CHEMISTRY

BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

ALKALI AND ALKALINE EARTH METALS

Evalution Choose The Best Answer

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

A. Hydration energy : LigtNagtKgtRb

B. Ionisation energy: LigtNagtKgtRb

C. Density: LiltNaltKltRb

D. Atomic size: LiltNaltKltRb

Answer: C

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2. Which of the following statements is incorrect ?

A. Li^+ has minimum degree of hydration among alkali metal cations.

B. The oxidation state of K in KO_2 is +1

C. Sodium is used to make Na/Pb alloy

D. $MgSO_4$ is readily soluble in water

Answer: A

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3. Which of the following compounds will not evolve H_2 gas on reaction with alkali metals ?

A. ethanoic acid

B. ethanol

C. phenol

D. none of these

Answer: D

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4. Which of the following has the highest tendency to give the reaction $M^{+}_{(g)} \xrightarrow[\text{Medium}]{\text{Aqueous}} M^{+}_{(aq)}$

A. Na

B. Li

C. Rb

D. K

Answer: B

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5. sodium is stored in

A. alcohol

B. water

C. kerosene

D. none of these

Answer: C

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6. RbO_2 is

A. superoxide and paramagnetic

B. peroxide and diamagnetic

C. superoxide and diamagnetic

D. peroxide and paramagnetic

Answer: A

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7. Find the wrong statement

A. Sodium metal is used in organic qualitative analysis

B. sodium carbonate is soluble in water and it is used in inorganic qualitative analysis

C. potassium carbonate can be prepared by solvay process

D. Potassium bicarbonate is acidic salt

Answer: C

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8. Lithium shows diagonal relationship with

A. Sodium

B. Magnesium

C. calcium

D. aluminium

Answer: B

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9. Incase of alkali metal halides, the ionic character increases in the order_____

A. MF < MCl < MBr < MI

B. MI < MBr < MCl < MF

C. MI < MBr < MF < MCl

D. none of these

Answer: B

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10. In which process, fused sodium hydroxide is electrolysed for extraction of sodium?

A. Castner's process

B. Cyanide process

C. Down process

D. All of these

Answer: A

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11. The product obtained as a result of a reaction of nitrogen with

A. $Ca(CN)_3$

B. CaN_2

C. $CaCN_2$

D. Ca_3N_2

Answer: C

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12. Which of the following has highest hydration energy

A. $MgCl_2$

B. $CaCl_2$

C. $BaCl_2$

D. $SrCl_2$

Answer: A

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13. Assertion :Generally alkali and alkaline earth metals form superoxides

Reason : There is a single bond between O and O in superoxides.

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: D

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14. Assertion : $BeSO_4$, is soluble in water while $BaSO_4$ is not

Reason: Hydration energy decreases down the group from Be to Ba and lattice energy remian almost constant

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: A

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15. Which is the correct sequence of solubility of carbonates of alkaline earth metals ?

A. $BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3$

B. $MgCO_3 > CaCO_3 > SrCO_3 > BaCO_3$

C. $CaCO_3 > BaCO_3 > SrCO_3 > MgCO_3$

D. $BaCO_3 > CaCO_3 > SrCO_3 > MgCO_3$

Answer: B

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16. 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 are rarely hydrolysed

D. Its hydride is electron deficient and polymeric

Answer: C

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17. The 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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18. A colourless solid substance (A) on heating evolved CO_2 and also gave a white residue, soluble in water. Residue also gave CO_2 when treated with dilute HCI.

A. Na_2CO_3

B. $NaHCO_3$

C. $CaCO_3$

D. $Ca(HCO_3)_2$

Answer: B

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19. The compound (X) on heating gives a colourless gas a nd a residue that is dissolved in water to obtain (B). Excess of CO_2 is bubbled through aqueous solution of B, C is formed. Solid (C) on heating gives back X. (B) is

A. $CaCO_3$

B. $Ca(OH)_2$

C. Na_2CO_3

D. $NaHCO_3$

Answer: A

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20. Which of the following statement is false?

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

B. Mg^{2+} ion 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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21. The name 'Blue John' is given to which of the following compounds ?

A. CaH_2

B. CaF_2

C. $Ca_3(PO_4)_2$

D. CaO

Answer: B

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22. formula of Gypsum is

A. $CaSO_{4.2}H_2O$

B. $CaSO_{4.1}/2H_2O$

C. $3CaSO_4.\ H_2O$

D. $2CaSO_{4.2}H_2O$

Answer: A

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23. When CaC_2 is heated in atmospheric nitrogen in an electric furnace the compound formed is

A. $Ca(CN)_2$

B. CaNCN

C. CaC_2N_2

D. $CaNC_2$

Answer: B

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24. Among the following the least thermally stable is

A. K_2CO_3

B. Na_2CO_3

C. $BaCO_3$

D. Li_2CO_3

Answer: D

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25. Why sodium hydroxide is much more water soluble than chloride?

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26. Write the chemical equations for the reactions involved in solvay process of preparation of sodium carbonate

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27. An alkali metal (x) forms a hydrated sulphate, $X_2SO_{4.10}H_2O$. Is the metal more likely to the sodium (or) postassium.

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28. Write balanced chemical equation for each of the following chemical reactions.

Lithium metal with nitrogen gas

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29. Write balanced chemical equation for each of the following chemical reactions.

heating solid sodium bicarbonate

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30. Write balanced chemical equation for each of the following chemical reactions.

Rubidum with oxygen gas

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31. Write balanced chemical equation for each of the following chemical reactions.

Solid potassium hydroxide with CO_2

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32. Write balanced chemical equation for each of the following chemical reactions.

heating calcium carbonate

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33. Write balanced chemical equation for each of the following chemical reactions.

heating calcium with oxygen

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34. Discuss briefly the similarities between beryllium and aluminium

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35. Give the systematic names for the following

Milk of magnesia

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36. Give the systematic names for the following

lye

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37. Give the systematic names for the following

lime

Watch Video Solution

38. Give the systematic names for the following

Caustic potash

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39. Give the systematic names for the following

lye

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40. Give the systematic names for the following

lye

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41. Give the systematic names for the following

lye

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42. Substantiate lithium fluoride has the lowest solubility among group one metal fluorides

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43. Mention the uses of plaster of paris

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44. Beryllium halides are covalent whereas magnesium halides are ionic. Why?

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45. Alk aline earth metal (A), belongs to 3rd period reacts with oxygen and nitrogen to form compound (B) and (C) respectively. It undergo metal displacement reaction with $AgNO_3$ solution to form compound (D).

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46. Write balanced chemical equation for the following processes

evaporating a solution of calcium hydrogen carbonate

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47. Write balanced chemical equation for the following processes

heating calcium carbonate

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48. Write balanced chemical equation for the following processes

evaporating a solution of calcium hydrogen carbonate

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49. Write balanced chemical equation for the following processes

heating calcium oxide with carbon

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50. Explain the important common features of Group 2 elements

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51. Discuss briefly the similarities between beryllium and aluminium

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52. Why alkaline earth metals are harder than alkali metals.

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53. How is plaster of paris prepared ?

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54. Give the uses of gypsum.

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55. Describe briefly the biological importance of calcium and magnesium.

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56. Which would you expect to have a higher melting point, magnesium oxide or magnesium fluoride? Explain your reasoning.

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Additional Question Additional Choose The Correct Answer

1. Which one of the following is true?

A. Lithium on direct combination with nitrogen to form Li_3N

B. Magnesium on direct combination with nitrogen to form Mg_3N

C. Both (a) and (b)

D. Lithium and magnesium form bicarbonates

Answer: C

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2. Potassium chloride is used as

A. fertilizer

B. soft soap

C. electochemical cells

D. all the above

Answer: A

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3. The elements that belong to group 1 of the periodic table are called as _____

A. alkali metals

B. alkaline earth metals

C. chalcogens

D. rare gases

Answer: C

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4. Rubidium belongs to _____ group of metals

A. transition

B. inner transition

C. alkali

D. alkaline earth

Answer: C

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5. The radioactive element of group 1 is _____

A. rubidium

B. cesium

C. francium

D. radium

Answer: C

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6. Half life of fracium is _____

A. 12.3 years

B. 12.3 mins

C. 21 years

D. 21 mins

Answer: D

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7. Electronic configuration of is block of elements is _____

A. ns^2

B. ns^1

C. ns^2np^1

D. ns^2np^2

Answer: B

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8. The atomic and ionic radii of alkali metals _____ on moving down the group.

A. increases

B. decreases

C. decreases and then increases

D. does not vary

Answer: A

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9. Alkali elements exhibit an oxidation state of _____

A. $+1$

B. $+2$

C. $+3$

D. $+4$

Answer: A

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10. The hydration enthalpies of alkali metal ions decreases in _____ order.

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

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

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

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

Answer: A

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11. The most electro positive element of the periodic table is _____

A. Gold

B. Platinum

C. Cesium

D. Calcium

Answer: C

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12. Consider the following statements

1. Alkali metals are soft.

2. Alkali metals show high reactivity

3. I.E of alkali metal decreases down the group Which of the following statement(s) given above is/ are correct?

A. 1 & 3

B. only 1

C. 2 & 3

D. 1, 2 & 3

Answer: D

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13. The alkali metals have low melting point. Which of the following alkali metal is expected to melt if the room temperature rises to 30° C ?

A. Na

B. K

C. Rb

D. Cs

Answer: D

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14. 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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15. The order of decreasing ionisation enthalpy in alkali metals is

A. NagtLigtKgtRb

B. RbltNaltKltLi

C. LigtNagtKgtRb

D. KltLiltNaltRb

Answer: C

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16. Which of the following is used in photoelectric cells ?

A. Na

B. K

C. Li

D. Cs

Answer: D

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

(i) High boiling point

(ii) High density

(iii) Large atomic size

A. I & ii

B. I & iii

C. only ii

D. only iii

Answer: D

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18. Which of the following are the correct reasons for anomalous behaviour of lithium?

A. Exceptionally small size of its atom

B. Its high polarising power

C. Exceptionally low ionisation enthalpy

D. both a and b

Answer: D

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19. _____ions are found in large proportions in biological fluids.

A. Na^+ & Cl^-

B. K^+ & Cl^-

C. Na^+ & K^+

D. Cl^- & Br^-

Answer: C

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20. Which of the following ions are more responsible for transmission of nerve signal?

A. Lithium

B. Sodium

C. Potassium

D. Sodium of Potassium

Answer: D

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21. Spodumene is the silicate mineral of _____

A. lithium

B. sodium

C. cesium

D. francium

Answer: A

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22. Which of the following metals is most commonly used in photochemical cells?

A. Lithium

B. Calcium

C. Caesium

D. francium

Answer: C

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23. Which among the folJowing is the strongest reducing agent?

A. Na

B. K

C. Ac

D. Mg

Answer: B

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24. Why Cs and K are used as electrodes in photoelectric cells ?

A. Due to their less ionisation energy

B. Due to high ionisation energy

C. Due to diagonal relationshiop

D. none of these

Answer: A

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25. Which among the following alkali metals exhibit the most metallic character?

A. Na

B. Li

C. Cs

D. K

Answer: C

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26. The correct increasing order of density of alkali metals is

A. LiltKltNaltRbltCs

B. LiltNaltKltRbltCs

C. KltLiltRbltNaltCs

D. CsltRbltKltNaltLi

Answer: A

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27. Alkaline earth metals belong to _____ group of the periodic table.

A. 1

B. 2

C. 17

D. 18

Answer: B

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28. The metallic lusture exhibited by sodium is due to,

A. Excitation of free protons

B. Existence of body centered cubic lattice

C. Diffusion of Na^+ ions.

D. Vibration of loose electrons

Answer: D

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29. NaCl gives a golden yellow colour to the Bunsen flame which is due to.

A. Sublimation of metallic Na to give yellow vapour

B. Emission of excess energy absorbed as a radiation in the visible region.

C. Low ionization potential of Na

D. Photosensitivity of Na

Answer: B

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30. Assertion : Lithium is in diagonal relationship with magnesium

Reason : Li^+ has same size as Mg^{2+}

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: A

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31. _____occurs in large amounts in sea water.

A. NaCl

B. KCl

C. Both (a) and (b)

D. neither a nor b

Answer: C

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32. Which of the following oxides is the most basic in nature?

A. Na_2O

B. BeO

C. Li_2O

D. H_2O

Answer: A

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33. The most stable hydride of the following

A. NaH

B. LiH

C. KH

D. CsH

Answer: B

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34. Which hydroxide decomposes on heating ?

A. NaOH

B. RbOH

C. KOH

D. LiOH

Answer: D

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35. Which of the following halides has the highest melting point-

A. NaF

B. NaCl

C. NaBr

D. NaI

Answer: A

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36. The polarising power of Mg is almost same as

A. Li

B. Na

C. K

D. Rb

Answer: A

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37. Find out the correct statement with respect to alkali metals.

A. The react with oxygen to give mainly the oxide

MO_2

B. They react with halogen to give halides MX

C. Their nitrates decomposes on heating to give NO_2 and O_2

D. Their carbonates decomposes on heating to give CO_2 and MO

Answer: B

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38. Assertion : Na_2SO_4 is soluble in water but $BaSO_4$ is insoluble

Reason: Lattice energy of barium sulphate exceeds its hydration energy.

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: A

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39. Correct electronic configuration of Cr is

A. ns^2

B. ns^1

C. ns^2np^1

D. ns^2np^2

Answer: A

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40. The radioactive element of group 2 element is_____

A. Strontium

B. Radium

C. Beryllium

D. francium

Answer: B

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41. Alkaline earth metals exhibit _____oxidation state in their compounds.

A. $+1$

B. $+2$

C. $+4$

D. $+6$

Answer: B

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42. 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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43. _____is a group 2 element which shows diagonal relationship with aluminium.

A. Be

B. Mg

C. Ca

D. Ba

Answer: A

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44. Alkaline earth metals form basic hydroxides. The metal hydroxide which is most basic is _____

A. $Mg(OH)_2$

B. $Ca(OH)_2$

C. $Sr(OH)_2$

D. $Ba(OH)_2$

Answer: D

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45. _____ 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: A

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

A. $MgCO_3$

B. $CaCO_3$

C. $SrCO_3$

D. $BaCO_3$

Answer: D

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47. _____ is the cofactor of all enzymes that utilize ATP in phosphate transfer and energy release.

A. Be

B. Mg

C. Ca

D. Ba

Answer: B

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48. Alkaline earth metals are

A. Monovalent

B. Divalent

C. Trivalent

D. Zerovalent

Answer: B

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49. Name the alkaline earth metal hydroxide which is amphoteric is nature.

A. $Be(OH)_2$

B. KOH

C. NaOH

D. All of these

Answer: A

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50. Why alkaline earth metals have higher tendency to form complexes than alkali metals?

A. Smaller size

B. Greater nuclear charge

C. Both (a) and (b)

D. neither a nor b

Answer: C

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51. Ca is a good reducing agent, because

A. Due to its has small size

B. It has negative reduction potential

C. It is the first member of group 2

D. It has one electron in outermost shell

Answer: B

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52. What is the trend of formation of ionic compound in alkaline earth metals?

A. Increases down the group

B. Decreases down the group

C. Decreaes across the period

D. Remains same in the periodic table

Answer: A

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53. The element that does not answer the flame test is

A. Ba

B. Mg

C. Ca

D. Sr

Answer: B

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54. Quicklime is _____

A. $CaCO_3$

B. CaO

C. $Ca(OH)_2$

D. $CaSiO_3$

Answer: B

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55. $Ca(OH)_2$ is _____

A. gypsum

B. milk of lime

C. slaked lime

D. lime water

Answer: C

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56. Assertion : Alkaline earth metals are harder than alkali metals

Reason : Atomic radii Qf alkaline earth metals are smaller than corresponding alkali metals in the same periods of periodic table

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: B

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57. Assertion : Beryllium compounds are covalent in nature

Reason : The size of Be^{2+} ion larger in comparison to the radii of the other divalent ions of alkaline earth metals.

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: C

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58. Identify the correct statements about barium.

(i) It shows photoelectric effect

(ii) It is silvery white metal

(iii) It forms $Ba(NO_3)_2$ which is used in preparation of green fire

A. Both (i) and (iii)

B. (ii) and (iii)

C. only ii

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

Answer: B

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59. Which element of group 2 is not considered as alkaline earth metal?

A. Beryllium

B. Calcium

C. Strontium

D. Barium

Answer: A

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60. 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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61. Compounds of alkaline earth metals are less soluble in water than the corresponding alkali metals salts due to :

A. their increased covalent character

B. high lattice energy

C. their high ionization energy

D. none of the above

Answer: A

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62. _____is used in purification and refining of sugar.

A. $Ca(OH)_2$

B. CaO

C. $CaCl_2$

D. $CaCO_3$

Answer: B

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63. Lime water turning milky is due to the formation of _____

A. Calcium carbonate

B. calcium hydroxide

C. Calcium oxide

D. Calcium chloride

Answer: A

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64. formula of Gypsum is

A. $CaSO_4.H_2O$

B. $CaSO_{4.1}/2H_2O$

C. $CaSO_{4.1}/4H_2O$

D. $CaSO_{4.2}H_2O$

Answer: D

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65. Gypsum is used in _____

A. Plaster board

B. surgical splints

C. soil additive

D. all the above

Answer: D

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66. Plaster of Paris is _____

A. $CaSO_4.\ H_2O$

B. $CaSO_{4.1}/2H_2O$

C. $CaSO_{4.1}/4H_2O$

D. $CaSO_{4.2}H_2O$

Answer: B

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67. Plaster of Paris is obtained by heating gypsum to _____

A. 293K

B. 100K

C. 393K

D. 273K

Answer: C

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68. Which of the following dissolves in water with a hissing sound?

A. bleaching powder

B. marble

C. quick lime

D. slaked lime

Answer: C

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69. The formula of bleaching powder is

A. CaOCl

B. $CaOCl_2$

C. CaO_2Cl_2

D. $CaOCl_2$

Answer: B

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70. Consider the following statements

1. Gypsum is calcium sulphate hemihydrate

2. Retrograde solubility is striking feature of gypsum

3. Alabaster is a variety of gypsum Which of the following statement(s) given above is/ are incorrect?

A. 1 & 3

B. only 1

C. 2 & 3

D. 1, 2 & 3

Answer: B

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71. Dead burnt plaster is _____

A. $CaSO_4$

B. $CaSO_{4.1}/2H_2O$

C. $CaSO_4.H_2O$

D. $CaSO_{4.2}H_2O$

Answer: A

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72. 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 posses disinfectant property.

D. It is used in the manufacture of cement

Answer: A

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73. A chemical A is used for the preparation of washing soda. 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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74. The 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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75. By adding gypsum to cement

A. setting time of cement 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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76. Give the correct order of thermal stabiiity of alkaline earth metal carbonates.

A.

$$BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3 > BeCO_3$$

B.

$$SrCO_3 > CaCO_3 > BaCO_3 > BeCO_3 > MgCO_3$$

C.

$$BeCO_3 > BaCO_3 > MgCO_3 > SrCO_3 > CaCO_3$$

D.

$$CaCO_3 > MgCO_3 > SrCO_3 > BaCO_3 > BeCO_3$$

Answer: A

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77. $M + 2H_2O \rightarrow M(OH)_2 + H_2$

which among the following metals does not undergo the above reaction at high temperature?

A. Be

B. Ba

C. Ca

D. Sr

Answer: A

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78. Assertion : The fluorides of alkaline earth metals are almost insoluble in water.

Reason: The lattice energies of the fluorides of alkaline earth metal are very high.

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

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

C. assertion is true but reason is false

D. both assertion and reason are false

Answer: A

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79. Which is insoluble in water?

A. CaF_2

B. $CaCl_2$

C. $HgCl_2$

D. $Ca(NO_3)_2$

Answer: A

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80. The correct statements is / are :

(i) $BeCl_2$ is a covalent compound

(ii) $BeCl_2$ Can form dimer

(iii) $BeCl_2$ is an electron deficient molecule

(iv) The hybridisation of Be in $BeCl_2$ is sp^2

A. `(i) and (iii)

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

C. (i) and (iv)

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

Answer: B

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81. In which of the following reactions, MgO is not formed

A. $Mg + CO_2 \rightarrow$

B. $Mg + No \rightarrow$

C. $Mg + dil.\ HNO_3 \rightarrow$

D. $Mg + B_2O_3 \rightarrow$

Answer: C

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82. Several blocks of magnesium are fixed to the bottom of a ship to

A. keep away the sharks

B. prevent rusting of iron ships

C. make the ship lighter

D. prevent punturing by under sea rocks

Answer: B

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83. Identify the correct statement

A. Gypsum is obtained by heating plaster of paris

B. Plaster of paris can be obtained by hydration of gypsum

C. Plaster of paris contains higher percentage of calcium than that of gypsum

D. Plaster of paris is obtained from gypsum by oxidation

Answer: C

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84. The metals X and Y that form oxide and nitride , when burnt in air are

A. Li and Na

B. Mg and Ca

C. Cs and K

D. K and Mg

Answer: B

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85. Alkali metal are _____ reactive.

A. highly

B. lower

C. very low

D. less than matels

Answer: A

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86. Spodumene is the silicate mineral of _____

A. Beryllium

B. Lithium

C. Calcium

D. Potassium

Answer: B

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87. Which of the following is incorrect ?

A. All Alkali elements are highly electropositive in nature.

B. Alkali readily lose their valence electron to give monovalent cations

C. Alkali metal have oxidation state which is +1 and +2

D. All the above are incorrect

Answer: C

88. Monovalent cations having stable electronic configurations similar to the

A. Alkali metals

B. alkaline earth metals

C. Noble gas

D. Halgens

Answer: C

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89. Lithium directly reacts with carbon to form _____ the ionic compound

A. lithium carbide

B. lithium carbonate

C. lithium hydro carbide

D. lithium hydrogen carbonate

Answer: A

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90. The coolant used in fast breeder reactor is _____.

A. Liquid Ammonia

B. Liquid Sodium

C. Liquid hydrogen

D. Liquid CO_2

Answer: B

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91. Except ____ halides, all the other halides of alkaline earth metals are ionic in nature.

A. Sodium

B. calcium

C. Beryllium

D. lithium

Answer: C

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92. Which is the correct statement about sodium chloride?

A. sodium chloride melts at 1081K

B. It has a solubility of 36.0g in 100g of water at 273k

C. The solubility does not increase appreciably with increase in temperature.

D. All the above are incorrect

Answer: D

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93. The atomic and inoic radii and alkaline earth metals are _____ than the corresponding members of the alkali metals

A. larger

B. smaller

C. extra large

D. same

Answer: B

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94. Which is known as a natural insulator?

A. Gypsum

B. beryllium

C. calcium

D. sodium

Answer: A

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Additional Short Answer

1. Write the electrode reactions involved in the electrolytic method of preparation of sodium Hydroxide.

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2. Alkali metals have low melting and boiling point. Density of alkali metals is very low. Give reason

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3. Why is second ionization energy of alkali metals higher than alkaline earth metals?

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4. How does the alkali metals produce characteristic colour to the oxidising flame?

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5. Why is the density of potassium less than that of sodium?

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

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7. Why does lithium exhibit anomalous properties ?

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8. Why does the Li^{2+} ion combines only with O^{2-} ion ?

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9. Comment on each of the following observations:

(a) Lithium is the only alkali metal to form a nitride directly by combination with nitrogen.

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10. Alkali metals exhibit high chemical reactivity Give reason.

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11. Why sodium hydroxide is much more water soluble than chloride?

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12. Carbonates and bicarbonates of alkali metals soluble in water and are thermally stable. Give reason.

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13. Write the chemical name of backing soda. Write any one of it uses.

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14. What happens when crystals of washing soda are exposed to air?

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15. List down the uses of washing soda.

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16. List the uses of sodium hydroxide.

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17. Why is sodium bicarbonate nicknamed as 'Baking Soda'?

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18. Why does Li_2CO_3 decompose at a temperature below 1273K ?

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19. What are 's' block elements ?

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20. What is meant by 'diagonal relationship' in periodic table? Why is it so?

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21. Explain the structure of $BeCl_2$

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22. Why does beryllium form $BeCl_2$ although it has no unpaired electrons ?

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23. Why are alkaline earth metal smaller than the Corresponding alkali metals.

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24. Why is the behaviour of beryllium is different from the other elements of the same group?

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25. Give the applications of strontium with respect to nuclear chemistry

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26. Write note on the preparation of

BeF_2

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27. Write note on the preparation of

$BeCl_2$

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28. Write note on the preparation of

BeH_2

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29. What happens when

(i) Magnesium is burnt in air

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30. What happens when

Quick lime is treated with silica

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31. What happens when

Chlorine reacts with slaked lime.

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32. Predict the product :

$2BeCl_2 + LiAlH_4 \rightarrow$?

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33. Predict the product:

$BeO + C + Cl_2 \rightarrow$?

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34. Predict the product :

$Be + Cl_2 \rightarrow$?

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35. IE_2 values of alkaline earth metals are much smaller than those of alkali metals. Explain.

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36. What are the uses of Beryllium?

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37. What are the uses of Magnesium ?

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38. What are the uses of Calcium ?

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39. What are the uses of barium?

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40. What are the uses of radium?

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41. Beryllium and magnesium do not give colour to flame whereas other alkaline earth metals do so. Why?

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42. Name the compound that constitutes the main body skelton.

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43. What is the amount of Ca & Mg required by human body/bag?

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44. Complete and balance the following equations for the reactions given between

Slaked lime + CO_2H_2O

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45. Complete and balance the following equations for the reactions given between

Quick lime $+CO_2$

Watch Video Solution

46. Complete and balance the following equations for the reactions given between

slaked lime $+CO_2$

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47. Complete and balance the following equations for the reactions given between

$Be(OH)_2 + HCl + H_2O$

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48. $BeSO_4$ is soluble in water whereas $BaSO_4$ is not. Why?

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49. What is milk of lime?

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50. Why does lime water turn milky when CO_2 is bubbled through it ?

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51. How is bleaching powder prepared ?

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52. Write the uses of calcium hydroxide.

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53. Discuss the role of magnesium in plants.

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54. What is retrograde solubility ?

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55. What is dead burnt plaster ?

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

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

Watch Video Solution

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

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

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60. How would you explain the following observation ?

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

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61. $LICIO_4$ is more soluble than $NaCIO_4$Why?

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62. How would you prepare beryllium hydride from beryllium chloride ?

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63. BeO is covalent where as MgO is ionic. Give reason.

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64. How would you prepare quick lime ?

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65. What is soda ash ? How it obtained ?

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66. How would you prepare pure sodium chloride from crude salt?

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67. Explain the action of Soda lime with

(i) SiO_2

(ii) P_4O_{10}

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Additional Long Answer

1. List out the uses of alkali metals.

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2. How are peroxides and superoxides formed by alkali metals?

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3. Alkali metal hydrides are strong reducing agents. Prove this statement.

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4. When does the blue coloured ammonia solution (of alkali metals) changes to bronze colour?

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5. Describe about the biological important of sodium and potassium.

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6. How is sodium hydroxide prepared commercially from brine solution?

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7. Why do Beryllium and nitrogen have zero electron affinity ?

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8. Write the equation for the amphoteric nature of Beryllium hydroxide.

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9. Explain the preparation and uses of the following compounds of calcium. i. Calcium oxide ii. Calcium hydroxide

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10. Describe solvay process (or) how is washing soda (or) sodium carbonate prepared in industries?

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11. Describe about the biological important of sodium and potassium.

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12. Enlist the simularities between lithium and magnesium.

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13. Compare the properties of beryllium with other elements of the same group.

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14. Give the important uses of the following compounds

$NaHCO_3$

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15. Give the important uses of the following compounds

NaOH

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16. Enlist the simularities between lithium and magnesium.

Watch Video Solution

17. Compare the properties of beryllium with other elements of the same group.

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18. Distinguish between alkali metals and alkaline earth metals.

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19. When water is added to compound (A) of calcium, compound B is formed with a hissing sound and evolution of large amount of heat. When CO_2 , is passed into the solution, it turns milky due to formation of compound C. If excess CO_2 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 disappears in the last step.

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20. An element occupies group number 1 and period number 3. This element when exposed to air gives

compound (A). The element with water forms compound (B). Which is a strong base und (A) with ammonia gives compound (C) which is used as reducing agent in organic chemistry. The element reacts with an halogen and forms cooking salt (D). Identify A, B, C and D.

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21. An element belongs to group 1 and period 3 reacts with chlorine gas to form A. (A) reacts with ammonium bicarbonate to give compounds (B) and (C). Compound period is beryllium (A). (B) is then heated to give

compound (D). Identify A, B, C and D and write the respective equations.

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22. An element A belonging to group 2 and period 2 reacts with chlorine at elevated temperature to give compound (B) compound B combines with $LiAlH_4$ to form compound (C). Which is an hydride identify A, B and C.

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