CHEMISTRY

BOOKS - PRADEEP CHEMISTRY (HINGLISH)

S-BLOCK ELEMENTS (ALKALI AND ALKALINE EARTH METALS)

Curiosity Questions

1. Alkali metals are usually stored in hydrocarbon solvents to protect them from air and moisture but lithium cannot . Why ?

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2. Are sodium cyanide and potassium cyanide equally poisonous ?

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Test Your Grip Multiple Choice Questions

1. Which alkali metal emits longest wavelength light in flame test ?

A. Na

B. K

C. Cs

D. Li

Answer: b

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2. Photoelectric effect is the maximum in

A. Cs

B. Na

C. K

D. Li

Answer: a

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3. The characteristic not related to alkali metal is

A. their ions are isoelectronic with noble gases

B. low melting point

C. low electronegativity

D. high ionization energy

Answer: d

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4. The solubility of alkali metal hydroxides follows the order:

A. LiOH $<$ NaOH $<$ KOH $<$ RbOH $<$ CsOH

B. LiOH $>$ NaOH $>$ KOH $>$ RbOH $>$ CsOH

C. LiOH $>$ CsOH $>$ RbOH $>$ NaOH $>$ KOH

D. LiCl $<$ RbCl $<$ KCl $<$ NaCl

Answer: a

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5. The melting points of the following halides follow the order

A. $LiCl < NaCl < KCl < RbCl$

B. $RbCl < KCl < NaCl < LiCl$

C. $LiCl < KCl < RbCl < NaCl$

D. $LiCl < RbCl < KCl < NaCl$

Answer: d

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

A. ammoniated Na^+ ions

B. sodium hydride

C. sodium amide

D. ammoniated electrons

Answer: d

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7. Which of the following does not form double salts ?

A. Li_2SO_4

B. Na_2SO_4

C. K_2SO_4

D. Rb_2SO_4

Answer: a

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8. Which of the following is not known ?

A. KO_3

B. KO_4

C. KO_2

D. K_2O_2

Answer: b

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9. The by-product of Solvay ammonia process is

A. Carbon dioxide

B. Ammonia

C. Calcium chloride

D. Calcium carbonate

Answer: c

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10. A metal M readily forms water soluble sulphate MSO_4, water insoluble hydroxide $M(OH)_2$ and oxide MO which becomes inert on heating. The hydroxide is soluble in $NaOH$. The M is

A. Be

B. Mg

C. Ca

D. Sr

Answer: a

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11. Which of the following alkaline earth metal sulphate is least soluble in water:-

A. $BaSO_4$

B. $MgSO_4$

C. $SrSO_4$

D. $CaSO_4$

Answer: a

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12. Gypsum on heating to $390K$ gives

A. $CaSO_4.\ 2H_2O$

B. $CaSO_4$

C. $CaSO_4.\ 1/2H_2O$

D. SO_3 and CaO

Answer: c

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13. The drying agent which absorbs carbon dioxide and reacts violently with water is

A. Sodium carbonate

B. Alcohol

C. Conc.H_2SO_4

D. Calcium oxide

Answer: d

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

A. one mole of ammonia

B. one mole of nitric acid

C. two moles of ammonia

D. two moles of nitric acid

Answer: c

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15. The plaster of paris is hardened by

A. Liberating CO_2

B. Hydration

C. Dehydration

D. Changing into $CaCO_3$

Answer: b

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Test Your Grip Fill In The Blanks

1. Radioactive alkali metal is ..... And its outer electronic configuration is ..... .

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2. The alkali metal which gives golden yellow colour in the flame test is ..... .

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3. Li , Na and K react with dioxygen giving ..... , ...and .....respectively .

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4. The bicarbonate of alkali metal which does not exist in the solid state is ..... .

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5. Lithium shows diagonal relationship with

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6. Sodium carbonate is prepared by .....and its formula is ..... .

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7. The alkaline earth metal which shows coordination number four in its complexes is ..... .

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8. Magnesium burns in air forming .....and ..... .

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9. The oxide of alkaline earth which is covalent and insoluble in water is ..... .

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10. Plaster of Paris is obtained by heating .....at .....and its formula is ..... .

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11. The major constituent of cement is ..... .

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Conceptual Questions Group 1 Elements Alkali Metals

1. Alkali metals are paramagnetic but their salts are dimagnetic. Explain.

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2. Which out of sodium or potassium has higher melting point ?

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3. Alkali metals impart colour to Bunsen flame due to

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4. Why is that on being heated in excess supply of air , K , Rb and Cs form superoxides in preference to oxide and peroxides ?

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5. Why superoxides of alkali metals are paramagnetic ?

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6. What are alkali metals kept in Kerosene?

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7. What makes lithium to show properties uncommon to rest of the alkali metals ?

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8. When is a cation highly polarising? Which alkali metal cation has the highest polarising power?

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9. Give reasons for the following.

a. LiCI is more covalent than KCI.

b. LiI has lower melting point than LiF.

c. During electrolysis of molten sodium chloride, calcium chloride and potassium fluoride are added.

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10. How will you distinguish between

(i) Na_2CO_3 and $NaHCO_3$ and (ii) $LiNO_3$ and KNO_3 ?

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Conceptual Questions Group 2 Elements Alkaline Earth Metals

1. Alkaline earth metals always form divalent cations even through their second ionization enthalpies are almost double than their first ionization enthalpies . Explain .

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2. A piece of burning magnesium continues to burn in SO_2 . Explain .

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3. Explain why halides of beryllium fume in moist air but those of barium do not.

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4. (a). What is the hybrid state of Be in $BeCl_2$ in vapour state. What will be the change in the hybrid state of $BeCl_2$ in the solid state?

(b). Draw the structure of $(i)BeCl_2$ (vapour state) and (ii)$BeCl_2$ (solid state).

(c). Why do halides and hydrides of beryllium polymerise?

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5. Why are beryllium halides polymeric in nature ?

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6. The crystalline salts of alkaline earth metals contain more water of crystallisation than the corresponding alkali metal salts. Why ?

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7. Halides of Be dissolve in organic solvent while of Ba do not

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8. Why $BaSO_4$ is insoluble whereas $BeSO_4$ is soluble in water ?

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9. What is the difference between quick lime, slaked lime, milk of lime and lime water ?

(ii) How is gypsum prepared in the labor atory? How is it converted into plaster of Pairs?

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10. Write with a balanced chemical equation , how gypsum is used for the conversion of ammonia into ammonium sulphate without using H_2SO_4.

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11. Chlorination of calcium hydroxide produces bleaching powder . Write its chemical equation.

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12. Why is the temperature maintained around 393 K during the preparation of plaster of paris ?

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13. Why is it necessary to add gypsum in the final stages of the preparation of cement ?

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14. Give reasons for the following :

(i) $MgCl_2$ is more covalent than NaCl (ii) CuCl is more covalent than NaCl.

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15. How will you distinguish between

(i) magnesium and calcium (ii) Na_2SO_4 and $BaSO_4$

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16. Give reasons for the following :

(i) $Be(OH)_2$ dissolves in NaOH but $Mg(OH)_2$ does not . (ii) Magnesium oxide is used as a refractors material , (iii) During electrolysis of molten sodium chlorides , calcium chloride and potassium fluoride are added .

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17. Account for the following : (i) $Be(OH)_2$ is amphoteric while $Mg(OH)_2$ is basic .

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Ncert Questions And Exercises With Answers Ncert Intext Solved Questions

1. What is the oxidation state of K in KO_2 ?

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2. The E^{Θ} for Cl_2/Cl^- is $+1.36$ for I_2/I^- is $+0.53,$ for Ag^+/Ag is $+0.79, Na^+/Na$ is -2.71 and for Li^+/Li is -3.04 Arrange the following ionic spects in decreasing order of reducing strength:

I^-, Ag, Cl^-, Li, Na

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3. Why is KO_2 paramagnetic ?

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4. Why does the solubility of alkaline earth metal hydroxides in water increase down the group?

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5. Why does the solubility of alkaline earth metal carbonates and sulphates in water decrease down the group ?

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Ncert Questions And Exercises With Answers Ncert Exercises

1. What are the common physical and chemical features of alkali metals?

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2. Discuss the general characteristics and gradation in properties of alkaline earth metals.

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3. Why are alkali metals not found in nature ?

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4. Find out the oxidation state of sodium in Na_2O_2.

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5. Explain why is sodium less reactive than potassium.

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6. Compare the alkali metals and alkaline earth metals with respect to (a) ionisation enthalpy, (b) basicity of oxides and (c) solubility of hydroxides.

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7. In what ways lithium shows similarities to magnesium in its chemical behaviour?

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8. Explain why can alkali and alkaline earth metals not be obtained by chemical reduction methods?

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

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10. 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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11. Beryllium and magnesium do not give colour to flame whereas other alkaline eath metals do so. Why?

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12. Discuss the various reactions that occur in the Solvay process

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14. Why is Li_2CO_3 decomposed at a lower temperature whereas Na_2CO_3 at higher temperature?

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15. Compare the solubility and thermal stability of the following compounds of the alkali metals with those of the alkaline earth metals. (a) Nitrates (b) Carbonates (c) Sulphates.

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16. Starting from sodium chloride, how will you proceed to prepare (i) sodium metal (ii) sodium hydrxide (iii) sodium peroxide (iv) sodium

carbonate.

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17. What happens when (a) magensium in burnt in air, (b) quicklime is heated with silica, (c) chlorine reacts with slaked lime and (d) calcium nitrate is heated?

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18. Describe two important uses of each of the following:

(a) casutic soda, (b) sodium carbonate and (c) quicklime.

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19. Draw the structures of (i) $BeCl_2$ (vapour) (ii) $BeCl_2$ (solid).

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20. The hydroxides and carbonates of sodium and potassium are easily soluble in water the corresponding compounds of magnesium and calcium are springly soluble. Explain.

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21. Describe the importance of the following: (a) limestone, (b) cement and (c) plaster of Paris.

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

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

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24. Explain the significance of sodium, potassium, magnesium and calcium on biological fluids.

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25. What happens when

a. Sodium metal is dropped in water?

b. Sodium metal is heated in free supply of air?

c. Sodium peroxide dissolves in water?

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26. Comment on each of the following observation:

a. The mobilities of the alkali metal ions in aqueous solution are $Li^{\oplus} < Na^{\oplus} < K^{\oplus} < Rb^{\oplus} < Cs^{\oplus}$.

b. Lithium is the only alkali metal to form a nitride directly.

c. $E^{\ominus}$ for $M_{aq}^{2+} + 2e^{-} \rightarrow M_{(s)}$ (where M=Ca,Sr or Ba) is nearly constant.

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27. State as to why

(a) a solution of Na_2CO_3 is alkaline ?

(b) alkali metals are prepared by electrolysis of their fused chlorides?

(c) sodium is found to be more useful than potassium ?

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28. Write balanced equations for reactions between

a. Na_2O_2 and water

b. KO_2 and water

c. Na_2O and CO_2

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29. How would you explain the following observations ?

(i) BeO is almost insoluble but $BeSO_4$ is soluble in water

(ii) BaO is soluble but $BaSO_4$ is insoluble in water

(iii) LiI is more soluble than KI in ethanol

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30. .Which of the alkali metal is having least melting point?

A. Na

B. K

C. Rb

D. Cs.

Answer:

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31. Which one of the following alkali metals gives hydrated salts ?

A. Li

B. Na

C. K

D. Cs

Answer:

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32. Which one of the alkaline earth metal carbonates is thermally the most stable?

A. $MgCO_3$

B. $CaCO_3$

C. $SrCO_3$

D. $BaCO_3$

Answer:

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Ncert Exemplar Problems With Answers Hints And Solutions Multiple Choice Questions I

1. The alkali metals have low melting point. Which of the following alkali metal is expected to melt if the room temperature rises to $30^\circ C$?

A. Na

B. K

C. Rb

D. Cs

Answer: D

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2. Alkali metals react with water vigorously to form hydroxides and dihydrogen. Which of the following alkali metals reacts with water least vigorously ?

A. Li

B. Na

C. K

D. Cs

Answer: A

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3. The reducing power of a metal depends on various factors. Suggest the factor which makes Li, the strongest reducing agent in aqueous solution.

A. Sublimation enthalpy

B. Ionisation enthalpy

C. Hydration enthalpy

D. Electron gain enthalpy

Answer: C

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4. Metal carbonates decompose on heating to give metal oxide and carbon dioxide. Which of the metal carbonates is most stable thermally?

A. $MgCO_3$

B. $CaCO_3$

C. $SrCO_3$

D. $BaCO_3$

Answer: D

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5. Which of the carbonates given below is unstable in air and is kept in CO_2 atmosphere to avoid decomposition?

A. $BeCO_3$

B. $MgCO_3$

C. $CaCO_3$

D. $BaCO_3$

Answer: D

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6. Metals form basic hydroxides. Which of the following metal hydroxide is the least basic?

A. $Mg(OH)_2$

B. $Ca(OH)_2$

C. $Sr(OH)_2$

D. $Ba(OH)_2$

Answer: A

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7. Some of the Group 2 metal halides are covalent and soluble in organic solvents. Among the following metal halides, the one which is soluble in ethanol is

A. $BeCl_2$

B. $MgCl_2$

C. $CaCl_2$

D. $SrCl_2$

Answer: A

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8. The order of decreasing ionisation ethalpy in alkali metals is

A. $Na > Li > K > Rb$

B. $Rb < Na < K < Li$

C. $Li > Na > K > Rb$

D. $K < Li < Na < Rb$

Answer: C

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9. The solubility of metal halides depends on their nature, Lattice enthalpy and hydration enthalpy of the individual ions. Amongst fluorides of alkali metals, the lowest solubility of LiF in water is due to

A. ionic nature of lithium fluroide

B. high lattice enthalpy

C. high hydration enthalpy for lithium ion

D. low ionisation enthalpy of lithium atom

Answer: B

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10. Amphoteric hydroxides react with both alkalies and acids. Which of the following Group 2 metal hydroxides is soluble in sodium hydroxide?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $Ca(OH)_2$

D. $Ba(OH)_2$

Answer: A

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11. In the synthesis of sodium carbonate, the recovery of ammonia is done by treating NH_4Cl with $Ca(OH)_2$. The by-product obtained in this process is

A. $CaCl_2$

B. $NaCl$

C. $NaOH$

D. $NaHCO_3$

Answer: A

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12. When sodium is dissolved in liquid ammonia, a solution of deep blue colour is obtained. The colour of the solution is due to

A. ammoniated electron

B. sodium ion

C. sodium amide

D. ammoniated sodium ion

Answer: A

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13. By adding gypsum to cement

A. setting time of current becomes less

B. setting time of cement increases

C. colour of cement becomes light

D. shining surface is obtained

Answer: B

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14. Dead burnt plaster is

A. $CaSO_4$

B. $CaSO_4.\ \frac{1}{2}H_2O$

C. $CaSO_4.\ H_2O$

D. $CaSO_4.\ 2H_2O$

Answer: A

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15. Suspension of slaked lime in water is known as

A. lime water

B. quick lime

C. milk of lime

D. aqueous solution of slaked lime

Answer: C

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16. Which of the following elements does not form hydride by direct heating with dihydrogen ?

A. Be

B. Mg

C. Sr

D. Ba

Answer: A

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17. The formula of soda ash is

A. $Na_2CO_3.\ 10H_2O$

B. $Na_2CO_3.2H_2O$

C. $Na_2CO_3.\ H_2O$

D. Na_2CO_3

Answer: D

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18. A substance which gives a brick red flame and breaks down on heating to give oxygen and a brown gas is

A. Magnesium nitrate

B. Calcium nitrate

C. Barium nitrate

D. Strontium nitrate

Answer: B

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19. Which of the following statements is true about $Ca(OH)_2$?

A. It is used in the preparation of bleaching powder

B. It is a light blue solid .

C. It does not possess disinfectant property.

D. It is used in the manufacture of cement .

Answer: A

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20. A chemical A is used for the preparation of washing soda to recover ammonia. When CO_2 is bubbled through an aqueous solution of A, the solution turns milky. It is used in white washing due to disinfectant nature what is the chemical formula of A?

A. $Ca(HCO_3)_2$

B. CaO

C. $Ca(OH)_2$

D. $CaCO_3$

Answer: C

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21. Dehydration of hydrates of halides of calcium, barium and strontium i.e., $CaCI_2.6H_2O, BaCI_2.2H_2O, SrCI_2.2H_2O$, can be achieved by heating. These become wet on keeping in air. Which of the following statements is correct about these halides?

A. Act as dehydrating agent

B. Can absorb moisture from air

C. Tendency to form hydrate decreases from calcium to barium

D. All of the above

Answer: D

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Ncert Exemplar Problems With Answers Hints And Solutions Multiple Choice Questions Ii

1. Metallic elements are described by their standard electrode potential, fusion enthalpy, atomic size, etc. The alkali metals are characerised by which of the following properties?

A. High boiling point

B. High negative standard electrode potential

C. High density

D. Large atomic size

Answer: B::D

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2. Several sodium compounds find use in industries. Which of the following compounds are used for textile industry?

A. Na_2CO_3

B. $NaHCO_3$

C. $NaOH$

D. $NaCl$

Answer: A::C

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3. Which of the following compounds are readily soluble in water ?

A. $BeSO_4$

B. $MgSO_4$

C. $BaSO_4$

D. $SrSO_4$

Answer: A::B

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4. When zeolite which is hydrated sodium aluminium silicate is treated with hard water, the sodium ions are exchanged with which of the following ion (S)?

A. H^+ ions

B. Mg^{2+} ions

C. Ca^{2+} ions

D. SO_4^{2-} ions

Answer: B::C

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5. Identify the correct formula of halides of alkaline earth metals from the following.

A. $BaCl_2.\ 2H_2O$

B. $BaCl_2.\ 4H_2O$

C. $CaCl_2.\ 6H_2O$

D. $SrCl_2.\ 4H_2O$

Answer: A::C

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6. Choose the correct statements from the following .

A.

B.

C.

D.

Answer:

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7. Which of the following are the correct reasons for anomlaous behaviour of lithium?

A. Exceptionally small size of its atom

B. Its high polarising power

C. It has high degree of hydration

D. Exceptionally low ionisation enthalpy

Answer: A::B::C

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Ncert Exemplar Problems With Answers Hints And Solutions Short Answer Questions

1. How do you account for the strong reducing power of lithium in aqueous solution?

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2. When heated in air, the alkali metals form various oxides. Mention the oxides formed by Li, Na and K.

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3. Complete the following reactions

$(i)O_2^{2-} + H_2O \rightarrow (ii)O_2^- + H_2O \rightarrow$

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4. Lithium resembles magnesium in some of its properties. Mention two such properties and given reasons for this resemblance.

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5. Name an element from group 2 which forms an amphoteric oxide and a water soluble sulphate.

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6. Discuss the trend of the following

(i) Thermal stability of carbonates of Group 2 elements.

(ii) The solubility and the nature of oxides of Group 2 elements.

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7. Why are $BeSO_4$ and $MgSO_4$ readily soluble in water while $CaSO_4$, $SrSO_4$ and $BaSO_4$ are insoluble?

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8. All compounds of alkali metals are easily soluble in water but lithium compounds are more soluble in organic solvents. Explain.

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9. In the Solvay process, can we obtain sodium carbonate directly by treating the solution containing $(NH_4)_2CO_3$ with sodium chloride? Explain.

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10. Write Lewis structure of O_2^- ion and find out oxidation state of each oxygen atom? What is the average oxidation state of oxygen in this ion?

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11. Why Beryllium and magnesium do not impart colour to the flame?

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12. What is the structure of $BeCI_2$ molecule in gaseous and solid state?

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Ncert Exemplar Problems With Answers Hints And Solutions Matching Type Questions

1. Match the elements given in Column I with the properties mentioned in Column II.

$Column I$	$Column II$
$A.\ Li$	1. Insoluble sulphate
$B.\ Na$	2. Strongest monoacidic base
$C.\ Ca$	3. Most negative E^{Θ} value among alkali metals
$D.\ Ba$	4. Insoluble oxalate
	5. $6s^2$ outer electronic configuration

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2. Match the compounds given in Column I with their uses mentioned in Column II.

$Column I$	$Column II$
$A.\ CaCO_3$	1. Densitry ornamental work
$B.\ Ca(OH)_2$	2. Manufacture of sodium carbonate from caustic soda
$C.\ CaO$	3. Manufacure of high quality paper
$D.\ CaSO_4$	4. Used in white washing

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3. Match the elements given in Column I with the colour they impart to the flame given in Column II.

$Column I$	$Column II$
$A.\ Cs$	1. Apple green
$B.\ Na$	2. Violet
$C.\ K$	3. Brick red
$D.\ Ca$	4. Yellow
$E.\ Sr$	5. Crimson red
$F.\ Ba$	6. Blue

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Ncert Exemplar Problems With Answers Hints And Solutions Assertion And Reason Type Questions

1. Assertion (A) The carbonate of lithium decomposes easily on heating to form lithium oxide and CO_2.

Reason (R) Lithium being very small in size polarises large carbonate ion leading to the formation of more stable Li_2O and CO_2.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct

D. A is not correct but R is correct.

Answer: A

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2. Assertion (A) Beryllium carbonate is kept in the atomsphere of carbon dioxide.

Reason (R) Beryllium carbonate is unstable and decomposes to given beryllium oxide and carbon dioxide.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. Both A and R are not correct

D. A is not correct but R is correct.

Answer: A

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Ncert Exemplar Problems With Answers Hints And Solutions Long Answer Questions

1. The s-block elements are characterised by their larger atomic sizes, lower ionisation enthalpies, invariable +1 oxidation state and solubilities of their oxosalts. In the light of these features describe the nature of their oxides, halides and oxosalts.

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2. Present a comparative account of the alkali and alkaline earth metals with respect to the following characteristics.

(a) Tendency to form ionic/covalent compounds (b) Nature of oxides and their solubility in water

(c) Formation of oxoslats

(d) Solubility of oxosalts

(e) Thermal stability of oxosalts

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3. When a metal of group 1 was dissolved in liquid ammonia, the following observations were obtained

(a) Blue solution was obtained initially.

On concentrating the solution, blue colour changed to bronze colour.How do you account for the blue colour of the solution? Given the name of the product formed on keeping the solution for some time.

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4. The stability of peroxide and superoxide of alkali metals increase as we go down to group. Explain giving reason.

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5. When water is added to compound (A) of calcium, solution of compound (B) is formed. When carbon dioxide is passed into the solution, it turns milky due to the formation of compound (C). If excess of carbon dioxide is passed into the solution milkiness disappears due to the formation of compound (D). Identify the compounds A,B,C and D. Explain why the milkiness disppears in the last step.

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6. Lithium hydride can be used to prepare other useful hydrides. Beryllium hydride is one of them. Suggest a route for the preparation of beryllium hydride starting from lithium hydride. Write chemical equations involved in the process.

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7. An element of group 2 forms covalent oxide which is amphoteric in nature and dissolves in water to give an amphoteric hydroxide. Identify the element and write chemical reactions of the hydroxide of the element with an alkali and an acid.

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8. Ions of an element of group 1 participate in the transmission of nerve signals and transport of sugars and aminoacids into cells. This element imparts yellow colour to the flame in flame test and forms an oxide and a peroxide with oxygen. Identify the element and write chemical reaction to show the formation of its peroxide. Why does the element impart colour to the flame?

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9. Why does sodium impart yellow colour in the flame ?

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Additional Questions Very Short Answer Questions Group 1 Elements Alkali Metals

1. Why the elements of second row (first short period) show a number of differences in properties from other members of their respective families ?

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2. What is diagonal relationship due to ?

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3. What is the general name for elements of group 1 ?

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4. Amongst alkali metals , why is lithium regarded as most apt reducing agent in aqueous solutions ?

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5. Name the alkali metals , why is lithium regarded as most apt reducing agent in aqueous solutions?

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6. What happens when KO_2 reacts with water ? Write the balanced chemical equation for the reactions

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7. Name the metal which floats on water without any apparent reaction with it .

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8. Arrange the following in order of the increasing covalent character : MCl , MBr , MF , MI (where M = alkali metal) .

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9. Predict giving reason the outcome of the reaction $LiI + KF \rightarrow$

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10. Name the chief factor responsible for the anomalous behaviour of lithium .

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11. Name the alkali metals which shows diagonal relationship with magnesium .

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12. Give one important ore of each of sodium and potassium .

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13. Alkali and alkaline earth metals cannot be obtained by chemical reduction method . Explain .

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14. Why cannot sodium and potassium be prepared by the electrolysis of their aqueous solutions ?

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15. What are the raw materials needed for the manufacture of washing soda by Solvay process ?

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16. Which alkali metal and alkaline earth metal are radioactive? Give their atomic numbers also.

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Additional Questions Very Short Answer Questions Group 2 Elements Alkaline Earth Metals

1. Name the alkaline earth metal which forms covalent compounds .

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2. state any one reason for alkaline earth metals ions in general to have a greater tendency to from complexes than the alkali metals .

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3. The second ionization enthalpy of calcium is more than that the first and yet calcium forms $CaCl_2$ and not CaCl. Why ?

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4. Name an element which is invariably bivalent and whose oxide is soluble in excess of $NaOH$ and its dipositive ion has a noble gas core.

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5. Name the alkaline earth metal hydroxide which is amphoteric .

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6. Name one reagent or one operation to distinguish between

(i) $BeSO_4$ and $BaSO_4$ (ii) $Be(OH)_2$ and $Ba(OH)_2$ (iii) Na_2CO_3 and $NaHCO_3$

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7. Draw the structure of (i) $BeCl_2$ (vapour) (ii) $BeCl_2$ (s) .

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8. Why does beryllium show similarities with aluminium ?

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9. Name any two ores of magnesium .

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10. Bones contain calcium ions . What do you think would be the anion associated with them ?

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11. Give chemical formula of dolomite and carnallite.

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12. What is quicklime? What happens when we add water to quicklime ?

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13. What is Epsom salt ? What is the action of heat on it ?

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14. What is the formula of gypsum ? What happens when it is heated ?

Watch Video Solution

15. What is the formula of plaster of Paris?

Watch Video Solution

16. What is dead burnt plaster?

Watch Video Solution

17. What are the main ingredients of Portland cement :-

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Additional Questions Short Answer Questions Group 1 Elements Alkali Metals

1. What are s — block elements?

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2. Comment on the statement , "The first element of a group shows anomalous behaviour with respect to the rest of the members of the group ".

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3. What is meant by diagonal relationship in the periodic table ? What is it due to ?

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4. What is the cause of diagonal similarity ?

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5. Why group -1 elements are called alkali metals ?

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6. List some important uses of isotopes.

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7. Name the alkali metals in order of increasing atomic masses and write their electronic configuration .

Watch Video Solution

8. Alkali metals have low ionisation energies. Explain.

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9. Why does alkali metals impart characteristic colour to the flame?

Watch Video Solution

10. 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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11. State as to why

(a) lithium on being heated in air mainly forms the monoxide and not the peroxide

(b) sodium is stored iin kerosene oil .

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12. The mobilities of the alkali metal ions in aqueous solution are L i + < N a + < K + < R b + < C s + because

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13. Account for the following : (i) Alkali metals show only +1 oxidation state .

(ii) The hydroxides of alkali metals are strong bases .

(iii) Na and K impart colour to the flame but Mg does not .

(iv) Li is the best reducing agent in aqueous solution .

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14. List three properties of lithium in which it differs from rest of the alkali metals .

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15. Discuss the diagonal relationship of lithium with magnesium .

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16. Discuss the anomalous behaviour of lithium in its group . Compare the properties of lithium with those of magnesium .

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17. Account for the following : (i) There is a striking similarity between Li and Mg .

(ii) Alkali metals are difficult to reduce .

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18. Enumerate the main difficulties encountered in the extraction of alkali metals by usual methods .

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19. Why alkaline earth metals cannot be obtained by reduction of their oxides with carbon ?

Watch Video Solution

20. Sodium metal cannot be obtained by the electrolysis of aqueous sodium chloride solution . Why ?

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21. Enlist some important uses of sodium and potassium metals.

Watch Video Solution

22. Write equations for the reactions involved in making sodium bicarbonate from sodium chloride .

Watch Video Solution

23. Give reasons for the following :

(i) Sodium carbonate is prepared indirectly through sodium bicarbonate from sodium chloride .

(ii) Potassium carbonate cannot be prepared by Solvay-ammonia process.

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24. Write chemical equations for the preparation of sodium thiosulphate from sodium sulphite .

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25. What happens when sodium thiosulphate is treated with (i) Iodine (ii) Dil.H_2SO_4 (iii) Silver nitrate .

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26. Discuss the biological importance of Na^+ and K^+ ions .

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Additional Questions Short Answer Questions Group 2 Elements Alkaline Earth Metals

1. Why are elements of group 2 known as alkaline earth metals ?

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2. Why do alkaline earth metals not occur in the free state ? Name some important minerals of magnesium .

Watch Video Solution

3. Name the alkaline earth metals and give their electronic configurations

.

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4. The second ionization enthalpy of an alkaline earth metal is higher than its first ionization energy . Why is it so ?

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5. Alkaline earth metals form ionic salts having bivalent cations . Justify the statement by giving reasons in favour of your answer .

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6. Alkali metals are good reducing agents because

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7. Alkaline earth metals always form divalent cations even through their second ionization enthalpies are almost double than their first ionization enthalpies . Explain .

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8. Explain the trends in the solubility of carbonates , sulphates and hydroxides of alkaline earth metals.

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9. In what respects , does $BeCl_2$ differ from the halides of other group 2 elements ?

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10. Like lithium in Group 1 , beryllium shows anomalous behaviour in Group 2 . Write three such properties of beryllium which make it anomalous in the group .

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11. What is diagonal relationship ? Discuss the diagonal relationship between Be and Al giving main similarites.

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12. Beryllium exhibits some similarities with aluminium. Point out four such properties.

Watch Video Solution

13. Give three important uses of each of calcium and magnesium .

Watch Video Solution

14. Give one method of preparing quick lime . What happens when rain water falls on it ?

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15. How is Plaster of Paris prepared ? Describe its chief property due to which it is widely used .

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16. List the raw materials required for the manufacture of Portland cement ? What is the role of gypsum in it

Watch Video Solution

17. Discuss the biological importance of Ca^{2+} and Mg^{2+} ions .

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Additional Questions Long Answer Questions

1. Discuss the position of lithium in the periodic table . How does it differ from other members of the family . To what other elements in the periodic table does it resemble ? Justify your answer with suitable examples .

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2. Give general characteristics of alkali metals . Discuss the anomalous behaviour of lithium . Mention similarties shown by lithium towards magnesium ?

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3. Why is it that s-block elements never occur free in nature ? What are their usual modes of occurrence and how are they generally prepared ?

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4. Mention the general trends in Group 1 and 2 with increasing atomic number with respect to (i) density (ii) melting point (iii) atomic size (iv) ionization enthalpy .

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5. Compare and constract the chemistry of Group 1 metals with those of Group 2 metals with respect to (i) nature of oxides (ii) solubility and thermal stability of carbonates (iii) polarizing power of cations (iv) reactivity and reducing power .

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6. The chemistry of beryllium is not essentially ionic . Justify the statement by making a reference to the nature of its oxide , chloride , fluoride of beryllium .

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7. Give any three points of similarity between beryllium and aluminium and two points of dissimilarity between beryllium and barium .

Watch Video Solution

8. Describe the manufacture of Portland cement , What is its approximate composition ?

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Analytical Questions And Problems With Answers Solutions Questions

1. Lithium is the lighest alkali metal but in aqueous solution , Li^+ has the lowest mobility among alkali metals . Why so ?

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2. Lithium has the highest ionization enthalpy amoung alkali metals , yet is the strongest reducing agent . Why so ?

Watch Video Solution

3. Sodium fire in the laboratory should not be extinguished by pouring water . Why ?

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4. Pure sodium chloride is not hydroscopic but common salt gets wet in rainy season ? Why so ?

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5. To prevent table salt from absorbing moisture and to make it flow freely certain additives are added to table salt . Name one such compound and explain how does it work ?

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6. Potassium superoxide (KO_2) is used as a source of oxygen in submarines , space shuttles and in oxygen musks . How does it work ?

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7. Sodium metal is extracted by the electrolysis of fused chloride but potassium metal cannot be obtained by electrolysis of fused potassium chloride . Why so ?

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8. Potassium metal is a better reducing agent that sodium but still potassium metal can be obtained by reduction of potassium chloride with sodium . How does it happen ?

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9. Unlike sodium carbonate , potassium carbonate cannot be prepared by Solvay ammonia process . Why is it so ?

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10. Why is calcium preferred over sodium to remove last traces of moisture from alcohol ?

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11. Magnesium metal burns in air to form a white ash . On treating the white ash with water , odour of ammonia is detected . Explain .

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12. MgN_2 when reacted with water gives NH_3 and HCl. However, $MgCl_2$ does not give HCl when treated with water at room temperature. Assigne reason.

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13. What is dead burnt plaster?

Watch Video Solution

14. Anhydrous magnesium sulphate is used for drying solvents but anhydrous calcium sulphate cannot used . Why so ?

Watch Video Solution

15. Hydrated calcium chloride when fused loses water of crystallization to form anhydrous calcium chloride but anhydrous magnesium chloride cannot be prepared by heating magnesium chloride hexahydrate . Why so ?

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16. The reaction

proceeds better with KF than with NaF. Why so ?

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17. What is fly ash ?

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Analytical Questions And Problems With Answers Solutions Problems

1. Calcium burns in nitrogen to produce a white powder which dissolves in sufficient water to produce a gas (A) and alkaline solution. The solution on exposure to air produce a thin solid layer of (B) on the surface. Indentity the compound (A) and (B)

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Competition Focus Jee Main And Advance Medical Entrance I Multiple Choice Questions With One Correct Answer

1. Which of the following sets will have highest hydration energy and highest ionic radii

A. Na and Li

B. Li and Rb

C. K and Na

D. Cs and Na

Answer: B

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Competition Focus Jee Main And Advance Medical Entrance Multiple Choice Questions With One Correct Answer

1. The seqeunce of ionic mobility in the aqueous solution is

A. $Rb^+ > K^+ > Cs^+ > Na^+$

B. $Na^+ > K^+ > Rb^+ > Cs^+$

C. $K^+ > Na^+ > Rb^+ > Cs^+$

D. $Cs^+ > Rb^+ > K^+ > Na^+$

Answer: D

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2. Ionic mobility of which of the following alkali metal ions is lowest when aqueous solution of their salts are put under an electric field ?

A. K

B. Rb

C. Li

D. Na

Answer: C

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3. The ease of adsorption of the hydrated alkali metal ions on ion-exchange resins follows the order:

A. $Li^+ < Na^+ < K^+ < Rb^+$

B. $Rb^+ < K^+ < Na^+ < Li^+$

C. $K^+ < Na^+ < Rb^+ < Li^+$

D. $Na^+ < Li^+ < K^+ < Rb^+$

Answer: B

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4. The increasing order of the density of the alkali metal is

A. $Li < K < Na < Rb < Cs$

B. $Li < Na < K < Rb < Cs$

C. $Cs < Rb < Na < K < Li$

D. $Cs < Rb < K < Na < Li$

Answer: A

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5. For alkali metals, which of the following trends is incorrect?

A. Hydration energy : $Li > Na > K > Rb$

B. Ionization energy : $Li > Na > K > Rb$

C. Density : $Li < Na < K < Rb$

D. Atomic size : $Li < Na < K < Rb$

Answer: B

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6. The salt of alkali metal gives violet colour in the flame test. Its aqueous solution gives a white precipitate with barium chloride in hydrochloric acid medium. The salt is

A. K_2SO_4

B. KCl

C. Na_2SO_4

D. K_2CO_3

Answer: A

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7. The salt of an alkali metal gives yellow colour in the flame test. Also its aqueous solution gives an insoluble white precipitate with barium chloride in acidic medium. The salt is

A. NaCl

B. K_2SO_4

C. Na_2SO_4

D. Li_2SO_4

Answer: C

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8. The reaction between sodium and water can be made less vigorous by

A. lowering the temperature

B. adding a little alcohol

C. amalgamating sodium

D. adding a little acetic acid

Answer: C

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9. Alkali metals have negative reduction potential and hence they behave as

A. oxidising agent

B. Lewis bases

C. reducing agents

D. electrolytes

Answer: C

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10. The correct order of reducing character of alkali metals is

A. $Rb < K < Na < Li$

B. $Li < Na < K < Rb$

C. $Na < K < Rb < Li$

D. $Rb < Na < K < Li$

Answer: C

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11. Which one of the alkali metals forms only the normal oxide, M_2O, on heating in air ?

A. Rb

B. K

C. Li

D. Na

Answer: C

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12. The main oxides formed on combustion of Li,Na and K in excess of air respectively are

A. Li_2O, Na_2O and KO_2

B. LiO_2, Na_2O_2 and K_2O

C. Li_2O_3, Na_2O_2 and KO_2

D. Li_2O, Na_2O_2 and KO_2

Answer: D

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

A. H_2O_2

B. Na_2O

C. Na_2O and O_3

D. $NaOH$ and Na_2CO_3

Answer: D

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14. Among the following compounds, the one that gets hydrolysed to form metallic hydroxide, hydrogen peroxide and oxygen is

A. Na_2O

B. Na_2O_2

C. Li_2O

D. KO_2

Answer: D

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

A. absorbs CO_2 and increases O_2 content

B. eliminates moisture

C. absorbs CO_2

D. produces ozone

Answer: A

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16. Which one of the following acts as a reducing as well as oxidising agent ?

A. $NaNO_3$

B. Na_2O

C. Na_2O_2

D. KNO_3

Answer: C

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17. The alkali metals form salt like hydrides by the direct synthesis at elevated temperature. The termal stability of these hydrides decreases in which of the following orders ?

A. $NaH > LiH > KH > RbH > CsH$

B. $LiH > NaH > KH > RbH > CsH$

C. $CsH > RbH > KH > NaH > LiH$

D. $KH > NaH > LiH > CsH > RbH$

Answer: B

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18. Which of the following statements is false regarding alkali metals ?

A. Alkali metals are soft and can be cut with the help of knife

B. Alkali metals do not occur in free state in nature

C. Alkali metals are highly electropositive

D. Alkali metal hydrides are covalent in character

Answer: D

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19. The stability of the following alkali metal chlorides follows the order:

A. $LiCl > KCl > NaCl > CsCl$

B. $CsCl > KCl > NaCl > LiCl$

C. $NaCl > KCl > LiCl > CsCl$

D. $KCl > CsCl > NaCl > LiCl$

Answer: D

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20. In the case of alkali metals, the covalent character decreases in the order.

A. $MI > MBr > MCl > MF$

B. $MCl > MI > MBr > MF$

C. $MF > MCl > MBr > MI$

D. $MF > MCl > MI > MBr$

Answer: A

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21. The correct order of increasing polarising power of the cations in the following $AlCl_3$, $MgCl_3$, $NaCl$ is

A. $AlCl_3 < MgCl_3 < NaCl$

B. $MgCl_2 < NaCl < AlCl_3$

C. $NaCl < MgCl_2 < AlCl_3$

D. $NaCl < AlCl_3 < MgCl_2$

Answer: C

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22. In the replacement reaction ,

The reaction will be most favourable if M happens to be

A. Na

B. K

C. Rb

D. Li

Answer: C

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23. Which of the following compound is most stable ?

A. LiF

B. LiCl

C. LiBr

D. LiI

Answer: A

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24. The low solubility of LiF and that of CsI in water are respectively due to which of the properties of the alkali metal ions?

A. Higher hydration enthalpy of Li^+ , higher lattice enthalpy of Cs^+

B. Smaller hydration enthalpy of Li^+ , higher lattice enthalpy of Cs^+

C. Smaller lattice enthalpy of Li^+ , higher hydration enthalpy of Cs^+

D. Smaller hydration enthalpy of Li^+ , smaller lattice enthalpy of Cs^+

Answer: A

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25. The alkali metal halide that is soluble in pyridine is

A. NaCl

B. LiCl

C. KCl

D. CsI

Answer: B

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

A. Blue coloured solution is obtained

B. Na^+ ions are formed in the solution

C. Liquid ammonia becomes a good conductor of electricity

D. Liquid ammonia remains diamagnetic .

Answer: C

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27. In organic reactions , metallic lithium in liquid ammonia behaves as

A. oxidising agent

B. reducing agent

C. bleaching agent

D. dehydrating agnet

Answer: B

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28. Mg and Li are similar in their properties due to

A. same e/m ratio

B. same electron affinity

C. same group

D. same ionic potential

Answer: D

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29. Both lithium and magnesium display several similar properties due to the diagonal relationship, however, the one which is incorrect is

A. both form nitrides

B. nitrates of both Li and Mg yield NO_2 and O_2 on heating

C. both form basic carbonates

D. both form soluble bicarbonates

Answer: C

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30. The products obtained on heating $LiNO_3$ will be

A. $LiNO_2 + O_2$

B. $Li_2O + NO_2 + O_2$

C. $Li_3N + O_2$

D. $Li_2O + NO + O_2$

Answer: B

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31. Which of the following alkali metal carbonate is the least stable and decomposes readily

A. Cs_2CO_3

B. Na_2CO_3

C. K_2CO_3

D. Rb_2CO_3

Answer: D

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32. Washing soda is

A. $Na_2CO_3.\ 7H_2O$

B. $Na_2CO_3.\ 10H_2O$

C. $Na_2CO_3.\ 3H_2O$

D. Na_2CO_3

Answer: B

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33. The salt added to table salt to make it flow freely in rainly reason is

A. KCl

B. KI

C. $Ca_3(PO_4)_2$

D. Na_3PO_4

Answer: C

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Competition Focus Jee Main And Advance Medical Entrance Multiple Choice Questions With One Correct Answer Group 2 Elements Alkaline Earth Metals

1. Be^{2+} is isoelectronic with which of the following ions ?

A. H^+

B. Li^+

C. Na^+

D. Mg^{2+}

Answer: B

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2. The second ionization enthalpy of which of the following alkaline earth metals is the highest?

A. Be

B. Mg

C. Ca

D. Sr

Answer: A

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3. The alkaline earth metal which has the least density is

A. Mg

B. Be

C. Sr

D. Ca

Answer: D

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4. The set representing the correct order of ionic radii is

A. $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$

B. $Li^+ > Na^+ > Mg^{2+} > Be^{2+}$

C. $Mg^{2+} > Be^{2+} > Li^+ > Na^+$

D. $Li^+ > Be^{2+} > Na^+ > Mg^{2+}$

Answer: A

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5. The hydration energy of Mg^{+2} is greater than that of

A. Al^{3+}

B. Na^{+}

C. Be^{2+}

D. Mg^{3+}

Answer: B

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6. Match the flame colours of the alkaline earth metal salts in the Bunsen burner .

(p)	Calcium	1.	Brick red
(q)	Strontium	2.	Apple
(r)	Barium	3.	Crimson

A. p-1 , q - 3 , r-2

B. p-3 , q - 1 , r-2

C. p-2 , q -3 , r - 1

D. p-1 , q-2 , r-3

Answer: A

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

A. $BeCl_2$ and $SrCl_2$

B. $BeCl_2$ and $MgCl_2$

C. $CaCl_2$ and $BaCl_2$

D. $BaCl_2$ and $SrCl_2$

Answer: B

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8. Magnesium reacts with an element (X) to form an ionic compound. If the ground state electronic configuration of (X) is $1s^2, 2s^2 2p^3$, the

simplest formula for this compound is

A. Mg_2X_3

B. MgX_2

C. Mg_2X

D. Mg_3X_2

Answer: D

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9. The least ionic chloride is given by

A. Mg

B. Ca

C. Be

D. Sr

Answer: C

Watch Video Solution

10. Among the following alkaline earth metal halides, one which is covalent and solube in organic solvents is:

A. Be

B. Mg

C. Ca

D. Sr

Answer: A

Watch Video Solution

11. Which of the following is covalent ?

A. NaCl

B. KCl

C. $BeCl_2$

D. $HgCl_2$

Answer: C

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12. Which of the following compounds has the lowest melting point ?

A. CaF_2

B. $CaCl_2$

C. $CaBr_2$

D. CaI_2

Answer: D

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13. For tow ionic solids CaO and KI, identify the wrong statement among the following ?

A. Lattice energy of CaO is much higher than that of KI

B. KI is soluble in benzene

C. CaO has high m.p.

D. KI has high m.p.

Answer: D

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14. Which of the following oxides is most acidic in nature ?

A. MgO

B. BeO

C. BaO

D. CaO

Answer: B

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15. Property of the alkaline earth metals that increases with their atomic number is

A. solubility of their hydroxide in water

B. solubility of their sulphates in water

C. ionization energy

D. electronegativity

Answer: B

Watch Video Solution

16. Which of the following is the weakest base ?

A. $Ca(OH)_2$

B. KOH

C. $LiOH$

D. $Sr(OH)_2$

Answer: A

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17. Which of the following is the strongest base ?

A. NaOH

B. KOH

C. $Ca(OH)_2$

D. $Mg(OH)_2$

Answer: C

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18. The decreasing order of basic character of K_2O BaO , CaO and MgO is

A. $K_2O > BaO > CaO > MgO$

B. $K_2O > CaO > BaO > MgO$

C. $MgO > BaO > CaO > K_2O$

D. $MgO > CaO > BaO > K_2O$

Answer: B

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19. Which one of the following order represents the correct sequence of the increasing basic nature of the given oxides?

A. $MgO < K_2O < Al_2O_3 < Na_2O$

B. $Na_2O < K_2O < MgO < Al_2O_3$

C. $K_2O < Na_2O < Al_2O_3 < MgO$

D. $Al_2O_3 < MgO < Na_2O < K_2O$

Answer: A

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20. In which of the following pairs, each member produces the same gas when reacted with water?

A. K, KO_2

B. Na, Na_2O_2

C. Ca, CaH_2

D. Ba, BaO_2

Answer: C

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21. When 1 mole of a substance (X) was treated with an excess of water, 2 moles of readily combustible gas were produced along with solution which when reacted with CO_2 gas produced a white turbidity. The substance (X) could be

A. Ca

B. CaH_2

C. $Ca(OH)_2$

D. $Ca(NO)_2$

Answer: B

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22. Among $CaH_2, BeH_2, BaH_2,$ the order of ionic character is

A. $BeH_2 < CaH_2 < BaH_2$

B. $CaH_2 < BaH_2 < CaH_2$

C. $BeH_2 < BaH_2 < CaH_2$

D. $BaH_2 < BeH_2 < CaH_2$

Answer: A

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23. The solubility in water of sulphate down the Be group is $Be > Mg > Ca > Sr > Ba.$

A. increase in melting group

B. increase in ionization energy

C. decreasing lattice energy

D. decreasing hydration enthalpy .

Answer: D

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24. Solubility of the alkaline earth's metal sulphates in water decreases in the sequence

A. $Sr > Ca > Mg > Ba$

B. $Ba > Mg > Sr > Ca$

C. $Mg > Ca > Sr > Ba$

D. $Ca > Sr > Ba > Mg$

Answer: C

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25. Which one of the following alkaline earth metal sulphates has its hydration enthalpy greater than its lattice enthalpy?

A. $BaSO_4$

B. $SrSO_4$

C. $CaSO_4$

D. $BeSO_4$

Answer: D

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26. Which of the following compounds are readily soluble in water?

A. $BeSO_4$

B. $MgSO_4$

C. $SrSO_4$

D. $BaSO_4$

Answer: A

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27. Choose the incorrect statement in the following :

A. BeO is almost insoluble but $BeSO_4$ is soluble in water

B. BaO is soluble but $BaSO_4$ is insoluble in water

C. Both Li and Mg form solid hydrogen carbonates

D. Both LiCl and $MgCl_2$ are deliquescent

Answer: D

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

A. $K_2CO_3 < MgCO_3 < CaCO_3 < BeCO_3$

B. $BeCO_3 < MgCO_3 < K_2CO_3 < CaCO_3$

C. $BeCO_3 < MgCO_3 < CaCO_3 < K_2CO_3$

D. $MgCO_3 < BeCO_3 < CaCO_3 < K_2CO_3$

Answer: C

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29. The solution of which does not produce precipitate when treated with K_2CO_3 is

A. $BaCl_2$

B. $CaBr_2$

C. $MgCl_2$

D. Na_2SO_4

Answer: D

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30. When $BaCl_2$ is added to an aqueous salt solution , a white ppt. is obtained . The anion amoung CO_3^{2-} , SO_3^{2-} and SO_4^{2-} that was present in the solution can be

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31. Which of the following on thermal decomposition yields a basic as wel as acidic oxide?

A. $KClO_3$

B. $CaCO_3$

C. NH_4NO_3

D. $NaNO_3$

Answer: B

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32. Which among the following is thermally least stable?

A. K_2CO_3

B. Na_2CO_3

C. Cs_2CO_3

D. Li_2CO_3

Answer: D

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33. On heating which of the following release CO_2 most easily ?

A. Na_2CO_3

B. $MgCO_3$

C. $CaCO_3$

D. K_2CO_3

Answer: B

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34. Which of the following is least thermally stable ?

A. $MgCO_3$

B. $CaCO_3$

C. $SrCO_3$

D. $BeCO_3$

Answer: D

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35. A sodium salt of an unknown anion when treated with $MgCl_2$ gives white precipitate only on boiling. The anion is

A. SO_4^{2-}

B. HCO_3^-

C. CO_3^{2-}

D. NO_3^-

Answer: B

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36. The compound A on heating gives a colourless gas and a residue that is dissolved in water to obtain B. Excess of CO_2 is bubbled through aqueous solution of B,C is formed which is recovered in the solid form.Solid C on gentle heating gives back A. The compound is

A. $CaCO_3$

B. Na_2CO_3

C. K_2CO_3

D. $CaSO_4.2H_2O$

Answer: A

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37. Be and Al exhibit diagonal relationship . Which of the following statements about them is/are not true ?

(i) Both react with HCl to liberate H_2.

(ii) They are made passive by HNO_3.

(iii) Their carbides give acetylene on treatment with water .

(iv) Their oxides are amphoteric .

A. (iii) and (iv)

B. (i) and (iii)

C. (i) only

D. (ii) and (iii)

Answer: D

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38. In context with beryllium, which one of the following statements is incorrect ?

A. It is rendered passive by nitric acid

B. It forms Be_2C

C. Its salts rarely hydrolyze

D. Its hydride is electron-deficient and polymeric .

Answer: C

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39. which one of the following represents the composition of carnallite mineral?

A. $K_2O.\ Al_2O_3.\ 6SiO_2$

B. KNO_3

C. $K_2SO_4.\ MgSO_4.\ MgCl_2.\ 6H_2O$

D. $KCl.\ MgCl_2.\ 6H_2O$

Answer: D

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40. Calcium is obtained by the

A. roasting by limestone

B. electrolysis of a solution of calcium chloride in H_2O

C. reduction of calcium chloride with carbon

D. electrolysis of molten anhydrous calcium chloride .

Answer: D

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41. Which of the substances can be used for drying neutral or basic gases ?

A. Calcium carbonate

B. Sodium carbonate

C. Sodium bicarbonate

D. Calcium oxide .

Answer: D

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

A. dolomite

B. a marble statue

C. calcined gypsum

D. sea shells

Answer: C

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43. Suspension of slaked lime in water is known as

A. lime water

B. quick lime

C. milk of lime

D. aqueous solution of slaked lime

Answer: C

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44. The reaction of Cl_2 and X gives bleaching powder . X is

A. CaO

B. $Ca(OH)_2$

C. $Ca(OCl)_2$

D. $Ca(ClO_3)_2$

Answer: B

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45. Which one of the following is present as an active ingredient in bleaching powder for bleaching action?

A. $CaOCl_2$

B. $Ca(OCl)_2$

C. CaO_2Cl

D. $CaCl_2$

Answer: B

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46. Bleaching powder loses its power on keeping for a long time because

A. it changes into calcium hypochlorate

B. it changes into calcium chloride and calcium hydroxide

C. it absorbs moisture

D. it changes into calcium chloride and calcium chlorate

Answer: D

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47. The product obtained a result of a reaction of nitrogen with CaC_2 is

A. $CaCN_3$

B. Ca_2CN

C. $CaCN_2$

D. $CaCN$

Answer: C

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48. Plaster of Paris is represented as

A. $CaSO_4.\ 2H_2O$

B. $CaSO_4.\ H_2O$

C. $CaSO_4.\ \frac{1}{2}H_2O$

D. $CaSO_4$

Answer: C

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49. Dead burnt plaster is

A. $CaSO_4$

B. $CaSO_4.\ \frac{1}{2}H_2O$

C. $CaSO_4.\ H_2O$

D. $CaSO_4.\ 2H_2O$

Answer: A

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50. Among the following compounds of cement which is present in the highest amount

A. Ca_2SiO_4

B. Ca_3SiO_5

C. Al_2O_3

D. $Ca_3Al_2O_6$

Answer: B

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

A. converting sand into silicic acid

B. keeping it cool

C. developing interlocking needle like crystals of hydrated silicates

D. hydrating sand and gravel mixed with cement

Answer: C

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52. The element responsible for the neuromuscular function in the body is

A. calcium

B. magnesium

C. potassium

D. sodium

Answer: A

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53. The function of Sodium pump is a biological process operating in each and every cell of all animals. Which of the following biologicaly important ions is also constant f this pump ?

A. K^+

B. Fe^{2+}

C. Ca^{2+}

D. Mg^{2+}

Answer: A

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54. Which of the following statements is false ?

A. Ca^{2+} ions are not important in maintaining the regular beating of the heart

B. Mg^{2+} ions are important in the green parts of the plants

C. Mg^{2+} ions form a complex with ATP

D. Ca^{2+} ions are important in blood clotting .

Answer: A

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Competition Focus Jee Main And Advance Medical Entrance Ii Multiple Choice Questions With One Or More Than One Correct Answer

1. Which of the folowing elements form peroxides when heated in excess of air?

A. K

B. Na

C. Ba

D. Ca

Answer: B::C::D

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2. RbO_2 is a

A. peroxide and paramagnetic

B. peroxide and diamagnetic

C. superoxide and paramagnetic

D. superoxide and diamagnetic

Answer: C

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3. The pair(s) of reagents that yield paramagnetic species is/are

A. Na and excess of NH_3

B. K and excess of O_2

C. Cu and dilute HNO_3

D. O_2 and 2-ethylanthraquinol

Answer: A::B::C

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4. Flame test is not given by

A. Be

B. K

C. Sr

D. Mg

Answer: A::D

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5. The alkaline earth metals forming ionic oxides are

A. BeO

B. MgO

C. CaO

D. SrO

Answer: B::C::D

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6. Which of the following chlorides are soluble in pyridine ?

A. LiCl

B. CsCl

C. NaCl

D. $BeCl_2$

Answer: A::D

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7. Which are correct statements for Be and Al ?

A. Both are rendered passive by conc. HNO_3

B. Both have sp-hybridization in their compounds

C. Both form amphoteric oxides

D. Both form ionic hydrides

Answer: A::C

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8. Which of the following groups of elements have properties that are most similar?

A. Na, K , Cs

B. Mg , Sr , Ba

C. Be , Al , Ca

D. Be, Ra ,Cs

Answer: A::B::C

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9. Magnesium burns in the atmoshphere of the following gases?

A. CO_2

B. N_2O

C. N_2

D. SO_2

Answer: A::B::C::D

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Competition Focus Jee Main And Advance Medical Entrance Iii Multiple Choice Questions Based On The Given Passage Comprehension

1. Alkali and alkaline earth metals along with hydrogen and helium constitute s-block elements . They have low ionization enthalpies and hence exhibit characteristic flame colouration . They have highly negative electrode potentials and hence are strong reducing agents . Their solutions in liquid ammonia are conducting and also act as strong reducing agents than hydrogen , they are usually prepared by electrolysis of their fused chlorides . Their oxides are basic and the basic strength increases down the group . The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends . The carbonates of alkaline earth metals and lithium carbonate decompose on heating while the carbonates of other alkali metals do not decompose on heating . The bicarbonates of both alkali and alkaline earth metals on heating give carbonates .

The basic character of the oxides , MgO , SrO , K_2O, NiO and Cs_2O increases in the order :

A. $MgO > SrO > K_2O > NiO > Cs_2$

B. $Cs_2 < K_2O < MgO < SrO < NiO$

C. $NiO < MgO < SrO < K_2O < Cs_2O$

D. $K_2O < NiO < MgO < SrO < Cs_2$

Answer: C

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2. Alkali and alkaline earth metals along with hydrogen and helium constitute s-block elements . They have low ionization enthalpies and hence exhibit characteristic flame colouration . They have highly negative electrode potentials and hence are strong reducing agents . Their solutions in liquid ammonia are conducting and also act as strong reducing agents than hydrogen , they are usually prepared by electrolysis of their fused chlorides . Their oxides are basic and the basic strength increases down the group . The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends . The carbonates of alkaline earth metals and lithium carbonate decompose on heating while the carbonates of other alkali metals do not decompose on heating . The bicarbonates of both alkali and alkaline earth metals on heating give

carbonates .

Which of the following are arranged in increasing order of solubilities ?

A. $CaCO_3 < KHCO_3 < NaHCO_3$

B. $NaHCO_3 < KHCO_3 < CaCO_3$

C. $KHCO_3 < NaHCO_3 < CaCO_3$

D. $CaCO_3 < NaHCO_3 < KHCO_3.$

Answer: D

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3. Alkali and alkaline earth metals have low ionisation enthalpies and hence exhibit characteristic flame colouration. They have high negative electrode potentials and hence are strong reducing agents. They dissolve in liquid ammonia to give a solution which conducts electricity and act as strong reducing agent. being stronger reducing agent than hydrogen, they are usually prepared by the electrolysis of their fused chlorides. Their oxides are basic and the basic strength increases down the group.

The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends. only the carbonates of Li and alkaline earth metals decompose on heating. The bicarbonates of both alkali and alkaline earth metals on heating give carbonates.

The compound insoluble in acetic acid is

A. calcium oxide

B. calcium carbonate

C. calcium oxalate

D. calcium hydroxide .

Answer: C

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4. Alkali and alkaline earth metals along with hydrogen and helium constitute s-block elements . They have low ionization enthalpies and hence exhibit characteristic flame colouration . They have highly negative electrode potentials and hence are strong reducing agents . Their

solutions in liquid ammonia are conducting and also act as strong reducing agents than hydrogen , they are usually prepared by electrolysis of their fused chlorides . Their oxides are basic and the basic strength increases down the group . The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends . The carbonates of alkaline earth metals and lithium carbonate decompose on heating while the carbonates of other alkali metals do not decompose on heating . The bicarbonates of both alkali and alkaline earth metals on heating give carbonates .

The metal that produces red-violed colour in the non-luminous flame is

A. Ba

B. Rb

C. Mg

D. K

Answer: B

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5. Alkali and alkaline earth metals along with hydrogen and helium constitute s-block elements . They have low ionization enthalpies and hence exhibit characteristic flame colouration . They have highly negative electrode potentials and hence are strong reducing agents . Their solutions in liquid ammonia are conducting and also act as strong reducing agents than hydrogen , they are usually prepared by electrolysis of their fused chlorides . Their oxides are basic and the basic strength increases down the group . The solubility of carbonates and sulphates of alkali and alkaline earth metals show opposite trends . The carbonates of alkaline earth metals and lithium carbonate decompose on heating while the carbonates of other alkali metals do not decompose on heating . The bicarbonates of both alkali and alkaline earth metals on heating give carbonates .

Which of the following process is used in the extractive metallurgy of magnesium ?

A. fused salt electrolysis

B. self reduction

C. aqueous solution electrolysis

D. thermite reduction

Answer: A

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6. According to Fajans'rules, the percentage of covalent character in an ionic compound increase if the cation is highly charged or small in size and the anion is large or cation has pseudoinert gas configuration. As a result of the increased covalent character, solubility in less polar solvent increases and the melting point decreases.

Which of the following has the lowest melting point?

A. LiCl

B. NaCl

C. KCl

D. RbCl .

Answer: A

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7. According to Fajans'rules, the percentage of covalent character in an ionic compound increase if the cation is highly charged or small in size and the anion is large or cation has pseudoinert gas configuration. As a result of the increased covalent character, solubility in less polar solvent increases and the melting point decreases.

The correct order of increasing ionic character is

A. $BeCl_2 < MgCl_2 < CaCl_2 < BaCl_2$

B. $BeCl_2 < MgCl_2 < BaCl_2 < CaCl_2$

C. $BeCl_2 < BaCl_2 < MgCl_2 < CaCl_2$

D. $BaCl_2 < CaCl_2 < MgCl_2 < BeCl_2$

Answer: A

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8. According to Fajans'rules, the percentage of covalent character in an ionic compound increase if the cation is highly charged or small in size and the anion is large or cation has pseudoinert gas configuration. As a result of the increased covalent character, solubility in less polar solvent increases and the melting point decreases.

The correct order of decreasing covalent character is

A. LiCl , NaCl, $BeCl_2$

B. $BeCl_2, NaCl, LiCl$

C. $NaCl, LiCl, BeCl_2$

D. $BeCl_2, LiCl, NaCl$

Answer: D

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9. According to Fajan rules , the percentage of covalent character in an ionic compound increases . If the cation is highly charged or the cation is small and the anion is large or the cation has pseudo inert gas configuration . As a result of increased covalent character , the melting point decreases and solubility in less polar solvent increases .

Based on lattice energy and other consideration , which one of the following alkali metal chlorides is expected to have the highest melting point ?

A. LiCl

B. NaCl

C. KCl

D. RbCl .

Answer: B

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10. According to Fajan rules , the percentage of covalent character in an ionic compound increases . If the cation is highly charged or the cation is small and the anion is large or the cation has pseudo inert gas configuration . As a result of increased covalent character , the melting point decreases and solubility in less polar solvent increases .

The highest lattice energy corresponds to

A. MgO

B. CaO

C. SrO

D. BaO

Answer: A

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Competition Focus Jee Main And Advance Medical Entrance Iv Matching Type Questions

1. Match the following columns

List I Substances		List-II Composition
(A) Plaster of Paris	(i)	$CaSO_4.2\ H_2O$
(B) Epsomite	(ii)	$CaSO_4.1/2\ H_2O$
(C) Kieserite	(iii)	$MaSO_4.7\ H_2O$
(D) Gypsum	(iv)	$MgSO_4.H_2O$
	(v)	$CaSO_4$

A. $\begin{matrix}(A) & (B) & (C) & (D)\\ (iii) & (iv) & (i) & (ii)\end{matrix}$

B. $\begin{matrix}(A) & (B) & (C) & (D)\\ (ii) & (iii) & (iv) & (i)\end{matrix}$

C. $\begin{matrix}(A) & (B) & (C) & (D)\\ (i) & (ii) & (iii) & (v)\end{matrix}$

D. $\begin{matrix}(A) & (B) & (C) & (D)\\ (iv) & (iii) & (ii) & (i)\end{matrix}$

Answer: B

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Competition Focus Jee Main And Advance Medical Entrance Vi Integer Type Questions

1. The number of alkali metals forming superoxides on heating with dioxygen is

Li ,Na , K , Rb ,Cs

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2. How many of the follosing s-block elements to do not give characteristics colours in the flame test

Li,Be,Ca,Sr,Mg,Na,K,Ba

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3. How many of the following hydroxides is/are amphoteric in character?

CsOH , LiOH , $Ca(OH)_2, Be(OH)_2, Mg(OH)_2, Ba(OH)_2, Sr(OH)_2, Ba(OH)_2, KOH,$.

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4. How many of the following metals when heated in an atmosphere of N_2 gas form nitrides ?

$Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba$

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5. The sulphates of which of the following metals dissolve in water .

$SrSO_4, K_2SO_4, BeSO_4, Li_2SO_4, MgSO_4, BaSO_4, Na_2SO_4, CaSO_4, Rb_2S$

.

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Competition Focus Jee Main And Advance Medical Entrance Vii Numerical Value Type Questions

1. The enthalpy of formation of hypothetical $CaCl(s)$ is theoretically found to be $-188kJmol^{-1}$ and $\Delta_f H^\circ$ for $CaCl_2(s) is -795kJmol^{-1}$.

Calculate $\Delta_f H^\circ$ (in kJ mol^{-1}) for the disproportionation reaction .

$2CaCl(s) \rightarrow CaCl_2 + Ca(s)$

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Assertion Reason Type Question Type 1

1. Assertion (A): Sodium metal is softer than potassium metal.

Reason (R): Metallic bond in potassium is weaker than in sodium.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: d

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2. Assertion (A): Sodium reacts with oxygen to form Na_2O_2 whereas potassium reacts with oxygen to form KO_2.

Reason (R): Potassium is more reactive than sodium.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: b

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3. Statement I: Alkali metals dissolve in liquid ammonia to give blue solutions.

Statement II: Alkali metals in liquid ammonia give solvated species of the type $\left[M(NH_3)_n\right]^{\oplus}$ (M = alkali metals).

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: b

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4. Assertion (A): $CuCI$ is more covalent than $NaCI$.

Reason (R): $Na^{\oplus}$ ion more polarising than $Cu^{\oplus}$ ion.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: c

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5. Assertion (A): Among the alkali metals caesium salts exhibit the maximum conductance in aqueous solution.

Reaction (R): The radii of the hydrated caesium is the highest among alkali metals.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: c

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6. Assertion (A): Be and Mg impart characterstic colour to the flame.

Reason (R): As compared to other alkaline earth metals, ionisation enthalpy of Be and Mg is low.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: d

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7. Statement- 1 . $Be(OH)_2$ is soluble both in HCl and NaOH .

Statement- 2 . $Be(OH)_2$ is amphoteric in nature .

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: a

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8. Be forms $[BeF_4]^{2-}$, but Al forms $[AiF_6]^{3-}$.

Reason (R): Be does not have d-orbitals in the valence shell but Al has.

A. Statement-1 is True, Statement-2 is True, Statement-2 is a correct explanation for statement-1.

B. Statement-1 is True, Statement-2 is True, Statement-2 is not a correct explanation for statement-1.

C. Statement-1 is True, Statement-2 is False.

D. Statement-1 is False, Statement-2 is True.

Answer: a

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Assertion Reason Type Question Type 2

1. Assertion (A): Alkali metals impart colour to the flame.

Reason (R): The ionisation energies are low.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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2. Assertion (A): Sodium reacts with oxygen to form Na_2O_2 whereas potassium reacts with oxygen to form KO_2.

Reason (R): Potassium is more reactive than sodium.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: b

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3. Assertion . K , Rb and Cs form superoxides .

Reason . The stability of the superoxides increases from K to Cs due to decrease in lattice energy .

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: c

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4. Statement I $LiCl$ is predomionantly a covalent compound.

Statement II Electronegatvity difference between Li and Cl is too small

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: c

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5. Assertion (A) : The mobility of $Na^{\oplus}$ is lower than that of $K^{\oplus}$ ion.

Reason (R) : The ionic mobility depends upon the effective radius of the ion.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: b

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6. Assertion . Among the alkali metals , lithium salts exhibit the least electrical conductance in aqueous solutions .

Reason . Smaller the radius of the hydrated cation , lower is the electrical conductance in aqueous solutions .

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: c

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7. Assertion . Li resembles Mg.

Reason . Li^+ has approximately the same size as Mg^{2+}

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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8. Assertion (A): Na_2CO_3 and Li_2CO_3 are thermally stable.

Reason (R): Both the carbonates are salts of large cations and large anions.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: d

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9. Assertion . Potassium carbonate cannot be manufactured by a process similar to the Solvay's soda ammonia process .

Reason . Potassium hydrogen carbonate is less soluble in water than sodium hydrogen carbonate .

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: c

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10. Assertion (A): In rainy season, common salt becomes damp after sometime on keeping.

Reason (R): Common salt (NaCI) is hygroscopic in nature.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: c

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11. Assertion . In the electrolysis of aqueous NaCl , Na is preferentially discharged at mercury cathode forming sodium amalgam .

Reason . It is due to the fact that hydrogen has a high overvoltage at mercury cathode .

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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12. Assertion (A): magnesium keeps on burning in CO_2.

Reason (R): Magnesium reduces CO_2 to C.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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13. Assertion (A): Calcium and magnesium oxides are not reduced by carbon.

Reason (R): Calcium and magnesium oxides react with carbon to form their respected carbides.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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14. Assertion . CaF_2 has been given the name fluorspar .

Reason. Solid CaF_2 emits light when heated .

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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15. Assertion (A): Na_2SO_4 is soluble in water while $BaSO_4$ is insoluble.

Reason (R): Latice enthalpy of $BaSO_4$ exceeds its hydration enthalpy.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: a

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16. Assertion (A): Sulphur is estimates as $BaSO_4$ and not as $MgSO_4$.

Reason (R): The ionic radius of Mg^{2+} is less than that of Ba^{2+}

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: b

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17. Assertion Bleaching powder is a mixed salt.

Reason In the presence of $CoCl_2$ bleaching powder decomposes to give $CaCl_2$ and O_2

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: b

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18. Assertion (A): Magnesium can be obtained by the electronlysis of aqueous solution of $MgCl_2$.

Reason (R): The electrode potential of Mg^{2+} is much higher than $H^{\oplus}$.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: d

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19. Assertion (A): magnesium is not present in enamel of human teeth. Reason (R): Magnesium is an essential elements for biological functions of human beings.

A. If both assertion and reason are true, and reason is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If assertion is true, but reason is false

D. If both assertion and reason are false.

Answer: b