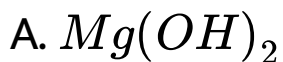
D. all of these

**Answer: D**



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7. Which of the following hydroxides is the most soluble in water ?

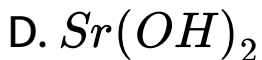
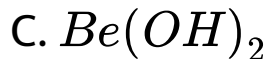
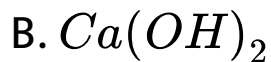
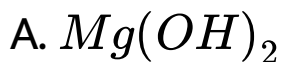


**Answer: B**



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**8. Which of the following hydroxides of group 2 elements is amphoteric ?**

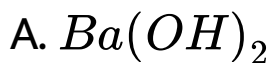


**Answer: C**

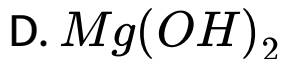
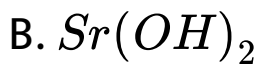


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**9. The most thermally stable hydroxide is**





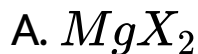


**Answer: A**



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**10.** Which of the following halides are ionic in nature ?



B.  $CaX_2$

C.  $SrX_2$

D. All of these

**Answer: D**



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**11.** All the halides of group 2 elements form hydrates and are hygroscopic (absorb water vapor from the air). Which of the following is the most hydrated chloride ?

A.  $MgCl_2$

B.  $CaCl_2$

C.  $SrCl_2$

D.  $BaCl_2$

**Answer: A**



**Watch Video Solution**

**12.** When hydrated  $MgCl_2 \cdot 6H_2O$  is strongly heated,

A. anhydrous  $MgCl_2$  is formed

B. MgO is formed

C.  $Mg(OH)Cl$  is formed

D.  $Mg(OH)HCl$  is formed

**Answer: B**



**Watch Video Solution**

**13.** The hydrated halides of \_\_\_ cannot be dehydrated on heating.

A. Be and Mg

B. Mg and Ca

C. Ca and Sr

D. Sr and Ba

**Answer: A**



**Watch Video Solution**

**14.** Fused  $BeF_2$  is

A. ionic

B. covalent

C. both ionic and covalent

D. a polymeric compound

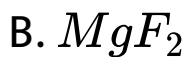
**Answer: B**



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**15.** Which of the following compounds is highly soluble in water ?

A.  $CaF_2$

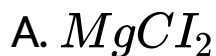


**Answer: C**



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**16.** Which of the following compounds are water soluble ?



B.  $CaCl_2$

C.  $SrCl_2$

D. All of these

**Answer: D**



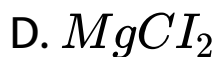
**Watch Video Solution**

**17. Which of the following solids is polymeric ?**

A.  $BaCl_2$

B.  $CaCl_2$





**Answer: C**



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**18. Beryllium chloride vapor contains**



D. Both (1) and (2)

**Answer: D**



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**19.** Because it is cheap (a byproduct of the Solvay process) and deliquescent, anhydrous  $CaCl_2$  is often used to dry gases and organic liquids. However, it cannot be used to dry ammonia and ethanol since it forms complexes having the respective formulas

A.  $\text{CaCl}_2 \cdot 8\text{NH}_3$  and  $\text{CaCl}_2 \cdot 4\text{C}_2\text{H}_5\text{OH}$

B.  $\text{CaCl}_2 \cdot 4\text{NH}_3$  and  $\text{CaCl}_2 \cdot 4\text{C}_2\text{H}_5\text{OH}$

C.  $\text{CaCl}_2 \cdot 8\text{NH}_3$  and  $\text{CaCl}_2 \cdot 8\text{C}_2\text{H}_5\text{OH}$

D.  $\text{CaCl}_2 \cdot 4\text{NH}_3$  and  $\text{CaCl}_2 \cdot 8\text{C}_2\text{H}_5\text{OH}$

**Answer: A**



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**20.** Which of the following is incorrect about the carbonates of alkaline earth metals ?

A. They are insoluble in water.

B. They are obtained as white precipitates when calculated amount of  $CO_2$  is passed through the solution of group 2 hydroxides.

C. They are precipitated when sodium or ammonium carbonate solution is added to an aqueous solution of water soluble salt of group 2 elements.

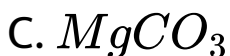
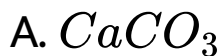
D. All the carbonates are ionic.

**Answer: D**



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21. Which of the following carbonates is the least soluble in water ?

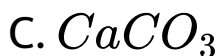
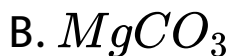


**Answer: B**



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**22.** Which of the following carbonates is the most thermally stable ?



**Answer: D**



**Watch Video Solution**

**23.** Which of the following bicarbonates exists in the solid state ?



D. None of these

**Answer: D**



**Watch Video Solution**

**24.** Sulphates of group 2 metals are prepared by the action of sulphuric acid on

(i) metals, (ii) metal oxides

(iii) metal hydroxides, (iv) metal carbonates

A. (i), (ii)

B. (i),(ii), (iii)

C. (i),(ii),(iii),(iv)



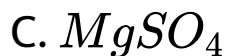
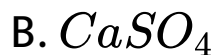
D. (ii), (iii), (iv)

**Answer: D**



**Watch Video Solution**

**25.** Which of the following sulphates crystallizes without water of crystallization ?



D.  $BeSO_4$

**Answer: A**



**Watch Video Solution**

**26.** Which of the following sulphates is sparingly soluble in water ?

A.  $BeSO_4$

B.  $MgSO_4$

C.  $CaSO_4$

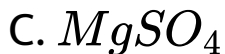
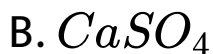


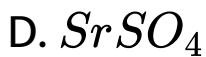
**Answer: C**



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27. Which of the following compounds has the highest temperature of decomposition ?



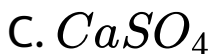
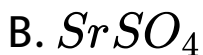


**Answer: D**



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**28.** Which of the following sulphates is useful in diagnosing stomach or duodenal ulcers ?



D.  $MgSO_4$

**Answer: A**



**Watch Video Solution**

**29.** Group 2 nitrates are prepared in solution by the action of nitric acid on

A. oxides

B. hydroxides

C. carbonates

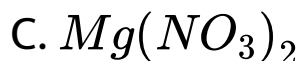
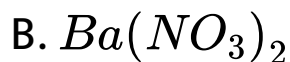
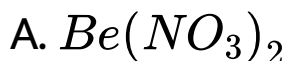
D. all of these

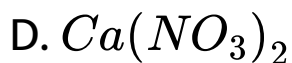
**Answer: D**



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**30.** Which of the following nitrates crystallizes as anhydrous salt?



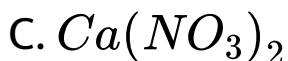
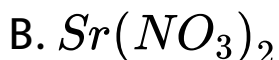
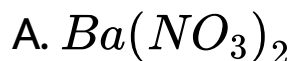


**Answer: D**



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**31.** Which of the following nitrates decomposes on heating, giving the oxide ?



D. All of these

**Answer: D**



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## Follow Up Test 11

1. Which of the following group 2 elements forms a basic nitrate in addition to the normal salt ?



A. Ba

B. Sr

C. Be

D. Ca

**Answer: C**



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2. Beryllium, the first member of group 2, shows an anomalous behavior as compared to Mg and the rest of the members on account of

A. exceptionally small atomic and ionic radii

B. high ionization enthalpy

C. absence of vacant d-orbitals in its valence shell

D. all of these

**Answer: D**



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3. Beryllium shows a diagonal relationship with

A. calcium

B. boron

C. aluminium

D. magnesium

**Answer: C**



**Watch Video Solution**

4. Which of the following is incorrect for both B and Al?

A. Both are resistant to the action of conc.



B. Both  $BeCl_2$  and  $AlCl_3$  have chlorine bridged dimers in the vapor phase.

C. Both  $BeCl_2$  and  $AlCl_3$  act as strong Lewis bases.

D. Both have a tendency to form covalent compounds.

**Answer: C**



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5. Calcium oxide is called quick lime. It is prepared by the thermal decomposition of

(i) calcium carbonate, (ii) calcium nitrate

(iii) calcium sulphate, (iv) calcium hydroxide

A. (i),(ii)

B. (ii),(iii)

C. (iii),(iv)

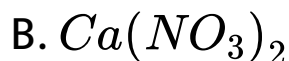
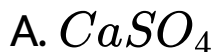
D. (i),(ii),(iii),(iv)

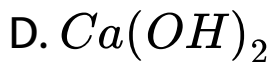
**Answer: D**



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6. Quick lime is prepared on a commercial scale by heating \_\_\_\_ in a rotary kiln at 1070-1270 K.





**Answer: C**



**Watch Video Solution**

7. Which of the following is incorrect for quick lime ?

A. Pure CaO is a crystalline white solid of very high melting point.

B. On heating with ammonium salts, it liberates  $NH_3$  gas.

C. It forms calcium carbide when heated with coke in an electric furnace at 2273 K.

D. It combines with acids and with solid acidic oxides at high temperature to form salts.

**Answer: A**



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8. The addition of limited amount of water disintegrates the hard lumps of CaO. During this process called \_\_\_\_, a hissing sound and a large amount of heat is released.

- A. hydration of lime
- B. hydrolysis of lime
- C. dehydration of lime
- D. slaking of lime

**Answer: D**



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9. Soda lime is a mixture of

A.  $NaOH$  and  $CaCO_3$

B.  $Na_2CO_3$  and  $CaCO_3$

C.  $NaOH$  and  $CaO$

D.  $NaOH$  and  $Ca(OH)_2$

**Answer: C**



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**10.** Lime is used for

- A. the softening of hard water
- B. the manufacture of cement
- C. the manufacture of calcium carbide
- D. all of these

**Answer: D**



**Watch Video Solution**

11. Calcium hydroxide is called slaked lime. It is prepared on a commercial scale by adding water to



**Answer: B**



**Watch Video Solution**

12. Which of the following is incorrect for slaked lime ?

A. It is a white amorphous powder.

B. It is sparingly soluble in water.

C. The solubility increases with rise in temperature.

D. None of these.

**Answer: C**



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**13.** A suspension of slaked lime in water is called

A. lime water

B. milk of lime

C. baryta water

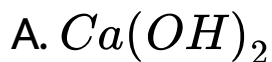
D. both (1) and (2)

**Answer: B**



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14. Bleaching powder is prepared by passing chlorine into



**Answer: A**



**Watch Video Solution**

15. Which of the following changes occur when an excess of  $CO_2(g)$  is passed into a clear solution of limewater ?

A. A white precipitate of  $CaCO_3$  is formed.

B. A white precipitate of  $CaCO_3$  is formed

initially which changes into soluble

$Ca(HCO_3)_2$  on passing excess  $CO_2$

gas.

C. A white precipitate of  $Ca(HCO_3)_2$  is

formed.



D. A white precipitate of both

$CaCO_3$  and  $Ca(HCO_3)_2$  is formed.

**Answer: B**



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**16.** Limestone rock is the commonest form of calcium carbonate which also occurs with \_\_\_\_ carbonate as dolomite.

A. Be

B. Sr

C. Ba

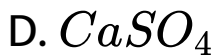
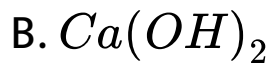
D. Mg

**Answer: D**



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**17.** Calcium carbonate, commonly called limestone, is prepared by passing  $CO_2(g)$  through



**Answer: B**



**Watch Video Solution**

**18.** Which of the following is incorrect for  $CaCO_3$  ?

A. It is a white fluffy powder.

B. It is almost insoluble in water.

C. When heated to 1200 K, it decomposes  
to evolve  $O_2$ .

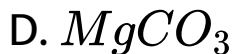
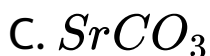
D. it reacts with dilute acid to liberate  $CO_2$ .

**Answer: C**



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19. Calcium carbonate along with \_\_\_ is used as a flux in the extraction of metals such as iron.



**Answer: D**



**Watch Video Solution**

20. Calcium carbonate is used as

(i) a filler in cosmetics

(ii) a constituent of chewing gum

an antacid

mild abrasive in toothpaste

A. (i),(ii),(iii),(iv)

B. (i),(ii), (iii)

C. (i),(iii)

D. (i),(iv)

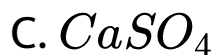
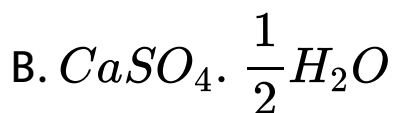
**Answer: A**





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21. Plaster of Paris, a white powder, is



**Answer: B**



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22. Plaster of Paris is obtained when gypsum is heated to

A. 293 K

B. 493 K

C. 593 K

D. 393 K

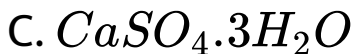
**Answer: D**



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23. Plaster of Paris has a remarkable property of setting with water. On mixing with one-third its weight of water, it forms a plastic mass that sets into a hard mass of interlocking crystals of \_\_\_\_ within 5 to 15 min.



**Answer: A**





24. The raw materials for the manufacture of Portland cement (or just cement) are limestone,

- A. clay, and sand
- B. sand, and gypsum
- C. clay, and gypsum
- D. gypsum, and alumina

**Answer: C**



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**25.** Cement is essentially a finely powdered mixture of calcium silicates and aluminates along with small quantities of gypsum which sets into a hard stone-like mass when treated with water. Which of the following important ingredients present in Portland cement contributes to the maximum extent?

A. Dicalcium silicate

B. Tricalcium silicate

C. Tricalcium aluminate

D. Both (1) and (2)

**Answer: B**



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**26. Which of the following is incorrect ?**

A. Cement containing no iron is white.

B. Cement containing excess amount of lime cracks during setting.

C. Setting of cement is and endothermic process.

D. Setting of cement is an example of hydration.

**Answer: C**



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**27.** All enzymes that utilize ATP in phosphate transfer require

A. Mg

B. Ca

C. both (1) and (2)

D. Ba

**Answer: A**



**Watch Video Solution**

**28.** The main pigment for the absorption of light in green plants is chlorophyll-a which contains

A. Be

B. Mg

C. Ca

D. Sr

**Answer: B**



**Watch Video Solution**

**29.** About 99% of body Ca is present in bones and teeth as

A. apatite

B. fluorapatite

C. both (1) and (2)

D. hydroxyapatite

**Answer: C**



**Watch Video Solution**

**30.**  $Ca^{2+}$  ions play an important role in

(i) neuromuscular function

(ii) interneuronal transmission



(iii) cell membrane integrity

(iv) blood coagulation

A. (i), (ii)

B. (ii),(iii)

C. (ii),(iii), (iv)

D. (i),(ii),(iii),(iv)

**Answer: D**



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31. The calcium concentration in plasma is regulated at about \_\_\_  $mgL^{-1}$ .

A. 50

B. 70

C. 100

D. 90

**Answer: C**



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32. Bone is not an inert and unchanging substance but is continuously being solubilized and redeposited to the extent of \_\_\_ mg per day.

A. 400

B. 350

C. 450

D. 300

**Answer: A**



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## Question Bank Level I

1. Calcium sulphate is sparingly soluble in

A. benzene

B. alcohol

C. acetic acid

D. water

**Answer: D**



**Watch Video Solution**

2. Sodium hydroxide is

A. hygroscopic

B. deliquescent

C. photosensitive

D. efflorescent

**Answer: B**



**Watch Video Solution**

3. Excess of  $Na^+$  ions in our system causes

- A. anemia
- B. low blood pressure
- C. high blood pressure
- D. diabetes

**Answer: C**



**Watch Video Solution**

4. The substance not likely to contain  $CaCO_3$  is

- A. a marble statue
- B. dolomite
- C. sea shells
- D. calcined gypsum

**Answer: D**



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## Question Bank Level II

1.  $RbO_2$  is a

- A. peroxide and diamagnetic
- B. superoxide and paramagnetic
- C. superoxide and diamagnetic
- D. peroxide and paramagnetic

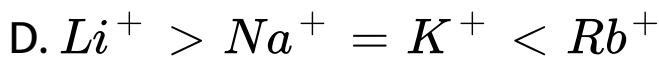
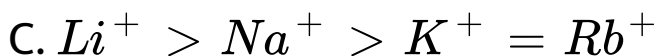
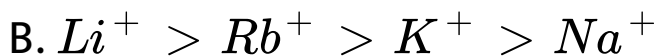
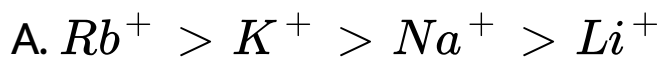
**Answer: B**



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2. Moar conductivites of  $Li^+$ ,  $Na^+$ ,  $K^+$  and  $Rb^+$  ions in aqueous solutions are in the following order.



**Answer: A**



**Watch Video Solution**

3. Which pair of the following chlorides does not impart color to the flame ?

A.  $BeCl_2$  and  $SrCl_2$

B.  $MgCl_2$  and  $CaCl_2$

C.  $BeCl_2$  and  $MgCl_2$

D.  $CaCl_2$  and  $BaCl_2$

**Answer: C**



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4. Calcium is obtained by the

A. roasting of limestone

B. reduction of  $CaCl_2$  with carbon

C. electrolysis of a solution of  $CaCl_2$  in  
water

D. electrolysis of molten  $CaCl_2$

**Answer: D**



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5. A solution of sodium metal in liquid ammonia is strongly reducing due to the presence of

A. solvated electrons

B. sodium amide

C. sodium hydride

D. sodium atoms

**Answer: A**



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6. The metallic luster exhibited by sodium is explained by

A. existence of body centered cubic lattice

B. excitation of free electrons

C. diffusion of sodium ions

D. oscillation of loose electrons

**Answer: D**



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7. A metal  $M$  readily forms its sulphate  $MSO_4$  which is water soluble. It forms oxide  $MO$  which becomes inert on heating. It forms insoluble hydroxide which is soluble in  $NaOH$ . The metal  $M$  is:

A. Be

B. Ca

C. Sr

D. Mg

**Answer: A**





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8. The ionic mobility of alkali metal ions in aqueous solution is maximum for:



**Answer: B**



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9. Beryllium and aluminium exhibit many properties which are similar . But, the two elements differ in

A. forming polymeric hydrides

B. exhibiting maximum covalency in  
compounds

C. forming covalent halides

D. exhibiting amphoteric nature in their  
oxides



**Answer: B**



**Watch Video Solution**

**10.** The most abundant alkali metal in sea water is

A. Li

B. Na

C. K

D. Rb

**Answer: B**



**Watch Video Solution**

**11.** The most abundant alkaline earth metal in sea water is

A. Mg

B. Ca

C. Sr

D. Ba

**Answer: A**



**Watch Video Solution**

**12.** Which of the following compounds contains potassium ?

A. Trona

B. Carnallite

C. Borax

D. Saltpetre

**Answer: B**



**Watch Video Solution**

**13.** The inner shells of electrons are completely filled in

A. Li

B. Na

C. K

D. Both (1) and (2)

**Answer: D**



**Watch Video Solution**

**14. Lithium is softer than**

A. Na

B. K

C. Rb

D. none of these

**Answer: D**



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15. Lithium is the strongest reducing agent in the aqueous solution because of the highest

A. enthalpy of sublimation

B. ionization enthalpy

C. enthalpy of hydration

D. all of these

**Answer: C**



16. Alkali metals liberate  $H_2$  gas when they react with

A. acetylene

B. alcohol

C. water

D. all of these

**Answer: D**



17. Which of the following alkali-metal hydroxides is the least soluble in water ?

A. CaOH

B. KOH

C. NaOH

D. LiOH

**Answer: D**



**Watch Video Solution**



18. Which of the following compounds is the most stable?

A. NaCl

B. NaI

C. NaF

D. NaBr

**Answer: C**



**Watch Video Solution**

19. The alkali metal cation having the least ionic mobility is



**Answer: A**



**Watch Video Solution**

20. Which of the following is insoluble in organic solvents?

A.  $\text{LiI}$

B.  $\text{LiBr}$

C.  $\text{LiCl}$

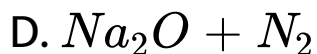
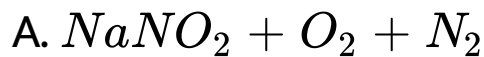
D.  $\text{LiF}$

**Answer: D**



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21.  $\text{NaNO}_3$  when heated to  $500^\circ\text{C}$  given

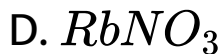
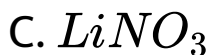
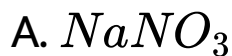


**Answer: B**



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22. Which of the following decomposes more readily than the other forming the oxide?



**Answer: C**



**Watch Video Solution**

23. Which of the following compounds does not contain calcium?

A. Carnalite

B. Anhydrite

C. Gypsum

D. Fluorapatite

**Answer: D**



**Watch Video Solution**

24. Which of the following has the highest melting and boiling points?

A. Li

B. Na

C. K

D. Ba

**Answer: C**



**Watch Video Solution**

25. Which of the following alkaline earth metals do not impart any color to the flame?

A. Ca,Sr

B. Mg,Ca

C. Be,Mg

D. Sr,Ba

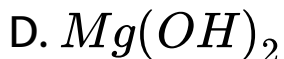
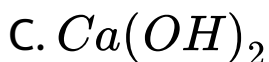
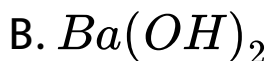
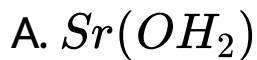
**Answer: B**



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26. Which one among the following is the most basic?



**Answer: D**



**Watch Video Solution**

27. Which of the following compounds is covalent?

A.  $\text{CaO}$

B.  $\text{MgSO}_4$

C.  $\text{Ba}(\text{NO}_3)_2$

D.  $\text{BeF}_2$

**Answer: A**



**Watch Video Solution**

28. Which of the following chlorides does not respond to the flame test?



**Answer: A**



**Watch Video Solution**

29. Which of the following is incorrect for both Be and Al?

A. Carbides of both the metals react with water liberating  $C_2H_2$  gas.

B. Oxides and hydroxides of both Be and Al are amphoteric and dissolve in NaOH solution as well as hydrochloric acid solution.

C. Oxides of both the metals are hard, high-melting insoluble solids.

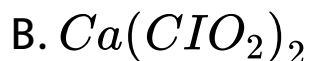
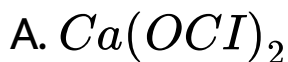
D. Salts of both the metals form hydrated ions in aqueous solution.

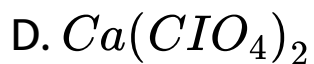
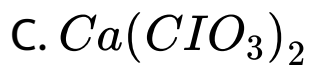
**Answer: A**



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**30.** Milk of lime reacts with chlorine to form \_\_\_\_\_, a constituent of bleaching powder.





**Answer: A**



**Watch Video Solution**

**31.** The most abundant metal present in the human body is

A. Ca

B. Mg

C. Na

D. K

**Answer: A**



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## Question Bank Level Iii

1. Sodium peroxide which is a yellow solid, when exposed to air becomes white due to the formation of:

A. NaOH and  $Na_2CO_3$

B. NaOH and  $H_2O_2$

C.  $Na_2O$  and  $O_3$

D.  $Na_2O$

**Answer: A**



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**2. The molecular formula of Glauber's salt is**

A.  $MgSO_4 \cdot 6H_2O$





**Answer: D**



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**3.** In curing cement plasters, water is sprinkled from time to time. This helps in

A. keeping it cool

B. hydrated sand gravel mixed with cement

C. developing interlocking needle-like

crystals of hydrated silicated

D. converting sand into silicic acid

**Answer: C**



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4.  $KO_2$  is used in oxygen cylinders in space and submarines because it

A. produces ozone

B. absorbs  $CO_2$

C. eliminates moisture

D. absorbs  $CO_2$  and increase  $O_2$  content

**Answer: D**



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5. One mole of magnesium nitride on reaction with an excess of water gives

- A. two moles of ammonia
- B. two moles of nitric acid
- C. one mole of nitric acid
- D. one mole of ammonia

**Answer: A**



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**6.** The number and type of bonds between two carbon atoms in  $CaC_2$  are:

A. two sigma, two pi

B. two sigma, one pi

C. one sigma, two pi

D. one sigma, one pi

**Answer: C**



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7. Which of the following is not an ore of magnesium?

A. Magnesite

B. Carnallite

C. Dolomite

D. Barytes

**Answer: D**



**Watch Video Solution**

**8. Which of the alkali metals is lighter than water?**

A. k

B. Na

C. Li

D. All of these

**Answer: D**



**Watch Video Solution**

**9. Which of the following is incorrect about the hydroxides of alkali metals?**

- A. The hydroxides, which are obtained by the reaction of the oxides with water, react with acids to form salts and water.
- B. They react with  $CO_2$  (even traces in the air) forming the carbonates.
- C. They react with amphoteric oxides and liberate  $NH_3$  from both ammonium salts and coordination complexes.
- D. They are all thermally stable.

**Answer: D**





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10. Which of the following dissolves in water to produce hydroxides?

A. Na

B.  $Na_2O$

C.  $Na_2O_2$

D.  $NaO_2$

**Answer: D**



11. Which of the following is almost insoluble in water?

A.  $\text{LiI}$

B.  $\text{KI}$

C.  $\text{RbI}$

D.  $\text{CsI}$

**Answer: D**



12. The solubility of most of the alkali metal halides except those of \_\_\_ decreases on descending the group.

A. fluorides

B. chlorides

C. bromides

D. iodides

**Answer: A**



**Watch Video Solution**

13. Which of the following chlorides exist as hydrates?

(i)  $MgCl_2$  (ii) NaCl

(iii) KCl (iv)  $CaCl_{92}$ )

A. i,ii

B. ii,iii

C. i,iv

D. iii,iv

**Answer: C**



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14. Anhydrous magnesium chloride can be prepared by heating  $MgCl_2 \cdot 6H_2O$

A. in an atmosphere of nitrogen

B. in a current of dry HCl gas

C. with magnesium

D. with concentrated HCl

**Answer: B**



15. Baryta water is used for detecting \_\_\_ gas.

A.  $CO_2$

B. CO

C.  $NH_3$

D.  $O_2$

**Answer: A**



16. Which of the following is used in the preparation of mortar, a building material ?

A.  $\text{CaO}$

B.  $\text{Ca}(\text{OH})_2$

C.  $\text{CaCO}_3$

D.  $\text{CaCl}_2$

**Answer: B**



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17. Cement is a product obtained by combining a material rich in lime ( $\text{CaO}$ ) with other material such as clay which contains silica ( $\text{SiO}_2$ ) along with the oxides of

A. Al

B. Fe

C. Mg

D. All of these

**Answer: D**



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## Question Bank Level Iv

1. "Electron" is an alloy of

A. Mg and Fe

B. Mg and Al

C. Mg and Zn

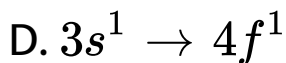
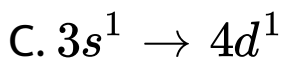
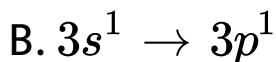
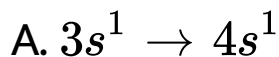
D. Mg and Ni

**Answer: C**



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2. The sodium D-line arises from the electronic transition \_\_\_\_\_ in Na atoms formed momentarily in the flame.



**Answer: B**



**Watch Video Solution**

3. The crystal structure of  $Na_2O$  resembles

A. antifluorite structure

B. fluorite structure

C. rock-salt structure

D. rutile structure

**Answer: A**



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4. Which of the following statements is incorrect?

A. NaOH dissolves  $PbO_2$  forming soluble sodium plumbate.

B. NaOH dissolves  $SnO_2$  forming soluble sodium stannate.

C. NaOH dissolves HgO forming soluble sodium mercurate.

D. NaOH solution dissolves  $Al_2O_3$  forming soluble sodium aluminate.

**Answer: C**



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5. Which of the following bicarbonates consists of dimeric anions in the crystalline state?

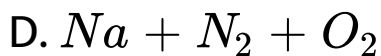
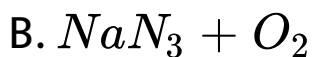


**Answer: C**



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6.  $NaNO_3$  on being heated to  $800^\circ C$  gives



**Answer: A**



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7. Which of the following is the densest metal?

A. Be

B. Mg

C. Ca

D. CsI

**Answer: D**



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8. Which of the following is least reactive in the electrochemical series?

A. Na

B. Cr

C. Sr

D. Ba

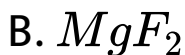
**Answer: A**



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9. Which of the following compounds is used to make prisms and cell windows for spectrophotometres?

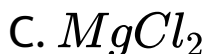


**Answer: C**



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10. Which of the following is widely used for treating ice on roads, particularly in very cold countries?



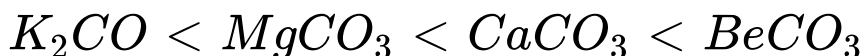
**Answer: B**



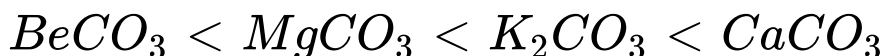
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1. The correct order of increasing thermal stability of  $K_2CO_3$ ,  $MgCO_3$ ,  $CaCO_3$ , and  $BeCO_3$  is

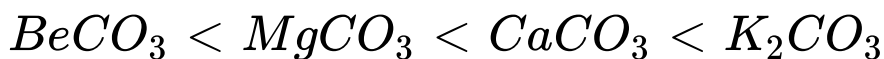
A.



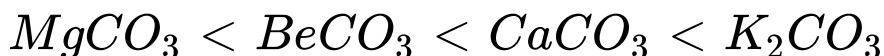
B.



C.



D.

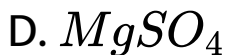
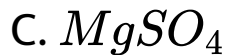
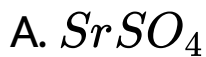


**Answer: C**



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2. In which of the following is the hydration energy higher than the lattice energy?



**Answer: C**



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**3.** The product obtained on fusion of  $BaSO_4$  and  $Na_2CO_3$  is

A.  $BaCO_3$

B. BaO

C.  $Ba(OH)_2$

D.  $BaHSO_4$

**Answer: A**



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**4. When washing soda is heated**

A. CO is released

B.  $CO + CO_2$  is released

C.  $CO_2$  is released

D. water vapor is released

**Answer: D**

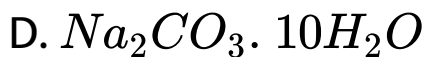
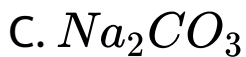


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**5. Baking soda is**

A.  $NaHCO_3$

B.  $NaHCO_3 \cdot 6H_2O$



**Answer: A**



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**6. NaOH is prepared by the**

A. Down cell

B. Castner cell

C. Solvay process



D. Castner-Kellner cell

**Answer: D**



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7. The correct sequence of increasing covalent character is represented by



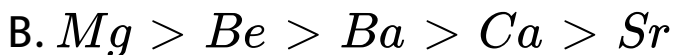
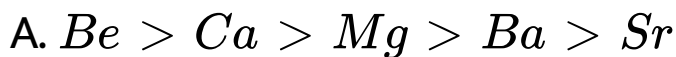


**Answer: B**



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8. The correct order of solubility of the sulphates of alkaline earth metals in water is



D.  $Mg > Ca > Ba > Sr$

**Answer: C**



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9. Which of the following is not an ore of magnesium?

A. Gypsum

B. Magnesite

C. Dolomite

D. Carnallite

**Answer: A**



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**10. Photoelectric effect is the maximum in**

A. Cs

B. Na

C. K

D. Li

**Answer: A**



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**11. Which of the following is monovalent?**

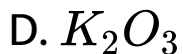
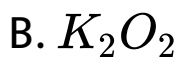
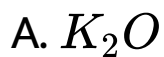
- A. Alkali metals
- B. Alkaline earth metals
- C. Metallorids
- D. Metals

**Answer: A**



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12. Superoxide of potassium is



**Answer: C**



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13. Carnallite on electrolysis gives

A. Ca and  $Cl_2$

B. Na and  $CO_2$

C. Al and  $Cl_2$

D. Mg and  $Cl_2$

**Answer: D**



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14. On dissolving moderate amount of sodium metal in liquid ammonia at low temperature, which of the following does not occur ?

A. Blue colored solution is not obtained.

B.  $Na^+$  ions are formed in the solution.

C. Liquid  $NH_3$  remains diamagnetic.

D. Liquid  $NH_3$  becomes a good conductor of electricity.

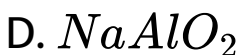
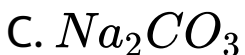
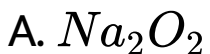
**Answer: C**







15. Sodium metal reacts with  $Al_2O_3$  at high temperature to give a sodium compound X. X reacts with carbon dioxide in water to form Y. Y is



**Answer: C**



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**16.** Aqueous NaCl solution is electrolyzed using platinum electrodes. What is the product formed at cathode?

A. Na

B.  $H_2$

C.  $O_2$

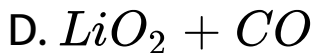
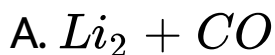
D.  $Cl_2$

**Answer: B**



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**17.** What are the products formed when  $Li_2CO_3$  undergoes decomposition?

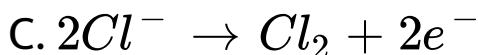
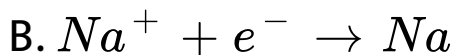


**Answer: C**



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**18.** What is the reaction occurring at the anode in Down's process for the extraction of sodium ?



**Answer: C**



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**19.** In the Solvay process of manufacture of  $Na_2CO_3$ , the byproducts are

A.  $NH_4Cl$ ,  $CaO$

B.  $CaO$ ,  $Na_2CO_3$

C.  $CaCl_2$ ,  $CO_2$ ,  $NH_3$

D.  $Na_2CO_3$ ,  $CO_2$

**Answer: C**



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**20.** In electrolysis of  $NaCl$  when  $Pt$  electrode is taken  $H_2$  is liberated at cathode while  $Hg$  cathode it forms sodium amalgam because

A. Hg is more inert than Pt

B. more voltage is required to reduce  $H^+$

at Hg than at Pt

C. Na is dissolved in Hg while it does not dissolve in Pt

D. concentration of  $H^+$  ions is larger when Pt electrode is taken

**Answer: D**



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**21.** When sodium is treated with sufficient oxygen/air, the product obtained is

A.  $Na_2O$

B.  $Na_2O_2$

C.  $NaO_2$

D.  $NaO$

**Answer: A**



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**22.** which of the following has the lowest melting point ?



A. Li

B. Na

C. K

D. Cs

**Answer: D**



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**23.** Magnesium can be obtained by

A. reducing MgO with coke

B. reducing Mg salt solution with Fe

C. electrolysis of fused mg salt

D. electrolysis of  $Mg(NO_3)_2$  solution.

**Answer: C**



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**24.** A solution of  $MgCl_2$  in water has pH

A.  $< 7$

B.  $> 7$

C. 7

D. 14.2

**Answer: A**



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**25.** In view of their low ionisation energies, the alkali metals are

A. weak oxidizing agents

B. strong reducing agents

C. strong oxidizing agents

D. weak reducing agents

**Answer: B**



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**26.** On heating quicklime with coke in an electric furnace, we get

A. Ca and  $CO_2$

B.  $CaCO_3$

C.  $\text{CaO}$

D.  $\text{CaC}_2$

**Answer: D**



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**27.** The number of covalent bonds formed by beryllium is

A. 2

B. 3

C. 4

D. 5

**Answer: A**



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