CHEMISTRY

BOOKS - VK JAISWAL ENGLISH

s-BLOCK ELEMENTS

Level 1

1. Sodium bicarbonate has :

A. Ionic bond

B. Covalent bond

C. Hydrogen bond

D. All of these

Answer: D

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2. Which of the following metal on burning in moist air does not give smell of ammonia?

A. Mg

B. Ca

C. K

D. Li

Answer: C

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3. For the alkali metals, which of the following increase with increasing atomic number?

A. First ionization energy

B. Electronegativity

C. Hydration energy of the univalent ion

D. Atomic radius

Answer: D

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4. Among the carbonates of alkali metals which one has highest thermal stability ?

A. Cs_2CO_3

B. Rb_2CO_3

C. K_2CO_3

D. Na_2CO_3

Answer: A

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5. Which of the following is most soluble in water?

A. $CsClO_4$

B. $NaClO_4$

C. $KClO_4$

D. $LiClO_4$

Answer: D

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6. Why does the solution of sodium in liquid ammonia possess strong reducing nature?

A. The presence of ions Na^+

B. The presence of ammoniated electron

C. The formation of $NaNH_2$

D. The formation of sodium hybride

Answer: B

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7. The order of basicity of hydroxides of alkali metals is

A. $Li > Na > Rb > Cs$

B. $Na > Li > Rb > Cs$

C. $Cs > Rb > Na > Li$

D. $Rb > Cs > Na > Li$

Answer: C

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8. The metallic lustre exhibited by sodium is explained by

A. diffusion of Na^+ ions

B. oscillation of loose electrons

C. excitation of free protons

D. existence of body-centered cubic lattice

Answer: B

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9. Soda lime is a mixture of

A. $Na + CaO + H_2O$

B. $CaO + NaOH(aq)$

C. $NaOH + CaCO_3$

D. $NaHCO_3 + CaO$

Answer: B

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10. The compound called microscomic salt is:

A. $Na_2HPO_4 \cdot 2H_2O$

B. $Na(NH_4)HPO_4 \cdot 4H_2O$

C. $Na_1NH_4PO_4 \cdot 2H_2O$

D. $(NH_4)_2HPO_4 \cdot 2H_2O$

Answer: B

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11. Potassium when heated strongly in oxygen, if forms :

A. K_2O

B. KO_2

C. K_2O_2

D. KO_3

Answer: B

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12. When a concentrated solution of ammonia is saturated with sodium chloride in the presence of pieces of dry ice, a water cloud forms . Thid is due to the ,

A. precipitation of sodium carbonate from the reaction mixture

B. precipitation of sodium hydrogen carbonate from the reaction mixture

C. precipitation of ammonium hydrogen carbonate from the reaction mixture

D. precipitation of ammonium carbonate

Answer: B

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13. On heating sodium metal in a current of dry ammonia, the compound formed is

A. sodium imide

B. sodium nitride

C. sodium amide

D. sodium azide

Answer: C

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14. Which of the following compounds is not obtained when the products obtained from the electrolysis of brine are mixed?

A. $NaCl$

B. H_2

C. $NaOCl$

D. Cl_2

Answer: D

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15. When dry ammonia gas is passed over heated sodium (out of contact of air) the product forms is

A. sodium hydride

B. sodium nitride

C. sodamide

D. sodium cyanamide

Answer: C

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16. Which of the folowing compounds liberates oxygen on heating?

A. Li_2CO_3

B. $LiOH$

C. $LiNO_3$

D. $NaOH$

Answer: C

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17. Sodium peroxide is used to purify the air in submarines and confined spaces because:

A. It removes CO_2 and produces O_2

B. it decomposes to form Na_2O

C. it reacts with oxygen to form sodium superoxide

D. None of these

Answer: A

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18. Which of the following salt is known as washing sode?

A. Na_2CO_3

B. $Na_2CO_3 \cdot H_2O$

C. $Na_2CO_3 \cdot 10H_2O$

D. $Na_2CO_3 \cdot 5H_2O$

Answer: C

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19. Which of the following compounds is formed when sodium burns in excess supply of air?

A. Sodium suboxide

B. Sodium oxide

C. Sodium peroxide

D. Sodium superoxide

Answer: C

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20. Glauber's salt is :

A. Na_2SO_4

B. $Na_2SO_4 \cdot H_2O$

C. $Na_2SO_4 \cdot 5H_2O$

D. $Na_2SO_4 \cdot 10H_2O$

Answer: D

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21. Sodium hydroxide is produced on a large scale

A. by the hydrolysis of Na_2CO_3

B. by the electrolysis of an aqueous solution of NaCl

C. by adding water to sodium oxide

D. by reacting sodium with water

Answer: B

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22. Which of the following metal on used in flash bulbs?

A. Be

B. Mg

C. Ca

D. Ba

Answer: B

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23. The pair of compounds which cannot exist together in aqueous solution is ,

(I)NaH_2PO_4 and $NaHCO_3$ (II)Na_2CO_3 and $NaHCO_3$

(III)$NaOH$ and NaH_2PO_4 (IV)$NaHCO_3$ and $NaOH$

A. I, II, III

B. III, IV

C. I, IV

D. II, III

Answer: B

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24. On reacting with NaOH, which gives inflammable gas?

A. S

B. Zn

C. NH_4Cl

D. I_2

Answer: B

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25. In the reaction $LiH + AlH_3 \rightarrow LiAlH_4, AlH_3$ and LiH act as :

A. Lewis acid and Lewis base

B. Lewis base and Lewis acid

C. Bronsted base and Bronsted acid

D. None of these

Answer: A

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26. Lithium is strongest reducing agent among alkali metals due to which of the following factor ?

A. Ionisation energy

B. Hydration energy

C. Heat of sublimation

D. None of these

Answer: B

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27. Which set of compounds in the following pair of ionic compounds has the higher lattice energy ?

(i)

KCl or MgO $(ii) LiF$ or $LiBr$ $(iii) Mg_3N_2$ or $NaCl$

A. $KCl, LiBr, Mg_3N_2$

B. $MgO, LiBr, Mg_3N_2$

C. $MgO, LiF, NaCl$

D. MgO, LiF, Mg_3N_2

Answer: D

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28. Sodium bicarbonate has :

A. Ionic bond

B. Covalent bond

C. Hydrogen bond

D. All of these

Answer: A,B

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29. Compounds having lowest melting point:

A. $LiCl$

B. $CsCl$

C. $RbCl$

D. KCl

Answer: A

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30. Incorrect statement is :

A. $NaHCO_3$ and $KHCO_3$ have same crystal structure

B. On heating $LiNO_3$ decomposes into Li_2OanNO_2

C. Among alkali metals, Li metal impart red colour flame

D. Li_2SO_4 does not form alum

Answer: A

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31. 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 solubilitty of LiF in water is due to metals, the lowest solubility of LiF in water is due to

A. Ionic nature of lithium flouride

B. High lattice enthalpy

C. High hydration ethalpy of lithium ion

D. Low ionisation enthalpy of lithium atom

Answer: B

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32. 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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33. Mg_2C_3 reacts with water forming propyne. C_3^{4-} has

A. two sigma and two pi bonds

B. three sigma and one pi bond

C. two sigma and one pi bond

D. two sigma and three pi bonds

Answer: A

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34. The flouride which is most soluble in water

A. CaF_2

B. BaF_2

C. SrF_2

D. BeF_2

Answer: D

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35. The highest occupied energy level of the group 2 elements radius is $7s^2$, which of these statements is likely to be incorrect?

A. The element will show an oxidation state +II in all its compounds

B. The element will decomposes water, liberating hydrogen

C. Hydroxide of the elements will be amphoteric

D. Metal carbonate is relatively stable at higher temperature than calcium carbonate

Answer: C

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36. Amongst the following hydroxides, the one which has the highest value of K_{sp} at orinately temperature is :

A. $Mg(OH)_2$

B. $Ca(OH)_2$

C. $Sr(OH)_2$

D. $Ba(OH)_2$

Answer: D

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37. Which of the following alkaline earth metal hydroxides is the least soluble in water?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $Ca(OH)_2$

D. $Ba(OH)_2$

Answer: A

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38. The thermal stability of alkaline earth metal carbonates $-MgCO_3, CaCO_3, SrCO_3$ and $BaCO_3$, follows order

A. $BaCO_3 > SrCO_3 > MgCO_3$

B. $CaCO_3 > SrCO_3 > MgCO_3 > BaCO_3$

C. $MgCO_3 > CaCO_3 > SrCO_3 > BaCO_3$

D. $BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3$

Answer: D

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39. Magnesium has polarising power close to that of :

A. Li^+

B. Na^+

C. K^+

D. Cs^+

Answer: A

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40. Which of the following salt does not impart colour to the flame?

A. $MgCl_2$

B. $Mg(OH)_2$

C. $Mg(OH)Cl$

D. $MgCl_2$

Answer: A

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41. Mortal is mixture of :

A. $Ca(OH)_2$, silica and water

B. $CaCO_3$ and SiO_2

C. CaO and silica

D. $CaCO_3$, SiO_3 and water

Answer: A

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42. When hydrated $MgCI_2.6H_2O$ is strongly heated,

A. MgO

B. $Mg(OH)_2$

C. Mg(OH)Cl

D. $Mg(OH)_2$

Answer: A

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43. A piece of magnesium ribbon was heated to redness in an atmosphere of nitrogen and then cooled with water. The gas evolved is

A. ammonia

B. hydrogen

C. nitrogen

D. oxygen

Answer: A

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44. Plaster of paris when mixed with the correct amount of water sets into solid mass due to the formation of:

A. $CaSO_4$

B. $(CaSO_4)_2 \cdot H_2O$

C. $CaSO_4 \cdot 2H_2O$

D. CaO

Answer: C

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45. Plaster of Paris is chemically calcium sulphate monohydrate.

A. $CaSO_4$

B. $CaSO_4 \cdot 7H_2O$

C. $2CaSO_4 \cdot H_2O$

D. $CaSO_4 \cdot 2H_2O$

Answer: C

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46. Mg liberates H_2 on reaction with

A. dil.HCl

B. dil. H_2SO_4

C. very dil.HNO_3

D. All of these

Answer: D

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47. At high temperature, nitrogen combines with CaC_2 to give :

A. Calcium Cyanide

B. Calcium Cyanamide

C. Calcium Carbonate

D. Calcium Nitride

Answer: B

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48. Calcium hybride on hydrolysis forms?

A. $CaO + H_2$

B. $Ca(OH)_2$ only

C. $Ca(OH)_2 + H_2$

D. Only CaO

Answer: C

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49. Magnesium wire burns in the atomosphere of CO_2 because

A. Magnesium acts as an oxidising agent

B. Magnesium has two electrons in the outmost shell

C. Magnesium acts as a reducing agent and removes oxygen from CO_2

D. None of these

Answer: C

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50. MgO is used for lining furnces because:

A. of high melting point of MgO

B. Mgo is a very good conductor of heat

C. MgO is an electrical insulator

D. None of these

Answer: A

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51. Among $LiCl$, $RbCl$, $BeCl_2$, $MgCl_2$, the compounds with greatest and least ionic character respectively are

A. $LiCl$ and $RbCl$

B. $RbCl$ and $BeCl_2$

C. $RbCl$ and $MgCl_2$

D. $MgCl_2$ and $BeCl_2$

Answer: B

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52. Which of the following compounds does not have similarity in their structural aspects?

A. $FeSO_4 \cdot 7H_2O$

B. $Na_2CO_3 \cdot 7H_2O$

C. $MgSO_4 \cdot 7H_2O$

D. $ZnSO_4 \cdot 7H_2O$

Answer: B

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53. By adding gypsum to cement

A. Setting time of cement becomes less

B. Setting time of cement increase

C. Colour of cement becomes light

D. Shining surface is obtained

Answer: C

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54. A chemical 'A' is used for the preparation of washingg 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 off 'A'?

A. $Ca(HCO_3)_2$

B. CaO

C. $Ca(OH)_2$

D. $CaCO_3$

Answer: B

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55. Which is not similar characteristics(s) about the electronic configuration of Be, Mg, Ca?

A. All the atoms have a pair of s-electrons in their outermost energy level

B. All the atoms contains a pair of p-electrons in their outermost energy level

C. All are alkaline earth metals

D. All are of second group of the periodic table

Answer: B

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56. Sodium bicarbonate has :

A. Ionic bond

B. Covalent bond

C. Hydrogen bond

D. All of these

Answer: (d)

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57. Which of the following metal on burning in moist air does not give smell of ammonia?

A. Mg

B. Ca

C. K

D. Li

Answer: C

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58. For the alkali metals, which of the following increase with increasing atomic number?

A. First ionization energy

B. Electronegativity

C. Hydration energy of the univalent ion

D. Atomic radius

Answer: D

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59. Among the corbonates of alkali metals which one has highest thermal stability?

A. Cs_2CO_3

B. Rb_2CO_3

C. K_2CO_3

D. Na_2CO_3

Answer: A

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60. Which of the following is most soluble in water?

A. $CsClO_4$

B. $NaClO_4$

C. $KClO_4$

D. $LiClO_4$

Answer: D

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61. A solution of sodium in liquid ammonia is blue in colour due to:

A. The presence of ions Na^+

B. The presence of ammoniated electron

C. The formation of $NaNH_2$

D. The formation of sodium hydride

Answer: B

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62. The basicity of the hydroxides of the following alkali metals is of the order:

A. $Li > Na > Rb > Cs$

B. $Na > Li > Rb > Cs$

C. $Cs > Rb > Na > Li$

D. $Rb > Cs > Na > Li$

Answer: C

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63. The metallic lustre exhibited by sodium is explained by"

A. diffusion of Na^+ ions

B. oscillation of loose electrons

C. excitation of free protons

D. existence of body-centered cubic lattice

Answer: B

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64. Soda lime is made from:

A. $Na + CaO + H_2O$

B. $CaO + NaOH(aq)$

C. $NaOH + CaCO_3$

D. $NaHCO_3 + CaO$

Answer: B

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65. The compound called microcosmic salt is :

A. $Na_2HPO_4 \cdot 2H_2O$

B. $Na(NH_4)HPO_4 \cdot 4H_2O$

C. $Na_1NH_4PO_4 \cdot 2H_2O$

D. $(NH_4)_2HPO_4 \cdot 2H_2O$

Answer: B

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66. Potassium when heated strongly in oxygen, it forms:

A. K_2O

B. KO_2

C. K_2O_2

D. KO_3

Answer: B

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67. When a concentrated solution of ammonia is saturated with sodium chloride in the presence of pieces of dry ice, a water cloud forms . Thid is due to the ,

A. precipitation of sodium carbonate from the reaction mixture

B. precipitation of sodium hydrogen carbonate from the reaction mixture

C. precipitation of ammonium hydrogen carbonate from the reaction mixture

D. precipitation of ammonium carbonate

Answer: B

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68. The compound formed on heating sodium metal in a current of dry ammonia gas, is :

A. sodium imide

B. sodium nitride

C. sodium amide

D. sodium azide

Answer: C

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69. Which of the following compounds is not obtained when the products obtained from the electrolysis of brine are mixed?

A. $NaCl$

B. H_2

C. $NaOCl$

D. Cl_2

Answer: D

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70. When dry ammonia gas is passed over heated sodium (in absence of air) the product formed is :

A. sodium hydride

B. sodium nitride

C. sodamide

D. sodium cyanamide

Answer: C

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71. Which of the following compounds liberate(s) oxygen on heatin?

A. Li_2CO_3

B. $LiOH$

C. $LiNO_3$

D. $NaOH$

Answer: C

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72. Sodium peroxide is used to purify the air in submarines and confined spaces because:

A. It removes CO_2 and produces O_2

B. it decomposes to form Na_2O

C. it reacts with oxygen to form sodium superoxide

D. None of these

Answer: A

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73. Which of the following salt is known as washing sode?

A. Na_2CO_3

B. $Na_2CO_3 \cdot H_2O$

C. $Na_2CO_3 \cdot 10H_2O$

D. $Na_2CO_3 \cdot 5H_2O$

Answer: C

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74. Which of the following compounds is formed when sodium burns in excess supply of air?

A. Sodium suboxide

B. Sodium oxide

C. Sodium peroxide

D. Sodium superoxide

Answer: C

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75. Glauber's salt is :

A. Na_2SO_4

B. $Na_2CO_3 \cdot H_2O$

C. $Na_2CO_3 \cdot 5H_2O$

D. $Na_2CO_3 \cdot 10H_2O$

Answer: D

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76. Sodium hydroxide is produced on a large scale :

A. by the hydrolysis of Na_2CO_3

B. by the electrolysis of an aqueous solution of NaCl

C. by adding water to sodium oxide

D. by reacting sodium with water

Answer: B

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77. Which of the following metal is used in flash bulbs?

A. Be

B. Mg

C. Ca

D. Ba

Answer: B

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78. The pairs of compounds which cannot exist together in aquous solution are:

(I) NaH_2PO_4 and Na_2HCO_3 (II) Na_2CO_3 and $NaOH$

(III) $NaOH$ and NaH_2PO_4 (IV) $NaHCO_3$ and $NaOH$

A. I, II, III

B. III, IV

C. I, IV

D. II, III

Answer: B

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79. Which one on reaction with NaOH solution gives inflammable gas?

A. S

B. Zn

C. NH_4Cl

D. I_2

Answer: B

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80. In the reaction $LiH + AlH_3 \rightarrow LiAlH_4, AlH_3$ and LiH act as :

A. Lewis acid and Lewis base

B. Lewis base and Lewis acid

C. Bronsted base and Bronsted acid

D. None of these

Answer: A

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81. Which of the following is the most important factor in making lithium metal, the strongest reducing agent?

A. Ionisation energy

B. Hydration energy

C. Heat of sublimation

D. None of these

Answer: B

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82. Which set of compounds in the following pair of ionic compounds has the higher lattice energy ?

(i)

KCl or MgO $(ii) LiF$ or $LiBr$ $(iii) Mg_3N_2$ or $NaCl$

A. $KCl, LiBr, Mg_3N_2$

B. $MgO, LiBr, Mg_3N_2$

C. $MgO, LiF, NaCl$

D. MgO, LiF, Mg_3N_2

Answer: D

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83. Sodium bicarbonate has :

A. Ionic bond

B. Covalent bond

C. Hydrogen bond

D. All of these

Answer: A

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84. Compounds having lowest melting point:

A. $LiCl$

B. $CsCl$

C. $RbCl$

D. KCl

Answer: A

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85. Incorrect statement is :

A. $NaHCO_3$ and $KHCO_3$ have same crystal structure

B. On heating $LiNO_3$ decomposes into Li_2OanNO_2

C. Among alkali metals, Li metal impart red colour flame

D. Li_2SO_4 does not form alum

Answer: A

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86. 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 solubilitty of LiF in water is due to metals, the lowest solubility of LiF in water is due to

A. Ionic nature of lithium flouride

B. High lattice enthalpy

C. High hydration ethalpy of lithium ion

D. Low ionisation enthalpy of lithium atom

Answer: B

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87. 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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88. Mg_2C_3 reacts with water forming propyne gas. C_3^{4-} ions has:

A. two sigma and two pi bonds

B. three sigma and one pi bond

C. two sigma and one pi bond

D. two sigma and three pi bonds

Answer: A

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89. The flouride which is most soluble in water is :

A. CaF_2

B. BaF_2

C. SrF_2

D. BeF_2

Answer: D

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90. The highest occupied energy level of the group 2 elements radius is $7s^2$, which of these statements is likely to be incorrect?

A. The element will show an oxidation state +II in all its compounds

B. The element will decomposes water, liberating hydrogen

C. Hydroxide of the elements will be amphoteric

D. Metal carbonate is relative stable at higher temperature than calcium carbonate

Answer: C

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91. Amongst the following hydroxides, the one which has the highest value of K_{sp} at orinately temperature is :

A. $Mg(OH)_2$

B. $Ca(OH)_2$

C. $Sr(OH)_2$

D. $Ba(OH)_2$

Answer: D

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92. Which of the following alkaline earth metal hydroxides is the least soluble in water?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $Ca(OH)_2$

D. $Ba(OH)_2$

Answer: A

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93. The thermal stability of $BaCO_3, CaCO_3, SrCO_3$ and $MgCO_3$ decrease in the order:

A. $BaCO_3 > SrCO_3 > MgCO_3$

B. $CaCO_3 > SrCO_3 > MgCO_3 > BaCO_3$

C. $MgCO_3 > CaCO_3 > SrCO_3 > BaCO_3$

D. $BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3$

Answer: D

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94. Magnesium cation has polarising power close to that of :

A. Li^+

B. Na^+

C. K^+

D. Cs^+

Answer: A

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95. Which of the following salt does not impart colour to the flame?

A. $MgCl_2$

B. $Mg(OH)_2$

C. $Mg(OH)Cl$

D. $CaCl_2$

Answer: A

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96. Mortar is mixture is ,

A. $Ca(OH)_2$, silica and water

B. $CaCO_3$ and SiO_2

C. CaO and silica

D. $CaCO_3$, SiO_3 and water

Answer: A

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97. When $MgCl_2 \cdot 6h_2O$ is strongly heated, then it forms

A. MgO

B. $Mg(OH)_2$

C. Mg(OH)Cl

D. $Mg(OH)_2$

Answer: A

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98. A piece of magnesium ribbon is heated to redness in an atmosphere of nitrogen and on cooling with water, the evolved gas is :

A. ammonia

B. hydrogen

C. nitrogen

D. oxygen

Answer: A

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99. Plaster of paris when mixed with the correct amount of water sets into solid mass due to the formation of:

A. $CaSO_4$

B. $(CaSO_4)_2 \cdot H_2O$

C. $CaSO_4 \cdot 2H_2O$

D. CaO

Answer: C

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100. Plaster of paris is :

A. $CaSO_4$

B. $CaSO_4 \cdot 7H_2O$

C. $2CaSO_4 \cdot H_2O$

D. $CaSO_4 \cdot 2H_2O$

Answer: C

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101. Magnesium liberates H_2 on reaction with :

A. dil.HCl

B. dil. H_2SO_4

C. very dil.HNO_3

D. All of these

Answer: D

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102. At high temperature, nitrogen combines with CaC_2 to give:

A. Calcium Cyanide

B. Calcium Cyanamide

C. Calcium Carbonate

D. Calcium Nitride

Answer: B

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103. Calcium hybride on hydrolysis forms?

A. $CaO + H_2$

B. $Ca(OH)_2$ only

C. $Ca(OH)_2 + H_2$

D. Only CaO

Answer: C

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104. Magnesium wire is heated in the atmosphere of CO_2 because:

A. Magnesium acts as an oxidising agent

B. Magnesium has two electrons in the outmost shell

C. Magnesium acts as a reducing agent and removes oxygen from CO_2

D. None of these

Answer: C

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105. MgO is used for lining furnces because:

A. of high melting point of MgO

B. Mgo is a very good conductor of heat

C. MgO is an electrical insulator

D. None of these

Answer: A

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106. Among $LiCl, RbCl, BeCl_2, MgCl_2,$ the compounds with greatest and least ionic character respectively are

A. $LiCl$ and $RbCl$

B. $RbCl$ and $BeCl_2$

C. $RbCl$ and $MgCl_2$

D. $MgCl_2$ and $BeCl_2$

Answer: B

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107. Which of the following compounds does not have similarity in their structural aspects?

A. $FeSO_4 \cdot 7H_2O$

B. $Na_2CO_3 \cdot 7H_2O$

C. $MgSO_4 \cdot 7H_2O$

D. $ZnSO_4 \cdot 7H_2O$

Answer: B

Watch Video Solution

108. By adding gypsum to cement

A. Setting time of cement becomes less

B. Setting time of cement increase

C. Colour of cement becomes light

D. Shining surface is obtained

Answer: C

Watch Video Solution

109. A chemical 'A' is used for the preparation of washingg 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 off 'A'?

A. $Ca(HCO_3)_2$

B. CaO

C. $Ca(OH)_2$

D. $CaCO_3$

Answer: B

Watch Video Solution

110. Which is not similar characteristics(s) about the electronic configuration of Be, Mg, Ca?

A. All the atoms have a pair of s-electrons in their outermost energy level

B. All the atoms contains a pair of p-electrons in their outermost energy level

C. All are alkaline earth metals

D. All are of second group of the periodic table

Answer: B

Watch Video Solution

Level 2

1. $KO_2 + CO_2 + H_2O \xrightarrow[CO_2]{\text{more}} A + B$, then A and B are respectively

A. K_2CO_3, O_2

B. $KHCO_3, O_2$

C. KOH, K_2CO_3

D. $KHCO_3, H_2O$

Answer: B

Watch Video Solution

2. The correct order of increasing solubility in water is:

A. $KF < NaF < LiF$

B. $NaHCO_3 < KHCO_3 < RbHCO_3$

C. $K_2CO_3 < Na_2CO_3 < Li_2CO_3$

D. $LiNO_3 < NaNO_3 < KNO_3$

Answer: B

Watch Video Solution

3. Which of the following carbonate salt is soluble due to high entropy change?

A. K_2CO_3

B. Li_2CO_3

C. $(NH_4)_2CO_3$

D. Na_2CO_3

Answer: C

Watch Video Solution

4. Which of the following compounds decompose on heating ?

A. $NaHCO_3$

B. Na_2CO_3

C. $CaCO_3$

D. K_2SO_4

Answer: A::C

Watch Video Solution

5. Li does not resemble with other alkali metals in following properties?

A. Li_2CO_3 decomposes into oxides while other alkali metal carbonate are thermally stable

B. $LICl$ is predominately covalent

C. Li_3N is formed when Li metal is heated with N_2gas

D. All of these

Answer: D

Watch Video Solution

6. Which of the following statement about the sulphate of alkali metals is correct ?

A. Except Li_2SO_4 all sulphate of other alkali metals are soluble is water

B. All sulphate salts of alkali metals except lithium sulphate form alum

C. All sulphate salts of alkali metals except lithium sulphate do not decompose at high temperature

D. All of these

Answer: D

Watch Video Solution

7. The metallic lustre of metals is due to :

A. they have a hard surface and light is reflected back

B. their crystal structure contains ordered arrangement of constituent atoms

C. they contain loosely bound electrons which absorb the photons and then re-emit

D. they are obtained from the minerals on which light has been falling for years

Answer: C

Watch Video Solution

8. Select incorrect statement:

A. Li_2CO_3 is only sparingly soluble in water and no $LiHCO_3$ has been process

B. K_2CO_3 can not be made by a method similar to the solvey process

C. Li_2CO_3 and $MgCO_3$ both are thermally stable

D. Na_2CO_3, $NaHCO_3 \cdot 2H_2O$ is a mineral called trona

Answer: C

Watch Video Solution

9. Melting point of mixture of $Na_2CO_3 + K_2CO_3$ is :

A. Higher than that of Na_2CO_3

B. Higher than that of K_2CO_3

C. Lower than that of both Na_2CO_3 and K_2CO_3

D. Lower than that of K_2CO_3 only

Answer: C

Watch Video Solution

10. Select the incorrect statement:

A. Stability of peroxides and superoxides of alkali metals increase in size of the metal ion

B. NaOH does not form hydrated salt

C. Increase in stability in option (a) is due to stabilization of large anion by larger cations through lattice energy effects

D. The low solubility of LiF is due to its high lattice energy whereas low solubility of CsI is due to smaller hydration energy

Answer: D

 Watch Video Solution

11. The alkali metals dissolve in liquid NH_3, it is found that:

A. The dilute solution are blue but the colour changes to bronze with increasing concentration

B. The blue colour is due to presence of solvated electrons

C. The blue solutions are paramagnetic but the bronze coloured solutions are diamagnectic

D. All the facts given above are found

Answer: D

Watch Video Solution

12. Among the nitrate of alkali metals which one can be decomposed to its oxide on strong heating?

A. $NaNO_3$

B. KNO_3

C. $LiNO_3$

D. All of these

Answer: D

Watch Video Solution

13. When a standard solution of NaOH is left in air for a few hours:

A. a precipitate will form

B. strength of solution will decrease

C. the strength of solution will increase

D. the concentration of Na^+ ion in solution will remains same

Answer: B

Watch Video Solution

14. The addition of Na_2CO_3, to the aqueous solution of an oxide produces CO_2. This reaction indicates that

A. the oxide is basic

B. the oxide is amphoteric

C. the oxide is that of a metal

D. the oxide is that of a non-metal

Answer: D

Watch Video Solution

15. Salt $A + S \xrightarrow{BaCl_2}$ white ppt.

A is paramangnetic is nature and contains about 55% K. Thus,

A is:

A. K_2O

B. K_2O_2

C. KO_2

D. K_2SO_4

Answer: C

Watch Video Solution

16. Baking powder used to make cake is a mixture of starch, $NaHCO_3$ and $Ca(H_2PO_4)_2$. The function of $Ca(H_2PO_4)_2$ is

A. to show down the release of CO_2 gas

B. being acidic in nature and gives CO_2 when moistened with $NaHCO_3$

C. to act as a filler

D. None of these

Answer: B

Watch Video Solution

17. To an acidified dichromate solution, a pinch of Na_2O_2 is added and shaken. What is observed ?

A. Blue colour

B. Orange colour changing to greeen directly

C. Copious evolution of oxygen

D. Bluish-green precipitate

Answer: A::C

Watch Video Solution

18. Which of the following compounds is consumed during the preparation of Na_2CO_3 by Solvay's process?

A. $NH_3, CaCO_3, NaCl$

B. $NH_3, CaO, NaCl$

C. $CaCO_3, NaCl$

D. $NaCl, NH_4HCO_3$

Answer: C

Watch Video Solution

19. Which of the following statement is incorrect?

A. Sodium and potassium are soft and silvery white metals

B. Sodium and potassium in air get tarnished due to the formation of a layer of oxide or carbonates

C. Sodium and potassium burn in dry oxygen (excess) giving peroxides

D. Sodium and potassium are kept under kerosene to avoid the contact with air and moisture

Answer: C

Watch Video Solution

20. Nitrogen dioxide can not be obtained from

A. $Cu(NO_3)_2$

B. $Hg(NO_3)_2$

C. $NaNO_3$

D. $AgNO_3$

Answer: C

Watch Video Solution

21. $A + H_2O \rightarrow NaOH$

$$A \xrightarrow[400^\circ C]{O_2} B \xrightarrow[at25^\circ C]{H_2O} NaOH + O_2,$$

B is used for oxygenating in submarines A and B are respectively.

A. Na_2O_2 and Na_2O

B. Na_2O and Na_2O_2

C. Na_2O_2 and O_2

D. Na_2O and O_2

Answer: B

Watch Video Solution

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

A. $CaCl_2$ is less soluble in H_2O than NaCl

B. $CaCl_2$ is hygroscopic but NaCl is not

C. eutectic mixture of $CaCl_2/H_2O$ freezes at $-55^\circ C$ while that of $NaCl/H_2O$ freezes at $-18^\circ C$

D. NaCl makes the road slipperty but $CaCl_2$ does not

Answer: C

Watch Video Solution

23. A metal which does not react with nitrogen is :

A. Li

B. K

C. Ca

D. Mg

Answer: B

Watch Video Solution

24. The pair of compounds which cannot exist together in aqueous solution is:

$(I) NaH_2PO_4$ and $NaHCO_3$ $(II) Na_2CO_3$ and

$NaHCO_3$

$(III) NaOH$ and NaH_2PO_2 $(IV) NaHCO_3$ and $NaOH$

A. I, II, III

B. II, III

C. III, IV

D. only IV

Answer: D

Watch Video Solution

25. The incorrect order of solubility in water is:

A. $Ca(OH)_2 < Sr(OH)_2 < Be(OH)_2$

B. $Li_2CO_3 < Na_2CO_3 < K_2CO_3$

C. $KNO_3 < RbNO_3 < CsNO_3$

D. $BaS_2O_3 < MgS_2O_3 < CaS_2O_3$

Answer: D

Watch Video Solution

26. Which metal bicarbonates does not exist in solid state?

(i)$LiHCO_3$ (ii)$Ca(HCO_3)_2$ (iii)$Zn(HCO_3)_2$ (iv)CaS_2O_3

A. (i)

B. (ii)

C. (iii)

D. (iv)

Answer: A

Watch Video Solution

27. Which of the following order is correct?

A. $K^+ < Ca^{2+} < P^{3-} < S^{2-}$ Ionic size

B. $Na^+_{aq.} > K^+_{aq.} > Rb^+_{aq.} > Cs^+_{aq.}$: Electrical conductance

C. $Al^{3+}_{aq.} > Mg^{2+}_{aq.} > Na^+_{aq.}$: Hydrated size

D. $I^-_{aq.} < Br^-_{aq.} > Cl^-_{aq.} > F^-_{aq.}$: Ionic mobility

Answer: C

Watch Video Solution

28. Metal $M + \text{air} \xrightarrow{\delta} A \xrightarrow{H_2O} B \xrightarrow{HCl}$ White fumes, Metal M can be:

A. Li, Mg

B. Li, Al or K

C. Na, K or Mg

D. Li, Na or K

Answer: A

Watch Video Solution

29. X and Y are two metals. When burnt in air, X forms only oxide while Y forms oxide and nitride. The metals X and Y may be:

A. Ca and Mg

B. Na and Mg

C. Li and Na

D. Na and K

Answer: B

Watch Video Solution

30. Which is incorrect statement?

A. The heats of hydration of the dipositive alkaline earth metal ions decrease with an increase in their ionic size

B. $NaNO_3$ forms Na_2O_2 on heating

C. Hydration of alkali metal ion is less than that of IIA group

D. Alkaline earth metal ions, because of their much larger charge to size ratio, exert much stronger electrostatic attraction on the oxygen of water molecule surrounding them

Answer: B

Watch Video Solution

31. Which of the following statement is incorrect?

A. The atomic radius of Na is greater than that of Mg

B. Metallic bond of Mg is stronger than the metallic bond in Na

C. Melting and boiling point of Mg are greater than those of Ca

D. Mg and Ca are the most abundant elements amongst the alkaline earth metals

Answer: C

Watch Video Solution

32. Thermal stability of MCO_3 is in order:

A. $BeCO_3 < MgCO_3 < CaCO_3 < SrCO_3 < BaCO_3$

B. $MgCO_3 < BeCO_3 < CaCO_3 < SrCO_3BaCO_3$

C. $CaCO_3 < SrCO_3 < BaCO_3 < BeCO_3 < MgCO_3$

D. $BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3 < BeCO_3$

Answer: A

Watch Video Solution

33. Select incorrect statement about alkaline earth metals:

A. Solubility of sulphates decrease down the group

B. Solubility of hydroxides decrease down the group

C. Thermal stability of carbonates increase down the group

D. Basic nature increase down the group

Answer: B

Watch Video Solution

34. In polymeric $(BeCl_2)_n$, there are:

A. Three centre four-electron bonds

B. Three centre three-electron bonds

C. two centre three-electron bonds

D. two centre two-electron bonds

Answer: A

Watch Video Solution

35. A metal is burnt in air and the ash on moistening smells of ammonia. The metal is

A. Na

B. Fe

C. Mg

D. Al

Answer: C

Watch Video Solution

36. Which is not obtained when metal carbides react with H_2O?

A. $Al_4C_3 + H_2O \rightarrow CH \equiv CH$

B. $CaC_2 + H_2O \rightarrow CH \equiv CH$

C. $Mg_4C_3 + H_2O \rightarrow CH_3C \equiv CH$

D. $Be_2C + H_2O \rightarrow CH_4$

Answer: A

Watch Video Solution

37. Choose incorrect statement:

A. $BeCO_3$ is kept in the atmosphere of CO_2 since, it is least thermally stable

B. Be dissolves in alkali forming $\left[Be(OH)_4\right]^{2-}$

C. BeF_4 forms complex ion with NaF in which Be goes with cation

D. BeF_4 forms complex ion with NaF in which Be goes with anion

Answer: C

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38. IIA (alkaline earth metals) and IIB (zinc family) resemble:

A. $MgSO_4 \cdot 7H_2O$ is isomorphous with $ZnSO_4 \cdot 7H_2O$

B. IIA and IIB cations are ont precipitated by H_2S in acidic medium

C. both (a) and (b)

D. None of the above

Answer: A

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39. Select the correct statement:

A. Be and Al show diagonal relationship

B. Be forms tetrahedral complexes $\left[Be(C_2O_4)_2\right]^{2--}$

C. Al forms AlF_6^{2-}, an octahedral complex

D. All are correct statements

Answer: D

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40. Calcium imide on hydrolysis will give gas (B) which on oxidation by bleaching powder given gas (C). Gas (C) on reaction with magnesium gives compound (D). (D) on hydrolysis gives again gas (B). (B), (C) and (D) are:

A. NH_3, N_2, Mg_3N_2

B. $N_2, NH_3, MgNH$

C. $N_2, N_2O_5, Mg(NO_3)_2$

D. $NH_3, NO_2, Mg(NO_3)_2$

Answer: A

Watch Video Solution

41. A compound X on heating gives a colourless gas. This residue is dissolved in water to obtain Y. excess CO_2 is bubbled through aqueous solution of Y, Z is formed. Z on gentle heating give back X. the X is

A. $CaCO_3$

B. $Ca(HCO_3)_2$

C. Na_2CO_3

D. $NaHCO_3$

Answer: A

Watch Video Solution

42. Which of the following statement is false?

A. The milk of magnesia used as antacid is chemically $MgO + MgCl_2$

B. Stability of alkali metal oxides incease with increase in atomic numbers

C. Hydration energy of AgF is higher than its lattice energy

D. Anhydrous $MgCl_2$ cannot be prepared by direct heating of $MgCl_2 \cdot 6H_2O$

Answer: A

Watch Video Solution

43. The more commonly used baking powder contains about $30\,\%\,NaHCO_3$, $20\,\%\,NaK(SO_4)_2$, $10\,\%\,Ca(H_2PO_4)_2$ and 40% starch. Which of the following statements is/are correct?

A. $Ca(H_2PO_4)$ is acidic and when moistened it reacts with $NaHCO_4$ evolving CO_2 gas

B. $NaAl(SO_4)_2$ shows down the decomposition reaction of $NaHCO_3$ so that CO_2 is evolved more slowly.

C. $NaAl(SO_4)_2$ is acidic and when moistened it reacts with $NaHCO_3$ evolving CO_2

D. Both (a) and (b)

Answer: D

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44. $KO_2 + CO_2 + H_2O \xrightarrow{\text{more } CO_2} [X] + [Y]$

Products [X] and [Y] are respectivily.

A. K_2CO_3, O_2

B. $KHCO_3, O_2$

C. KOH, K_2CO_3

D. $KHCO_3, H_2O$

Answer: B

Watch Video Solution

45. The correct order of increasing solubility in water is:

A. $KF < NaF < LiF$

B. $NaHCO_3 < KHCO_3 < RbHCO_3$

C. $K_2CO_3 < Na_2CO_3 < Li_2CO_3$

D. $LiNO_3 < NaNO_3$

Answer: B

Watch Video Solution

46. Which of the following carbonate salt is soluble due to high entropy change?

A. K_2CO_3

B. Li_2CO_3

C. $(NH_4)_2CO_3$

D. Na_2CO_3

Answer: C

Watch Video Solution

47. Which of the following compounds decomposes on heatin?

A. $NaHCO_3$

B. Na_2CO_3

C. $CaCO_3$

D. K_2SO_4

Answer: A::C

Watch Video Solution

48. Li does not resemble with other alkali metals in following properties?

A. Li_2CO_3 decomposes into oxides while other alkali metal carbonate are thermally stable

B. $LICl$ is predominately covalent

C. Li_3N is formed when Li metal is heated with N_2gas

D. All of these

Answer: D

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49. Which of the following statement about the sulphate of alkali metals is correct ?

A. Except Li_2CO_2 all sulphate of other alkali metals are soluble is water

B. All sulphate salt of alkali metals except lithium sulphate forms alum

C. All sulphate salts of alkali metals except lithium sulphate do not decomposes at high temperature

D. All of these

Answer: D

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50. Alkali metals posses metallic lustre when freshly cut because

A. they have a hard surface and light is reflected back

B. their crystal structure contains ordered arrangement of constituent atoms

C. they contain loosely bound electrons which absor the photons and then re-emit

D. they are obtained from the minerals on which light has been falling for years

Answer: C

Watch Video Solution

51. Select the incorrect statement:

A. Li_2CO_3 is only sparingly soluble in water and no $LiHCO_3$ has been isolated.

B. K_2CO_3 can not be made by a method similar to the solvey process

C. Li_2CO_3 and $MgCO_3$ both are thermally stable

D. $Na_2CO_3.NaHCO_3 \cdot 2H_2O$ is a mineral called trona

Answer: C

Watch Video Solution

52. Melting point of mixture of $Na_2CO_3 + K_2CO_3$ is :

A. Higher than that of Na_2CO_3

B. Higher than that of K_2CO_3

C. Lower than that of both Na_2CO_3 and K_2CO_3

D. Lower than that of K_2CO_3 only

Answer: C

Watch Video Solution

53. Select incorrect statement:

A. Stability of peroxides and superoxides of alkali metals increase in size of the metal ion

B. NaOH does not form hydrated salt

C. Increase in stability in (a) is due to stabilisation of large anoin by larger cations through lattice energy effects

D. The low solubility of LiF is due to its high lattice energy whereas low solubility of CsI is due to smaller hydration energy

Answer: D

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54. The alkali metals dissolve in liquid NH_3, it is found that:

A. The dilute solution are blue but the colour changes to brone with increasing concentration

B. The blue colour is due to presence of solvated electrons

C. The blue solutions are paramagnetic but the bronze coloured solutions are diamagnectic

D. All the facts given above are found

Answer: D

Watch Video Solution

55. Among the nitrate of alkali metals which one can be decomposed to its oxide on strong heating?

A. $NaNO_3$

B. KNO_3

C. $LiNO_3$

D. All of these

Answer: D

Watch Video Solution

56. When a standard solution of $NaOH$ is left in air for a few hours:

A. a precipitate will form

B. strength of solution will decrease

C. the strength of solution will increase

D. the concentration of Na^+ ion in solution will remains same

Answer: B

Watch Video Solution

57. The addition of Na_2CO_3, to the aqueous solution of an oxide produces CO_2. This reaction indicates that

A. the oxide is basic

B. the oxide is amphoteric

C. the oxide is that of a metal

D. the oxide is that of a non-metal

Answer: D

Watch Video Solution

58. Salt $A + S \rightarrow B \xrightarrow{BaCl_2}$ White precipitate A is paramagnetic in nature and contains about 55% K. Thus, A is

A. K_2O

B. K_2O_2

C. KO_2

D. K_2SO_4

Answer: C

Watch Video Solution

59. Baking powder used to make cake is a mixture of starch, $NaHCO_3$ and $Ca(H_2PO_4)$. The function of $Ca(H_2PO_4)$ is :

A. to show down the release of CO_2 gas

B. being acidic in nature and gives CO_2 when moistened with $NaHCO_3$

C. to act as a filler

D. None of these

Answer: B

Watch Video Solution

60. To an acidified dichromate solution,, a pinch of Na_2O_2 is added and shaken. What is observed?

A. Blue colour

B. Orange colour changing to greeen directly

C. Copious evolution of oxygen

D. Bluish-green precipitate

Answer: A::C

Watch Video Solution

61. Which of the following compounds is consumed during the preparation of Na_2CO_3 by Solvay's process?

A. $NH_3, CaCO_3, NaCl$

B. $NH_3, CaO, NaCl$

C. $CaCO_3, NaCl$

D. $NaCl, NH_4HCO_3$

Answer: C

Watch Video Solution

62. Which of the following statement is incorrect?

A. Sodium and potassium are soft and silvery white metals

B. Sodium and potassium in air get tarnished due to the formation of a layer of oxide or carbonates

C. Sodium and potassium burn in dry oxygen (excess) giving peroxides

D. Sodium and potassium are kept under kerosene to avoid the contact with air and moisture

Answer: C

Watch Video Solution

63. Nitrogen dioxide cannot be obtained from:

A. $Cu(NO_3)_2$

B. $Hg(NO_3)_2$

C. $NaNO_3$

D. $AgNO_3$

Answer: C

Watch Video Solution

64.

$$'A' + H_2O \rightarrow NaOH : 'A' \xrightarrow[400^\circ C]{O_2} B \xrightarrow[at25^\circ C]{H_2O} NaOH + O_2$$

B is used for oxygenating in submarine A and are:

A. Na_2O_2 and Na_2O

B. Na_2O and Na_2O_2

C. Na_2O_2 and O_2

D. Na_2O and O_2

Answer: B

Watch Video Solution

65. $CaCl_2$ is preferred over NaCl for clearing ice on roads particularly in very cold countries. This is because:

A. $CaCl_2$ is less soluble in H_2O than NaCl

B. $CaCl_2$ is hygroscopic but NaCl is not

C. Eutectic mixture of $CaCl_2/H_2O$ freezes at $-55^\circ C$ while that of $NaCl/H_2O$ freezes at $-18^\circ C$

D. $NaCl$ makes the road slipperty but $CaCl_2$ does not

Answer: C

Watch Video Solution

66. A metal which does not react with nitrogen is :

A. Li

B. K

C. Ca

D. Mg

Answer: B

Watch Video Solution

67. Which metal bicarbonates does not exist in solid state?

(i)$LiHCO_3$ (ii)$Ca(HCO_3)_2$ (iii)$Zn(HCO_3)_2$ (iv)CaS_2O_3

A. I, II, III

B. II, III

C. III, IV

D. only IV

Answer: D

Watch Video Solution

68. The incorrect order of solubility in water is:

A. $Ca(OH)_2 < Sr(OH)_2 < Be(OH)_2$

B. $Li_2CO_3 < Na_2CO_3 < K_2CO_3$

C. $CsNO_3 < RbNO_3 < KNO_3$

D. $BaS_2O_3 < MgS_2O_3 < CaS_2O_3$

Answer: D

Watch Video Solution

69. Which metal bicarbonates does not exist in solid state?

(i)$LiHCO_3$ (ii)$Ca(HCO_3)_2$ (iii)$Zn(HCO_3)_2$ (iv)CaS_2O_3

Watch Video Solution

70. Which one of the following order is correct ?

A. $K^+ < Ca^{2+} < P^{3-} < S^{2-}$ Ionic size

B. $Na^+_{aq.} > K^+_{aq.} > Rb^+_{aq.} > Cs^+_{aq.}$: Electrical conductance

C. $Al^{3+}_{aq.} > Mg^{2+}_{aq.} > Na^+_{aq.}$: Hydrated size

D. $I^-_{aq.} < Br^-_{aq.} > Cl^-_{aq.} > F^-_{aq.}$: Ionic mobility

Answer: C

Watch Video Solution

71. Metal M + air $\xrightarrow{\delta} A \xrightarrow{H_2O} B \xrightarrow{HCl}$ White fumes, Metal M can be:

A. Li, Mg

B. Li, Al or K

C. Na, K or Mg

D. Li, Na or K

Answer: A

 Watch Video Solution

72. X and Y are two metals. When burnt in air, X forms only oxide while Y forms oxide and nitride. The metals X and Y may be:

A. Ca and Mg

B. Na and Mg

C. Li and Na

D. Na and K

Answer: B

Watch Video Solution

73. Which of the following is an incorrect statement?

A. The heats of hydration of the dipositive alkaline earth metal ions decrease with an increase in their ionic size

B. $NaNO_3$ forms Na_2O on heating

C. Hydration of alkali metal ion is less than that of IIA group

D. Alkaline earth metal ions, because of their much larger charge to size ratio, exert a much stronger electrostatic attraction on the oxygen of water molecule surrounding them

Answer: B

Watch Video Solution

74. Which of the following statement is incorrect?

A. The atomic radius of Na is greater than that of Mg

B. Metallic bond of Mg is stronger than the metallic bond in Na

C. Melting and boiling point of Mg are greater than those of Ca

D. Ma and Ca are the most abundant elements amongst the alkaline earth metals

Answer: C

Watch Video Solution

75. Thermal stability of MCO_3 is in order:

A. $BeCO_3 < MgCO_3 < CaCO_3 < SrCO_3 < BaCO_3$

B. $MgCO_3 < BeCO_3 < CaCO_3 < SrCO_3BaCO_3$

C. $CaCO_3 < SrCO_3 < BaCO_3 < BeCO_3 < MgCO_3$

D. $BaCO_3 > SrCO_3 > CaCO_3 > MgCO_3 < BeCO_3$

Answer: A

Watch Video Solution

76. Select incorrect statement about alkaline earth metals:

A. Solubility of sulphates decreases down the group

B. Solubility of hydroxides decreases down the group

C. Thermal stability of carbonates increases down the group

D. Basic nature increases down the group

Answer: B

Watch Video Solution

77. In polymeric $(BeCl_2)_n$, there are:

A. Three centre four-electron bonds

B. Three centre three-electron bonds

C. two centre three-electron bonds

D. two centre two-electron bonds

Answer: A

Watch Video Solution

78. A metal is burnt in air and the ash on moistening smells of NH_2.The metal is :

A. Na

B. Fe

C. Mg

D. Al

Answer: C

Watch Video Solution

79. Which is not obtained when metal carbides react with H_2O ?

A. $Al_4C_3 + H_2O \rightarrow CH \equiv CH$

B. $CaC_2 + H_2O \rightarrow CH \equiv CH$

C. $Mg_4C_3 + H_2O \rightarrow CH_3C \equiv CH$

D. $Be_2C + H_2O \rightarrow CH_4$

Answer: A

Watch Video Solution

80. Choose incorrect statement:

A. $BeCO_3$ is kept in the atmosphere of CO_2 since, it is least thermally stable

B. Be dissolves in alkali forming $\left[Be(OH)_4\right]^{2-}$

C. BeF_4 forms complex ion with NaF in which Be goes with cation

D. BeF_4 forms complex ion with NaF in which Be goes with anion

Answer: C

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81. IIA (alkaline earth metals) and IIB (zinc family) resemble:

A. $MgSO_4 \cdot 7H_2O$ is isomorphous with $ZnSO_4 \cdot 7H_2O$

B. IIA and IIB cations are ont precipitated by H_2S in acidic medium

C. both (a) and (b)

D. None of the above

Answer: A

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82. Select the correct statement:

A. Be and Al show diagonal relationship

B. Be forms tetrahedral complexes $\left[Be(C_2O_4)_2\right]^{2--}$

C. Al forms AlF_6^{2-}, an octahedral complex

D. All are correct statements

Answer: D

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83. Calcium imide on hydrolysis will give gas (B) which on oxidation by bleaching powder given gas (C). Gas (C) on reaction with magnesium gives compound (D). (D) on hydrolysis gives again gas (B). (B), (C) and (D) are:

A. NH_3, N_2, Mg_3N_2

B. $N_2, NH_3, MgNH$

C. $N_2, N_2O_5, Mg(NO_3)_2$

D. $NH_3, NO_2, Mg(NO_3)_2$

Answer: A

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84. The compound A on heating gives a colourless gas and a residue that

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. $Ca(HCO_3)_2$

C. Na_2CO_3

D. $NaHCO_3$

Answer: A

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85. Which of the following statement is false?

A. The milk of magnesia used as antacid is chemically

$MgO + MgCl_2$

B. Stability of alkali metal peroxide incease with increase

in atomic numbers

C. Hydration energy of AgF is higher than its lattice energy

D. Anhydrous $MgCl_2$ cannot be prepared by direct heating of $MaCl_2 \cdot 6H_2O$

Answer: A

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86. The more commonly used baking powder contains about $30\,\%\ NaHCO_3$, $20\,\%\ NaK(SO_4)_2$, $10\,\%\ Ca(H_2PO_4)_2$ and 40% starch. Which of the following statements is/are correct?

A. $Ca(H_2PO_4)$ is acidic and when moistened it reacts with $NaHCO_4$ evolving CO_2 gas

B. $NaAl(SO_4)_2$ shows down the decomposition reaction of $NaHCO_3$ so that CO_2 is evolved more slowly.

C. $NaAl(SO_4)_2$ is acidic and when moistened it reacts with $NaHCO_3$ evolving CO_2

D. Both (a) and (b)

Answer: D

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Level 3

1. Dilute solutions of alkali metals in liquid NH_3 are blue. It is the ammoniated electron which is responsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation, $\left[M(NH_3)_x\right]^+$ as well as the ammoniated electrons, $\left[e(NH_3)_y\right]^-$, values of x and y depend on the extent of solvation (by NH_3). Dilute solutions are paramagnetic due to free electrons.

What happens if alkali metals is allowed to react with concentrated liquid ammonia?

A. Paramagnetic character of solvated electrons is retained

B. Solvated electrons associate to form electron-pairs and paramagnetic character decrease

C. Reducing character is increased

D. Reducing character is not affected

Answer: B

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2. All alkali metals dissolve in anhydrous liquid ammonia to give blue colour solution. It is the ammoniated electron which is reponsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation, $\left[M(NH_3)_x\right]^+$ as well as the ammoniated electron, $\left[e(NH_3)_y\right]^-$, value of x and y depend on the extent of solvation by NH_3. Dilute solutions are paramagnetic due to free ammoniated electrons.

Q. Which of the following statement about solution of alkali metals in liquid ammonia is correct?

A. The solution has strong oxidizing properties

B. Both the dil. Solution as well as conc. Solution are equally paramagnetic in nature

C. Charge transfer is responsible for the colour of the solution

D. None of these

Answer: D

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3. All alkali metals dissolve in anhydrous liquid ammonia to give blue colour solution. It is the ammoniated electron which is reponsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation,

$\left[M(NH_3)_x\right]^+$ as well as the ammoniated electron, $\left[e(NH_3)_y\right]^-$, value of x and y depend on the extent of solvation by NH_3. Dilute solutions are paramagnetic due to free ammoniated electrons.

Q. Ammoniated solutions of alkali metals are reducing agents due to the presence of free ammoniated or solvated electrons that can reduce:

(I)$O_2 \text{to} O_2^{2-}$ (II) $K_2\left[Ni(CN)_4\right]$ to $K_4\left[Ni(CN)_4\right]$

(III) Aromatic ring (IV) Non-terminal alkyne

Choose the correct code:

A. III and IV

B. II and III

C. I, II, III and IV

D. I, III and IV

Answer: C

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4. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. The compounds B and C is

A. Na_2CO_3, Na_2SO_4

B. $NaHCO_3, Na_2SO_4$

C. Na_2CO_3, Na_2SO_3

D. None of these

Answer: C

Watch Video Solution

5. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. The compound D is

A. Na_2SO_4

B. $Na_2S_4O_6$

C. Na_2SO_3

D. $Na_2S_2O_3$

Answer: D

Watch Video Solution

6. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. Oxidation number of each 'S' atom in compound D:

A. $+2, \ +2$

B. $+4, 0$

C. $+6, \ -2$

D. $+5, \ -1$

Answer: C

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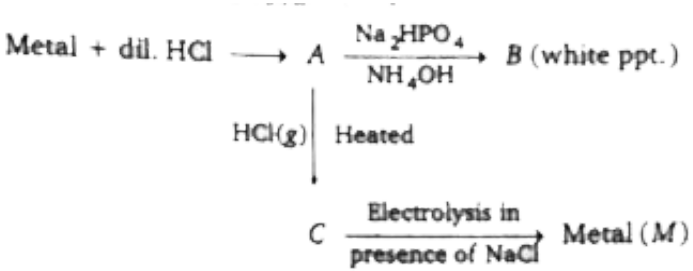

7.

Q. The compound A is :

A. $CaCl_2 \cdot 2H_2O$

B. $MgCl_2 \cdot 6H_2O$

C. $Na_2SO_4 \cdot 10H_2O$

D. $CaSO_4 \cdot 2H_2O$

Answer: B

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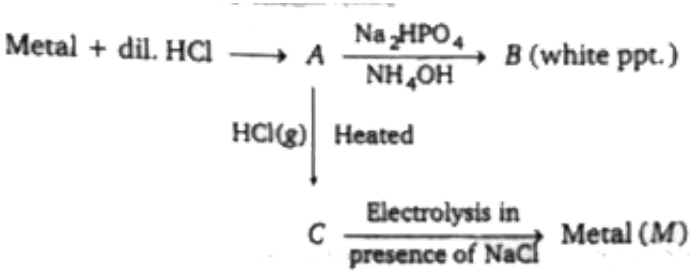

8.

Q. The compound B is :

A. $Mg(NH_4)PO_4$

B. $Ca_3(PO_4)_2 + NH_3$

C. $Na(NH_4)HPO_4$

D. Both (a) and (b)

Answer: A

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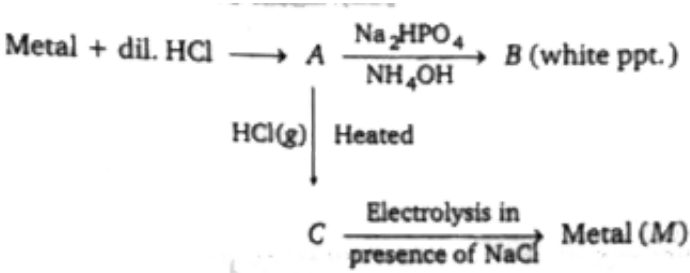

9.

Q. The compound C and metal M are:

A. $NaCl, Na$

B. $CaCl_2, Ca$

C. $MgCl_2, Mg$

D. $BeCl_2, Be$

Answer: C

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10. Calcium sulphate is found in nature in two forms, anhydrous calcium sulphate and hydrated calcium sulphate. When anhydrous calcium sulphate is heated with coke, sulphur dioxide gas is obtained. When hydrated calcium suphate is heated to 200° C, it forms anhydrous salt.

Q. The anhydrous calcium sulphate is called :

A. gypsum

B. anhydrite

C. plaster of paris

D. lime

Answer: B

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11. Mix calcium sulphate with conc. HCl and forms a paste. Bring a pinch of this paste near to the flame, what colour will you obtain?

A. golden yellow

B. brick red

C. crimson red

D. apple green

Answer: C

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12. Calcium sulphate is found in nature in two forms, anhydrous calcium sulphate and hydrated calcium sulphate.

When anhydrous calcium sulphate is heated with coke, sulphur dioxide gas is obtained. When hydrated calcium suphate is heated to 200° C, it forms anhydrous salt.

Q. What is the product formed when hydrated $CaSO_4$ is heated to 125° C instead of $200^\circ C$?

A. $(CaSO_4)_2H_2O$

B. $CaSO_4\frac{3}{4}H_2O$

C. $CaSO_4$

D. $CaO + SO_3$

Answer: A

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13. Sodium sulphite (Na_2SO_3) is added to meat as a preservative. The presence of Na_2SO_3 can be detected by adding dil. H_2SO_4 when the pungent smelling gas evolved turns the lime water milky. The gas evolved was detected as sulphur dioxide. The SO_2 to SO_4^{2-} in titration.

$SO_2 + 2H_2O + I_2 \rightarrow 4H^+ + SO_4^{2-} + 2I^-$

In order to check the results of titration, excess barium chloride is added to the final solution. The resulting precipitate is collected and weighed.

Q. SO_2 gas is used as bleaching agent. Its bleaching action is :

A. temporary and due to its oxidizing nature

B. temporary and due to its reducing action

C. permanent and due to its oxidizing nature

D. permanent and due to its reducing action

Answer: B

Watch Video Solution

14. Sodium sulphite (Na_2SO_3) is added to meat as a preservative. The presence of Na_2SO_4 can be detected by adding dil. H_2SO_4 when the pungent smelling gas evolved turns the lime water milky. The gas evolved was detected as sulphur dioxide. The SO_2 to SO_4^{2-} in titration.

$$SO_2 + 2H_2O + I_2 \rightarrow 4H^+ + SO_4^{2-} + 2I^-$$

In order to check the results of titration, excess barium chloride is added to the final solution. The resulting precipitate is collected and weighed.

Q. Which of the following compounds is formed, when Na_2SO_3 is boiled with sulphur.

A. Na_2SO_4

B. $Na_2S_4O_5$

C. $Na_2S_4O_6$

D. $Na_2S_4O_3$

Answer: D

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15. On treatment with cold wate, element (A) reacted quietly, librating colourless gas (B) and solution (C). Lithium reacted with gas (B) and giving a solid product (D) which gave effervesence with water to give basic solution (E). When CO_2

was passed thorough solution (C), an initial whit ppt (F) was formed but this redissolved forming solution (G) when more CO_2 was passed. PPT (F) effervessced when moistened to Bunsen flame. (F) on heating wiith excess of carbon at $2000^\circ C$ gave (H):

Metal A may be:

A. Be

B. Ca

C. Mg

D. Ba

Answer: B

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16. On treatment with cold water, an element (A) reacts readily liberating a colourless, odourless gas (B) and a solution (C). Lithium is reacted with (B) yeildng a solid product (D) which effervesce with water to give a strongely basic solution (E). When CO_2 gas is bubbled through solution (C), a white ppt. (F) is formed but this redissolved forming solution (G) when more CO_2 is passed. Precipitate (F) effervesced when moistened with conc. HCl and give deep red colouration to Bunsen burner flame. (F) on heating with excess of carbon at 2000° C give (H).

Answer the following question on the basis of above passage.

Q. Solution (G) contains a salt which

(i) causes permanent hardness of water

(ii)can not be obtained in solid state

(iii)causes temporary hardness of water

(iv)can be obtained in solid state

Select the correct statements :

A. (i) and (ii)

B. (i) and (iv)

C. (ii) and (iii)

D. (ii) and (iv)

Answer: C

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17. On treatment with cold water, an element (A) reacts readily liberating a colourless, odourless gas (B) and a solution (C). Lithium is reacted with (B) yeildng a solid product (D) which effervesce with water to give a strongely

basic solution (E). When CO_2 gas is bubbled through solution (C), a white ppt. (F) is formed but this redissolved forming solution (G) when more CO_2 is passed. Precipitate (F) effervesced when moistened with conc. HCl and give deep red colouration to Bunsen burner flame. (F) on heating with excess of carbon at 2000°C give (H).

Answer the following question on the basis of above passage.

Q. Solid (H) on hydrolysis gives a gas which on passing through ammoniated $AgNO_3$ solution yields:

A. white ppt.

B. red ppt.

C. no ppt.

D. brown ppt.

Answer: A

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18. Lithium only forms monoxide when heated in oxygen. Sodium forms monoxide and peroxide in excess of oxygen. Other alkali metals form superoxide metals superoxide with oxygen i.e., MO_2. The abnormal behaviour of lithium is due to small size. The larger size of higher metals also decides the role in formation of superoxide. All the three anions abstract proton from water. The three anions are raleted to each other as follows:

$$\underset{\text{oxide ion}}{O_2^{2-}} \xrightarrow{\frac{1}{2}O_2} \underset{\text{peroxide ion}}{O_2^{2-}} \xrightarrow{O_2} \underset{\text{superoxide ion}}{2O_2^-}$$

Q. Consider the following reaction :

$$M + O_2 \rightarrow MO_2$$

(M=alkali metal) (stable superoxide)

A. M can not be Li and Na

B. M can not be Cs and Rb

C. M can not be Li and Rb

D. None of these

Answer: A

19. Lithium only forms monoxide when heated in oxygen. Sodium forms monoxide and peroxide in excess of oxygen. Other alkali metals form superoxide metals superoxide with oxygen i.e., MO_2. The abnormal behaviour of lithium is due to small size. The larger size of higher metals also decides the role in formation of superoxide. All the three anions abstract

proton from water. The three anions are raleted to each other as follows:

$$O_2^{2-} \xrightarrow{\frac{1}{2}O_2} \underset{\substack{\text{peroxide ion}\\ \text{oxide ion}}}{O_2^{2-}} \xrightarrow{O_2} \underset{\text{superoxide ion}}{2O_2^-}$$

Q. Which anion is stable towards water:

A. O^{2-}

B. O_2^{2-}

C. O_2^-

D. None of these

Answer: D

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20. Lithium only forms monoxide when heated in oxygen. Sodium forms monoxide and peroxide in excess of oxygen. Other alkali metals form superoxide metals superoxide with oxygen i.e., MO_2. The abnormal behaviour of lithium is due to small size. The larger size of higher metals also decides the role in formation of superoxide. All the three anions abstract proton from water. The three anions are raleted to each other as follows:

$$\underset{\text{oxide ion}}{O_2^{2-}} \xrightarrow{\frac{1}{2}O_2} \underset{\text{peroxide ion}}{O_2^{2-}} \xrightarrow{O_2} \underset{\text{superoxide ion}}{2O_2^-}$$

Q. Which compounds will liberate oxygen when reacts with ice cold water?

A. Na_2O_2

B. KO_2

C. Na_2O

D. Cs_2O_2

Answer: B

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21. Lithium only forms monoxide when heated in oxygen. Sodium forms monoxide and peroxide in excess of oxygen. Other alkali metals form superoxide metals superoxide with oxygen i.e., MO_2. The abnormal behaviour of lithium is due to small size. The larger size of higher metals also decides the role in formation of superoxide. All the three anions abstract proton from water. The three anions are raleted to each other as follows:

$$\underset{\text{oxide ion}}{O_2^{2-}} \xrightarrow{\frac{1}{2}O_2} \underset{\text{peroxide ion}}{O_2^{2-}} \xrightarrow{O_2} \underset{\text{superoxide ion}}{2O_2^-}$$

Q. In hydrolysis, the alkali metals oxides, peroxide and superoxide act as:

A. Bronsted acid

B. Bronsted base

C. Lewis acid

D. Lewis base

Answer: B

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22. Most metal oxide are thermally stable at temperature upto $1000^{\circ}C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Which of the following salt salt does not give NO_2 gas on heating?

A. $Pb(NO_3)_2$

B. $Zn(NO_3)_2$

C. $AgNO_3$

D. KNO_3

Answer: D

Watch Video Solution

23. Most metal oxide are thermally stable at temperature upto $1000^\circ C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Which of the following compound cannot be thermally decomposed even at high temperature?

A. $CsHCO_3$

B. Rb_2CO_3

C. Li_2CO_3

D. $(NH_4)_2CO_3$

Answer: B

Watch Video Solution

24. Most metal oxide are thermally stable at temperature upto $1000^\circ C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Correct code for following thermal decomposition reaction(s) evolving gas having equal number of $\sigma -$ and $\pi -$ bonds is :

(i) $BeCO_3 \xrightarrow{\delta}$ (ii) $ZnSO_4 \xrightarrow[\gamma < 800^\circ C]{\delta}$

(iii) $FeSO_4 \xrightarrow{300^\circ C}$ (iv) $(NH_3)_2Cr_2O_7 \xrightarrow{\delta}$

A. i, ii

B. i, iii, iv

C. i, ii, iii

D. All of these

Answer: C

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25. All alkali metals dissolve in anhydrous liquid ammonia to give blue colour solution. It is the ammoniated electron which is reponsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation, $\left[M(NH_3)_x\right]^+$ as well as the ammoniated electron, $\left[e(NH_3)_y\right]^-$, value of x and y depend on the extent of solvation by NH_3. Dilute solutions are paramagnetic due to free ammoniated electrons.

Q. What happens if more alkali metals is allowed to react with concentrated liquid ammonia?

A. Paramagnetic character of solvated electrons is retained

B. Solvated electrons associate to form electron-pairs and paramagnetic character decrease

C. Reducing character is increased

D. Reducing character is not affected

Answer: B

Watch Video Solution

26. All alkali metals dissolve in anhydrous liquid ammonia to give blue colour solution. It is the ammoniated electron which is reponsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation, $\left[M(NH_3)_x\right]^+$ as well as the ammoniated electron, $\left[e(NH_3)_y\right]^-$, value of x and y depend on the extent of solvation by NH_3. Dilute solutions are paramagnetic due to free ammoniated electrons.

Q. Which of the following statement about solution of alkali metals in liquid ammonia is correct?

A. The solution have strong oxidizing properties

B. Both the dil. Solution as well as conc. Solution are equally paramagnetic in nature

C. Charge transfer is responsible for the colour of the solution

D. None of these

Answer: D

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27. All alkali metals dissolve in anhydrous liquid ammonia to give blue colour solution. It is the ammoniated electron which is reponsible for the blue colour of the solution, and the electrical conductivity is due to the ammoniated cation, $\left[M(NH_3)_x\right]^+$ as well as the ammoniated electron, $\left[e(NH_3)_y\right]^-$, value of x and y depend on the extent of solvation by NH_3. Dilute solutions are paramagnetic due to free ammoniated electrons.

Q. Ammoniated solutions of alkali metals are reducing agents due to the presence of free ammoniated or solvated electrons that can reduce:

(I)$O_2 \text{to} O_2^{2-}$ (II) $K_2\left[Ni(CN)_4\right]$ to $K_4\left[Ni(CN)_4\right]$

(III) Aromatic ring (IV) Non-terminal alkyne

Choose the correct code:

A. III and IV

B. II and III

C. I, II, III and IV

D. I, III and IV

Answer: C

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28. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. The compounds B and C is

A. Na_2CO_3, Na_2SO_4

B. $NaHCO_3, Na_2SO_4$

C. Na_2CO_3, Na_2SO_3

D. None of these

Answer: C

Watch Video Solution

29. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. The compound D is

A. Na_2SO_4

B. $Na_2S_4O_6$

C. $Na_2S_2O_3$

D. $Na_2S_2O_3$

Answer: D

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30. $Na \xrightarrow{H_2O} A \xrightarrow{CO_2} B \xrightarrow{SO_2} C \xrightarrow[\delta]{Na_2S/I_2} D \xrightarrow{Ag^+/Sa<} E$

(complex)

Q. Oxidation number of each 'S' atom in compound D:

A. $+2, \ +2$

B. $+4, 0$

C. $+6, \ -2$

D. $+5, \ -1$

Answer: C

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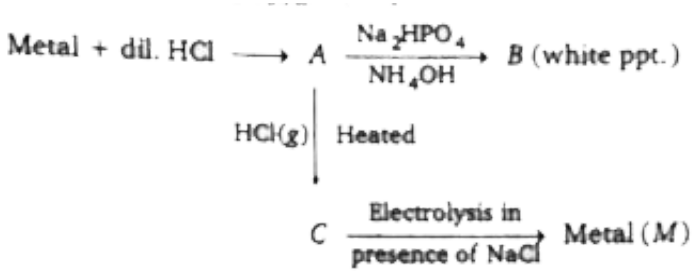

31.

Q. The compound A is :

A. $CaCl_2 \cdot 2H_2O$

B. $MgCl_2 \cdot 6H_2O$

C. $Na_2SO_4 \cdot 10H_2O$

D. $CaSO_4 \cdot 2H_2O$

Answer: B

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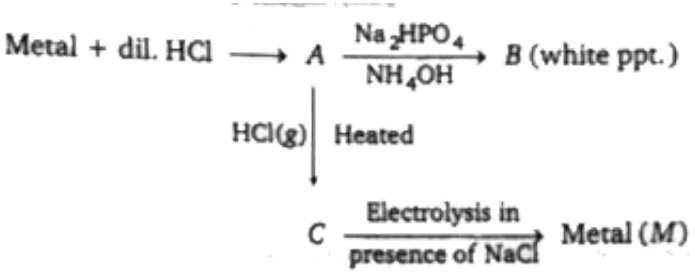

32.

Q. The compound B is :

A. $Mg(NH_4)PO_4$

B. $Ca_3(PO_4)_2 + NH_3$

C. $Na(NH_4)HPO_4$

D. Both (a) and (b)

Answer: A

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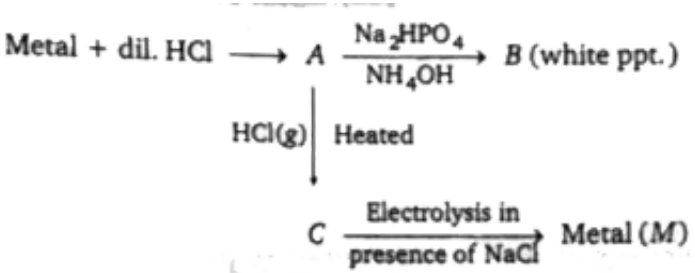

33.

Q. The compound C and metal M are:

A. $NaCl, Na$

B. $CaCl_2, Ca$

C. $MgCl_2, Mg$

D. $BeCl_2, Be$

Answer: C

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34. Calcium sulphate is found in nature in two forms, anhydrous calcium sulphate and hydrated calcium sulphate. When anhydrous calcium sulphate is heated with coke, sulphur dioxide gas is obtained. When hydrated calcium suphate is heated to 200° C, it forms anhydrous salt.

Q. The anhydrous calcium sulphate is called :

A. gypsum

B. anhydrite

C. plaster of paris

D. lime

Answer: B

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35. Calcium sulphate is found in nature in two forms, anhydrous calcium sulphate and hydrated calcium sulphate. When anhydrous calcium sulphate is heated with coke, sulphur dioxide gas is obtained. When hydrated calcium suphate is heated to 200° C, it forms anhydrous salt.

Q. When calcium sulphate is mixed with conc. HCl and the paste is formed. What colour is obtained wehn a pinch of this paste is brought near the flame?

A. golden yellow

B. brick red

C. crimson red

D. apple green

Answer: C

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36. Calcium sulphate is found in nature in two forms, anhydrous calcium sulphate and hydrated calcium sulphate. When anhydrous calcium sulphate is heated with coke, sulphur dioxide gas is obtained. When hydrated calcium suphate is heated to 200° C, it forms anhydrous salt.

Q. What is the product formed when hydrated $CaSO_4$ is heated to 125° C instead of $200^\circ C$?

A. $(CaSO_4)_2H_2O$

B. $CaSO_4\frac{3}{4}H_2O$

C. $CaSO_4$

D. $CaO + SO_3$

Answer: A

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37. Sodium sulphite (Na_2SO_3) is added to meat as a preservative. The presence of Na_2SO_4 can be detected by adding dil. H_2SO_4 when the pungent smelling gas evolved turns the lime water milky. The gas evolved was detected as sulphur dioxide. The SO_2 to SO_4^{2-} in titration.

$$SO_2 + 2H_2O + I_2 \rightarrow 4H^+ + SO_4^{2-} + 2I^-$$

In order to check the results of titration, excess barium chloride is added to the final solution. The resulting precipitate is collected and weighed.

Q. SO_2 and CO_2 both lime water milky. Which of the following reagent can be used to distinguish these two gases?

(I)$K_2Cr_2O_7/H_2SO_4$ (II)$KMnO_4/H^+$ (III)I_2 solution

A. II, II, III correct

B. I. III only correct

C. II, III only correct

D. III only correct

Answer: A

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38. Sodium sulphite (Na_2SO_3) is added to meat as a preservative. The presence of Na_2SO_4 can be detected by adding dil. H_2SO_4 when the pungent smelling gas evolved turns the lime water milky. The gas evolved was detected as sulphur dioxide. The SO_2 to SO_4^{2-} in titration.

$$SO_2 + 2H_2O + I_2 \rightarrow 4H^+ + SO_4^{2-} + 2I^-$$

In order to check the results of titration, excess barium chloride is added to the final solution. The resulting precipitate is collected and weighed.

Q. SO_2 gas is used as bleaching agent. Its bleaching action is :

A. temporary and due to its oxidizing nature

B. temporary and due to its reducing action

C. permanent and due to its oxidizing nature

D. permanent and due to its reducing action

Answer: B

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39. Sodium sulphite (Na_2SO_3) is added to meat as a preservative. The presence of Na_2SO_4 can be detected by adding dil. H_2SO_4 when the pungent smelling gas evolved turns the lime water milky. The gas evolved was detected as sulphur dioxide. The SO_2 to SO_4^{2-} in titration.

$SO_2 + 2H_2O + I_2 \rightarrow 4H^+ + SO_4^{2-} + 2I^-$

In order to check the results of titration, excess barium chloride is added to the final solution. The resulting precipitate is collected and weighed.

Q. Which of the following compounds is formed, when Na_2SO_3 is boiled with sulphur.

A. Na_2SO_4

B. $Na_2S_4O_5$

C. $Na_2S_4O_6$

D. $Na_2S_4O_3$

Answer: D

Watch Video Solution

40. On treatment with cold water, an element (A) reacts readily liberating a colourless, odourless gas (B) and a solution (C). Lithium is reacted with (B) yeildng a solid product (D) which effervesce with water to give a strongely basic solution (E). When CO_2 gas is bubbled through solution (C), a white ppt. (F) is formed but this redissolved forming solution (G) when more CO_2 is passed. Precipitate (F) effervesced when moistened with conc. HCl and give deep red colouration to Bunsen burner flame. (F) on heating with excess of carbon at 2000° C give (H).

Answer the following question on the basis of above passage.

Q. Metal (A) may be :

A. Be

B. Ca

C. Mg

D. Ba

Answer: B

Watch Video Solution

41. On treatment with cold water, an element (A) reacts readily liberating a colourless, odourless gas (B) and a solution (C). Lithium is reacted with (B) yeildng a solid product (D) which effervesce with water to give a strongely

basic solution (E). When CO_2 gas is bubbled through solution (C), a white ppt. (F) is formed but this redissolved forming solution (G) when more CO_2 is passed. Precipitate (F) effervesced when moistened with conc. HCl and give deep red colouration to Bunsen burner flame. (F) on heating with excess of carbon at 2000°C give (H).

Answer the following question on the basis of above passage.

Q. Solution (G) contains a salt which

(i) causes permanent hardness of water

(ii)can not be obtained in solid state

(iii)causes temporary hardness of water

(iv)can be obtained in solid state

Select the correct statements :

A. (i) and (ii)

B. (i) and (iv)

C. (ii) and (iii)

D. (ii) and (iv)

Answer: C

Watch Video Solution

42. On treatment with cold water, an element (A) reacts readily liberating a colourless, odourless gas (B) and a solution (C). Lithium is reacted with (B) yeildng a solid product (D) which effervesce with water to give a strongely basic solution (E). When CO_2 gas is bubbled through solution (C), a white ppt. (F) is formed but this redissolved forming solution (G) when more CO_2 is passed. Precipitate (F) effervesced when moistened with conc. HCl and give deep red colouration to Bunsen burner flame. (F) on heating with

excess of carbon at 2000° C give (H).

Answer the following question on the basis of above passage.

Q. Solid (H) on hydrolysis gives a gas which on passing through ammoniated $AgNO_3$ solution yields:

A. white ppt.

B. red ppt.

C. no ppt.

D. brown ppt.

Answer: A

Watch Video Solution

43. Lithium only forms monoxide when heated in oxygen. Sodium forms monoxide and peroxide in excess of oxygen.

Other alkali metals form superoxide metals superoxide with oxygen i.e., MO_2. The abnormal behaviour of lithium is due to small size. The larger size of higher metals also decides the role in formation of superoxide. All the three anions abstract proton from water. The three anions are raleted to each other as follows:

$$\underset{\text{oxide ion}}{O_2^{2-}} \xrightarrow{\frac{1}{2}O_2} \underset{\text{peroxide ion}}{O_2^{2-}} \xrightarrow{O_2} \underset{\text{superoxide ion}}{2O_2^-}$$

Q. Consider the following reaction :

$M + O_2 \rightarrow MO_2$

(M=alkali metal) (stable superoxide)

A. M can not be Li and Na

B. M can not be Cs and Rb

C. M can not be Li and Rb

D. None of these

Answer: A

Watch Video Solution

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Q. Which anion is stable towards water:

A. O^{2-}

B. O_2^{2-}

C. O_2^-

D. None of these

Answer: D

Watch Video Solution

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oxide ion

Q. Which compounds will liberate oxygen when reacts with ice cold water?

A. Na_2CO_2

B. KO_2

C. Na_2O

D. Cs_2O_2

Answer: B

Watch Video Solution

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Q. In hydrolysis, the alkali metals oxides, peroxide and superoxide act as:

A. Bronsted acid

B. Bronsted base

C. Lewis acid

D. Lewis base

Answer: B

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47. Most metal oxide are thermally stable at temperature upto $1000^{\circ}C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Which of the following salt salt does not give NO_2 gas on heating?

A. $Pb(NO_3)_2$

B. $Zn(NO_3)_2$

C. $AgNO_3$

D. KNO_3

Answer: D

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48. Most metal oxide are thermally stable at temperature upto $1000^\circ C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Which of the following compound cannot be thermally decomposed even at high temperature?

A. $CsHCO_3$

B. Rb_2CO_3

C. Li_2CO_3

D. $(NH_4)_2CO_3$

Answer: B

Watch Video Solution

49. Most metal oxide are thermally stable at temperature upto $1000^\circ C$ but the oxide of metals below hydrogen in the electrochemical series fairly. Thus HgO and Ag_2O decomposes on heating.

Q. Correct code for following thermal decomposition reaction(s) evolving gas having equal number of $\sigma -$ and $\pi -$ bonds is :

(i) $BeCO_3 \xrightarrow{\delta}$ (ii) $ZnSO_4 \xrightarrow[\gamma < 800^\circ C]{\delta}$

(iii) $FeSO_4 \xrightarrow{300^\circ C}$ (iv) $(NH_4)_2Cr_2O_7 \xrightarrow{\delta}$

A. i, ii, iii

B. i, iii, iv

C. i, ii, iii and IV

D. All of these

Answer: A

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ONE OR MORE ANSWER IS/ARE CORRECT

1. The correct statement(s) is /are

A. Thermal stability of alkaline earth metal chloride decrease with increasing molecular mass but reverse

order is true for their melting point.

B. Thermal stability of boron halides increase with decreasing molecular mass but reverse order is true for their melting point

C. Thermal stability of beryllium halides increase with decreasing molecular mass and same order is also true for their melting point

D. Thermal stability of hydra acids of halogens increase with decreasing molecular mass and same order is also true for their melting point

Answer: B::C

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2. Which of the following metal(s) in liquid NH_3 with low conc. Is not paramagnetic?

A. Cs

B. Be

C. K

D. Mg

Answer: B::D

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3. Which of the following substance can be used directly as feritizer?

A. $(NH_4)_2SO_4$

B. $Ca_3(PO_4)_2$

C. $Ca(H_2PO_4)_2$

D. $CaCN_2 + C$

Answer: A::B::D

Watch Video Solution

4. Which of the following will release CO_2 when heated to $1000^\circ C$?

A. $KHCO_3$

B. Li_2CO_3

C. K_2CO_3

D. $PbCO_3$

Answer: A::C::D

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5. Which of the following properties show a similar trends on moving from Li to Cs within the group

A. Ionic mobility in aqueous solution

B. Reactivity towards water

C. Solubility of bromide salt

D. Thermal stability of carbonate salt

Answer: A::B::D

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6. The alkali metals

A. form salt like ionic hybrides

B. posses low ionisation potential

C. have high affinity for non-metals

D. have low density

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

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7. $NaNO_3$ on heating gives

A. O_2

B. NO_2

C. $O_2 + NO_2$

D. $NaNO_2$

Answer: A::D

Watch Video Solution

8. Which of the following statement is/are true?

A. All alkali metals are soft and can be cut with knife

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

C. Alkali metals are highly electropositive elements

D. Alkali metal hybrides are covalent in character

Answer: A::B::C

Watch Video Solution

9. Nitrogen dioxide cannot be obtained by heating:

A. KNO_3

B. $LiNO_3$

C. $Pb(NO_3)_2$

D. $NaNO_3$

Answer: A::D

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10. Select the incorrect statement(s):

A. Cs^+ is more hydrated than the other alkali metal ions

B. Among the alkali metals Li, Na, K and Rb, lithium has the highest melting point

C. Ionic mobility of Li^+ is maximum among alkali metal cations

D. Ionisation potential of Li is lower than that of Na

Answer: A::C::D

Watch Video Solution

11. Select the correct statement(s):

A. Sodium can be prepared by electrolysis aqueous solution of NaCl

B. Sodium can be prepared by electrolysing fused NaCl

C. Sodium is a strong agent

D. Sodium is soluble in liquid ammonia

Answer: B::D

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12. Identify the correct statement(s):

A. Sodium carbonate on heating evolves carbon dioxide

B. Sodium nitrate on heating evolves nitrogen dioxide

C. Sodium hydroxide does not decompose on heating

D. Sodium bicarbonate on heating evolve carbon dioxide

Answer: C::D

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13. Which statements are false?

A. Manufacture of NaOH is done by Solvay process

B. Manufacture of K_2CO_3 is done by Solvay process

C. Manufacture of NaOH is done by Castner Keliner process

D. Manufacture of $NaHCO_3$ is done by Solvay process

Answer: A::B

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14. Sulphate salt gives metal oxide and $SO_3\left(\text{ or } SO_2+\frac{1}{2}O_2\right)$ on heating:

A. K_2SO_4

B. $CaSO_4$

C. $MgSO_4$

D. $(NH_4)_2SO_4$

Answer: B::C

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15. The correct statement about sodium and its compounds would include that:

A. Sodium forms an ionic hydride NaH

B. Sodium nitrate decomposes to the nitrite on heating

C. Sodium is hard metal

D. Sodium carbonate decomposes readily on heating

Answer: A::B

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16. NaH reacts with water to give:

A. alkaline solution

B. acidic solution

C. neutral solution

D. hydrogen gas

Answer: A::D

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17. Which of the following statement(s) is/are incorrect?

A. Magnesium may by extracted by self reduction method

B. Down's Cell process is used to extract magnesium from sea water

C. Magnalium is an alloy of magnesium

D. Formula of Epsom salt is $MgSO_4 \cdot 6H_2O$

Answer: A::B::D

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18. Identify the incorrect statement(s):

A. Density of Mg is less than Ca

B. The atomic radius of Mg is greater than that of Ca

C. Mg alloys are used in the contruction of air crafts

D. Mg is used as a reducing agent

Answer: A::B

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19. Which of the following properties of the elements of group II (alkali earth metals) increase (s) with increasing atomic number?

A. Stability of carbonate

B. Solubility of hydroxide

C. Reactively with water

D. First ionization energy

Answer: A::B::C

Watch Video Solution

20. Select the wrong statement(s):

A. CaF_2 is soluble in water

B. $BaSO_4$ is soluble in water

C. $Be(OH)_2$ is soluble in water

D. $MgSO_4$ is soluble in water

Answer: A::B

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21. Which of the following statements about the elements, Mg, Ca, Sr and Ba and their compounds is true?

A. Solubility of the hydroxides in water increase with increasing atomic number

B. Thermal stability of the carbonates increase with increasing atomic number

C. All given elements react with water or steam to give hydrogen

D. Metal chloride are all liqiuds at room temperature

Answer: A::B::C

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22. Which of the following does/do not impart characteristic colour to the flame?

A. $MgSO_4$

B. $CaCl_2$

C. $Sr(NO_3)_2$

D. $BeCl_2$

Answer: A::D

Watch Video Solution

23. Which statements is correct regarding the diagonal relationship between the Al and Be?

A. BeO and Al_2O_3 are amphoteric in nature

B. Both carbide on hydrolysis produce same gas

C. Both can form complex

D. Both have nearly close m.p.

Answer: A::B::C

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24. Which of the following metals on treatement with alkali will liberate H_2 gas?

A. Be

B. Sn

C. Ga

D. In

Answer: A::B::C

Watch Video Solution

25. Choose the correct statement(s):

A. $BeCO_3$ is kept in the atmosphere of CO_2 since, it is least thermally stable

B. Be dissolves in alkali forming $\left[Be(OH)_4\right]^{2-}$

C. BeF_2 forms complex ion with NaF in which Be goes with cation

D. BeF_2 forms complex ion with NaF in which Be goes with anion

Answer: A::B::D

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26. Select the incorrect statement(s):

A. Magnesium can be burnt in the atmosphere of CO_2 and SO_2

B. Magnesium reacts with alkyl halides to form Grignard's reagent

C. Out of Mg and Ca, only Mg reacts with N_2 to form magnesium nitride

D. Calcium is less reactive than magnesium

Answer: C::D

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27. Which of the following statement(s) is/are incorrect?

A. Sodium bicarbonate is more soluble than sodium carbonate

B. Sodium hydroxide is known as caustic soda

C. Sodium bicarbonate is used as antacid

D. Sodium nitrate is used in the manufacture of soaps

Answer: D

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28. Select the incorrect statement(s):

A. KOH is a weaker base than NaOH

B. Milk of magnesia is an aqueous solution of $Mg(OH)_2$

C. Mg^{2+} ions are precipitated with the addition of NH_4OH in the presence of NH_4Cl

D. CaO_2 is less stable than MgO_2

Answer: A::C::D

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29. Which of the following statements regarding the oxides of alkali and alkaline earth metals is correct?

A. The reactivity of K_2O towards water is more than that of Na_2O

B. The oxides of alkaline earth metals are more basic than those of alkali metals

C. MgO is used as a refractory material for lining of electric furnaces

D. The milk of lime and lime water are two different solutions

Answer: A::C::D

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30. The pair of compounds which can exist together in aqueous solution is

A. Na_2CO_3 and $NaHCO_3$

B. $NaHCO_3$ and $NaOH$

C. $NaOH$ and NaH_2PO_4

D. $NaOH + NaHPO_3$

Answer: B::C

Watch Video Solution

31. Which of the following are soluble in water?

A. Na_2CO_3

B. BaC_2O_4

C. $MgCO_3$

D. $Ca(NO_3)_2$

Answer: A::D

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32. Which of the following salts exis (s) as decahydrated crystals?

A. Washing soda

B. Glauber's salt

C. Epson salt

D. Grypsum salt

Answer: A::B

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33. Which of statements are true?

A. $NaHCO_3$ and $KHCO_3$ have same crystal structure

B. On heating $LiNO_3$ decomposes into Li_2OanCO_2

C. Among alkali metals, Li metal impart red colour flame

D. Li_2SO_4 does not form alum

Answer: B::D

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34. The correct statement(s) is /are

A. Thermal stability of alkaline earth metal chloride decreases with increasing molecular mass but reverse order is true for their melting point.

B. Thermal stability of boron halides increase with decreasing molecular mass but reverse order is true for

their melting point

C. Thermal stability of beryllium halides increase with decreasing molecular mass and same order is also true for their melting point

D. Thermal stability of hydra acids of halogens increase with decreasing molecular mass and same order is also true for their melting point

Answer: B::C

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35. Which of the following metal(s) in liquid NH_3 with low conc. Is not paramagnetic?

A. Cs

B. Be

C. K

D. Mg

Answer: B::D

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36. Which of the following substance can be used directly as feritizer?

A. $(NH_4)_2SO_4$

B. $Ca_3(PO_4)_2$

C. $Ca(H_2PO_4)_2$

D. $CaCN_2 + C$

Answer: A::B::D

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37. Which of the following will release CO_2 when heated to $1000^\circ C$?

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C. K_2CO_3

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38. Which of the following properties show a similar trend on moving from Li and Cs within the group?

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D. Thermal stability of carbonate salt

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D. Sodium is soluble in liquid ammonia

Answer: B::D

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B. Sodium nitrate on heating evolves nitrogen dioxide

C. Sodium hydroxide does not decompose on heating

D. Sodium bicarbonate on heating evolve carbon dioxide

Answer: C::D

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46. Sulphate salt metal oxide and $SO_3\left(\text{ or } SO_2+\frac{1}{2}O_2\right)$ on heating:

A. K_2SO_4

B. $CaSO_4$

C. $MgSO_4$

D. $(NH_4)_2SO_4$

Answer: B::C

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A. Stability of carbonate

B. Solubility of hydroxide

C. Reactively with water

D. First ionization energy

Answer: A::B::C

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52. Select the wrong statement(s):

A. CaF_2 is soluble in water

B. $BaSO_4$ is soluble in water

C. $Be(OH)_2$ is soluble in water

D. $MgSO_4$ is soluble in water

Answer: A::B::C

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C. Out of Mg and Ca, only Mg reacts with N_2 to form magnesium nitride

D. Calcium is less reactive than magnesium

Answer: C::D

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C. Sodium bicarbonate is used as antacid

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Answer: B::C

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D. CaO_2 is less stable than MgO_2

Answer: A::C::D

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B. The oxides of alkaline earth metals are more basic than those of alkali metals

C. MgO is used as a refractory material for lining of electric furnaces

D. The milk of lime and lime water are two different solutions

Answer: A::C::D

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62. The pair of compounds which can exist together in aqueous solution is:

A. Na_2CO_3 and $NaHCO_3$

B. $NaHCO_3$ and $NaOH$

C. $NaOH$ and NaH_2PO_4

D. $NaOH + NaHPO_3$

Answer: B::C

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63. Which of the following are soluble in water?

A. Na_2CO_3

B. BaC_2O_4

C. $MgCO_3$

D. $Ca(NO_3)_2$

Answer: A::D

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64. Which of the following salts exis (s) as decahydrated crystals?

A. Washing soda

B. Glauber's salt

C. Epson salt

D. Grypsum salt

Answer: A::B

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65. Which of the following statements are true?

A. $NaHCO_3$ and $KHCO_3$ have same crystal structure

B. On heating $LiNO_3$ decomposes into Li_2O and CO_2

C. Among alkali metals, Li metal impart red colour flame

D. Li_2SO_4 does not form alum

Answer: B::D

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66. Saturated hydrocarbon gas is evolved by carbide(s) is/are

A. CaC_2

B. Al_4C_3

C. Mg_2C_3

D. Be_2C

Answer: B::D

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MATCH THE COLUMN

1. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching with one or more than entries of Column-II

Column-I (Prop. of metals)	Column-II (Metals)
(A) Yellow flame colour	(P) Ca
(B) Most reactive with water	(Q) Mg
(C) Gives carbide with 'C'	(R) Na
(D) Metal nitrate $\xrightarrow{\Delta}$ metal oxide $+ NO_2 + O_2$	(S) Li

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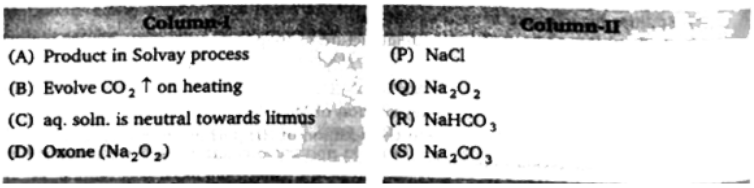
2. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching with one or more than entries of Column-II



Column-I	Column-II
(A) Product in Solvay process	(P) NaCl
(B) Evolve $CO_2 \uparrow$ on heating	(Q) Na_2O_2
(C) aq. soln. is neutral towards litmus	(R) $NaHCO_3$
(D) Oxone (Na_2O_2)	(S) Na_2CO_3

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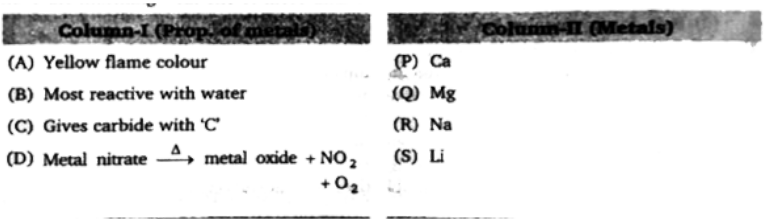
3. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching with one or more than entries of Column-II



Column-I (Prop. of metals)	Column-II (Metals)
(A) Yellow flame colour	(P) Ca
(B) Most reactive with water	(Q) Mg
(C) Gives carbide with 'C'	(R) Na
(D) Metal nitrate $\xrightarrow{\Delta}$ metal oxide $+ NO_2 + O_2$	(S) Li

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4. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching with one or more than entries of Column-II

Column-I	Column-II
(A) Product in Solvay process	(P) NaCl
(B) Evolve $CO_2 \uparrow$ on heating	(Q) Na_2O_2
(C) aq. soln. is neutral towards litmus	(R) $NaHCO_3$
(D) Oxone (Na_2O_2)	(S) Na_2CO_3

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5. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching

with one or more than entries of Column-II

Column-I (Chemical Prop.)	Column-II (Metals)
(A) Metal sulphate $\xrightarrow{\Delta}$ metal oxide $+ SO_2 + O_2$	(P) Ba
(B) Metal cation + K_2CrO_4 $\longrightarrow$ yellow ppt.	(Q) Sr
(C) Metal + NH_3 $\xrightarrow{\text{(liquid)}}$ blue solution	(R) Na
(D) MCl_2 + conc. H_2SO_4 $\longrightarrow$ white ppt.	(S) Mg

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6. Entries of Column-I are to be matched with entrices of Column-II. Each entry of Column-I may have the matching with one or more than entries of Column-II

Column-I (Compounds)	Column-II (Use of compounds)
(A) Magnesium hydroxide	(P) As a purgative
(B) Barium sulphate	(Q) As a fertilizer
(C) Magnesium sulphate	(R) As a constituent of sorrel cement
(D) Calcium cyanamide	(S) As a constituent of lithopone

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ASSERTION-REASON TYPE QUESTIONS

1. Statement-I : Li_2SO_4 do not form double salt like alum.

Statement-II : Li reacts with NH_3 gas to form $LiNH_2$

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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2. Assertion: $BeCi_2$ cannot be easily hydrolysed.

Reason: $BeCl_2$ is electron deficient compound.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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3. Assertion: K^+ and NH_4^+ ions have many similarities in their test

Reason: Radius of K^+ is almost equal to radius NH_4^+

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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4. Statement-I : Alums are isomorphous crystalline double salts, which are soluble in water.

Statement-II : The aq. Solutions of alums have acidic character due to hydrolysis.

A. If both statement-I and statement-II are true and the statement-II is the correct explanation of statement-I.

B. If both statement-I and statement-II are true and the statement-II is not the correct explanation of statement-I.

C. If statement-I is false but statement-II is true.

D. If statement-I is true but the statement-II is false.

Answer: B

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5. Assertion: Mg gets oxidised when heated in CO_2 atmosphere.

Reason: Mg has a strongly affinity for oxygen.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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6. Statement-I : $Mg^{2+} + ZnSO_4 \rightarrow MgSO_4 + Zn^{2+}$

Statement-II : More active metal can displace less active metal from its salt solution.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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7. Assertion: Li resembles with Mg in properties

Reason: Li^+ has almost same polarising power as Mg^{2+}.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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8. Assertion: $Be(OH)_2$ dissolves in excess NaOH solution.

Reason: $Be(OH)_2$ is an acidic compound.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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9. Assertion (A): Sulphate 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 the reason is the correct explanation of assertion

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: B

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10. Assertion (A): Alkaline earth metals are harder than alkali meatals.

Reason (R): Atomic radii of alkaline earth metas are smaller thant the corresponding alkali metals in the same period.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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11. Assertion: Magnesium does not impart characteristic colour to the bunsen-burner flame.

Reason: Ionisation energy of Mg is very high.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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12. Assertion: Among hydroxides of alkali metals, LiOH is the weakest base.

Reason: Among alkali metals, lithium has the highest ionisation energy .

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: B

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13. Assertion: CsI is sparingly soluble in water

Reason: Hydration energy Cs^+ and I^- ions are higher than lattice energy.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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14. Assertion : Potassium is not obtained by the electrolysis of fused KCl.

Reason : Potassium vapourises at the melting point of KCl.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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15. Assertion: M.P of $BeCl_2$ is less than that of $MgCl_2$, but reverse is true for their thermal stability.

Reason: M.P. and thermal stability of both compounds depend upon their lattice energy.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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16. Inspite of very high ionisation energy, lithium is the strongest reducing agent among all the alkali metals. Explain.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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17. Assertion: Li_2SO_4 does not form double salt like alum

Reason: Li reacts with NH_3 gas to form $LiNH_2$

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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18. Assertion: $BeCi_2$ cannot be easily hydrolysed.

Reason: $BeCl_2$ is electron deficient compound.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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19. Assertion: K^+ and NH_4^+ ions have many similarities in their test

Reason: Radius of K^+ is almost equal to radius NH_4^+

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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20. Assertion: Alums are crystalline double salts, which are soluble in water.

Reason: The eq.solutions of alums have acidic character due to hydrolysis

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: B

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21. Assertion: Mg gets oxidised when heated in CO_2 atmosphere.

Reason: Mg has a strongly affinity for oxygen.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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22. Assertion: $Mg^{2+} + ZnSO_4 \rightarrow MgSO_4 + Zn^{2+}$

Reason: More active metal can displace less active metal from its salt solution.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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23. Assertion: Li resembles with Mg in properties

Reason: Li^+ has almost same polarising power as Mg^{2+}.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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24. Assertion: $Be(OH)_2$ dissolves in excess NaOH solution.

Reason: $Be(OH)_2$ is an acidic compound.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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25. Assertion: SO_4^{2-} is estimated as $BaSO_4$ but not as $MgSO_4$

Reason : Ionic radius of Mg^{2+} is smaller than that of Ba^{2+}

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: B

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26. The densities of alkaline earth metals are much smaller than those of alkali metals.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: D

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27. Assertion: Be and Mg do not impat characteristic colour to the flame.

Reason: both Be and Mg have high ionization energy.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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28. Assertion: Among hydroxides of alkali metals, LiOH is the weakest base.

Reason: Among alkali metals, lithium has the highest ionisation energy .

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: B

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29. Assertion: $BaSO_4$ is insoluble in water.

Reason: Lattice energy of $BaSO_4$ is higher than its hydration energy

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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30. Assertion: CsI is sparingly soluble in water

Reason: Hydration energy Cs^+ and I^- ions are higher than lattice energy.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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31. Assertion : Potassium is not obtained by the electrolysis of fused KCl.

Reason : Potassium vapourises at the melting point of KCl.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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32. Assertion: M.P of $BeCl_2$ is less than that of $MgCl_2$, but reverse is true for their thermal stability.

Reason: M.P. and thermal stability of both compounds depend upon their lattice energy.

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: C

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33. Which of the following is the most important factor in making lithium metal, the strongest reducing agent?

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

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

C. If assertion is false but reason is true

D. If assertion is true but the reason is false

Answer: A

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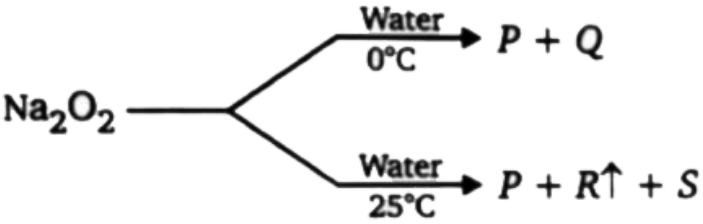
SUBJECTIVE PROBLEMS



1.

Calculate sum of bond order between same bonded atoms in Q and R compounds.

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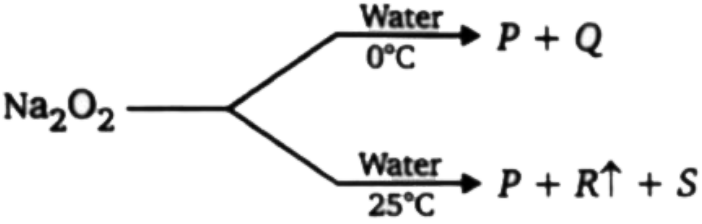

2.

Calculate sum of bond order between same bonded atoms in Q and R compounds.

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