CHEMISTRY

BOOKS - KALYANI CHEMISTRY (ENGLISH)

SPECIMEN QUESTION PAPER

Question

1. Na and Mg crystallise in bcc and fcc structures respectively. The value of Z (number

of atoms) for their crystals is:

A. 8 and 14

B. 2 and 4

C. 14 and 8

D. 6 and 4

Answer: B

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2. Colligative properties depend on:

A. The nature of solute particles in solution

B. The number of solute particles in solution

C. The nature of solute and solvent particles

D. The physical properties of solute particles in solution

Answer: B

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3. On dilution, the specific conductance of a solution:

A. Remains unchanged

B. Increases

C. Decreases

D. First increases then decreases

Answer: C

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4. The flux used in the extraction of iron from haematite ore is:

A. Limestone

B. Silica

C. Coke

D. Calcium phosphate

Answer: A

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5. Which of the following xenon fluoride of xenon cannot be formed?

A. XeF_2

B. XeF_4

C. XeF_6

D. XeF_3

Answer: D

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6. The gas obtained on heating iodoform with silver powder is:

A. Propane

B. Ethane

C. Ethyne

D. Ethene

Answer: C

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7. Boiling point of ethyl alcohol is greater than diethyl ether due to:

A. Vander Waals forces

B. London forces

C. Polarity

D. Hydrogen bonding

Answer: B

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8. In a face centred cubic lattice, atom 'A' occupies the corner positions and atom 'B' occupies the face centred positions. If one atom of 'B' is missing from one of the face centred points, the formula of the compound will be:

A. AB_2

B. A_2B_3

C. A_2B_5

D. A_2B

Answer: C

View Text Solution

9. The standard reduction potential values of three metallic cations X, Y and Z are 0.52 V, -3.03 V and -1.18 V respectively. The order of reducing power of the corresponding metals is:

A. $Y > Z > X$

B. $X > Y > Z$

C. $Z > Y > X$

D. $Z > X > Y$

Answer: A

View Text Solution

10. If molality of the dilute solution of a non-volatile, non-dissociating and non-associating electrolyte is doubled, the value of molal elevation constant or Ebullioscopic constant (K_b) will be:

A. Doubled

B. Halved

C. Tripled

D. Unchanged

Answer: D

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11. Extraction of zinc from zinc blende is achieved by:

A. Electrolytic reduction

B. Roasting, followed by reduction with carbon

C. Roasting, followed by reduction with another metal

D. Roasting, followed by self-reduction

Answer: B

View Text Solution

12. The most powerful oxidizing agent is:

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

Answer: A

View Text Solution

13. During the course of S_N^1 reaction, the intermediate species formed is:

A. A free radical

B. A carbanion

C. A carbocation

D. An intermediate complex

Answer: C

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14. Which type of defect has the presence of cations in the interstitial sites?

A. Schottky defect

B. Vacancy defect

C. Frenkel defect

D. Metal deficiency defect

Answer: D

View Text Solution

15. Reaction between acetone and methyl magnesium chloride, followed by hydrolysis will give:

A. tert-butyl alcohol

B. iso-butyl alcohol

C. iso-propyl alcohol

D. sec-butyl alcohol

Answer: A

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16. If 5.85 g of NaCl are dissolved in 90 g of water, the mole fraction of solute is:

A. 0.2632

B. 0.0102

C. 0.0196

D. 0.1045

Answer: C

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17. When zinc granule is dipped into copper sulphate solution, copper is precipitated because:

A. Both copper and zinc have a positive reduction potential.

B. Both copper and zinc have a negative reduction potential.

C. Reduction potential of zinc is higher than that of copper.

D. Reduction potential of copper is higher than that of zinc.

Answer: D

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18. The optically active compound is:

A. Butan-1-ol

B. Butan-2-ol

C. Propan-1-ol

D. 2-methyl-propan-1-ol

Answer: B

View Text Solution

19. Chlorine reacts with cold and dilute NaOH under ordinary conditions to give:

A. NaCl and Cl_2O

B. NaCl and ClO_2

C. NaCl and NaClO

D. NaCl and $NaClO_3$

Answer: C

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20. Solutions which distil without any change in composition and temperature are called:

A. Ideal

B. Super saturated

C. Azeotropic

D. Isotonic

Answer: C

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21. The reaction: Sodium alkoxide + alkyl halide

$\rightarrow$ Ether + Sodium halide is called:

A. Wurtz reaction

B. Kolbe's reaction

C. Perkin's reaction

D. Williamson's synthesis

Answer: D

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22. Benzene diazonium chloride on hydrolysis gives:

A. Benzene

B. Phenol

C. Chlorobenzene

D. Benzyl alcohol

Answer: B

View Text Solution

23. The vacant space in body centred cubic lattice unit cell is:

A. 0.32

B. 0.26

C. 0.48

D. 0.68

Answer: A

View Text Solution

24. For a spontaneous reaction ΔG° and ΔE° cell will be respectively:

A. -ve and -ve

B. +ve and +ve

C. +ve and -ve

D. -ve and +ve

Answer: D

View Text Solution

25. A liquid is mixed with ethanol and few drops of conc. H_2SO_4 is added. A compound with a fruity smell is formed. The liquid is:

A. HCHO

B. CH_3CHO

C. CH_3COOH

D. CH_3COCH_3

Answer: D

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26. The chief ore of copper is copper pyrite $(CuFeS_2)$

How is the sulphide ore concentrated?

A. By Gravity separation process

B. By Froth-floatation process

C. By Electromagnetic separation process

D. By Leaching process

Answer: B

View Text Solution

27. The chief ore of copper is copper pyrite $(CuFeS_2)$

Copper is purified by electrolytic refining of

blister copper. The correct statement about this process is:

A. Impure copper strip is used as cathode

B. Impurities do not settle as anode mud

C. Pure copper deposits at cathode

D. Acidified silver nitrate is used as electrolyte

Answer: C

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28. The reaction:

$CH_2Br + OH^- \rightarrow CH_3OH + Br^-$

The expected mechanism of the above reaction is:

A. S_N^1 mechanism

B. S_N^2 mechanism

C. S_E^1 mechanism

D. S_E^2 mechanism

Answer: B

View Text Solution

29. The reaction:

$CH_2Br + OH^- \rightarrow CH_3OH + Br^-$

The above reaction is:

A. Elimination reaction

B. Nucleophilic addition reaction

C. Nucleophilic substitution reaction

D. Electrophilic substitution reaction

Answer: C

View Text Solution

30. For the extraction of metal, answer the following:

The smelting of iron ore in blast furnace involves all the processes except:

A. Combustion

B. Reduction

C. Slag formation

D. Sublimation

Answer: D

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31. For the extraction of metal, answer the following:

Which of the following metal is obtained by leaching the concentrated ore with dilute sodium cyanide solution, followed by treatment with zinc?

A. Aluminium

B. Iron

C. Copper

D. Silver

Answer: D

View Text Solution

32. Phenol is heated with alcoholic KOH and chloroform:

What is the name of the reaction?

A. Cannizzaro reaction

B. Gattermann reaction

C. Reimer-Tiemann reaction

D. Kolbe reaction

Answer: C

View Text Solution

33. Phenol is heated with alcoholic KOH and chloroform:

What is the main product formed in this reaction?

A. Salicylaldehyde

B. Salicylic acid

C. Aniline

D. Phenyl isocyanide

Answer: A

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34. For IF_7 molecule:

The structure of the given molecule is:

A. Octahedral

B. Tetrahedral

C. Trigonal bipyramidal

D. Pentagonal bipyramidal

Answer: D

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35. For IF_7 molecule:

The type of hybridization of the given molecule is:

A. sp^3 hybridisation

B. sp^3d^3 hybridisation

C. sp^3d^2 hybridisation

D. sp^3d hybridisation

Answer: B

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36. Ethyl alcohol when reacts with PCl_5 gives a compound (A). When compound (A) is treated with alc. KOH, compound (B) is formed along with KCl and H_2O.

The compound (A) is:

A. $C_2H_4Cl_2$

B. CH_3CHO

C. C_2H_5Cl

D. CH_3OH

Answer: C

View Text Solution

37. Ethyl alcohol when reacts with PCl_5 gives a compound (A). When compound (A) is treated with alc. KOH, compound (B) is formed along with KCl and H_2O.

The compound (B) is:

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. C_2H_5OH

Answer: B

View Text Solution

38. Copper pyrite or chalcopyrite ($CuFeS_2$) is the main ore of copper. The extraction of copper from its ore involves, concentration, partial roasting, removal of iron and self-reduction.

On heating the mixture of Cu_2O and Cu_2S which one of the following will be obtained?

A. Cu_2SO_3

B. $Cu + SO_3$

C. CuO + CuS

D. $Cu + SO_2$

Answer: D

View Text Solution

39. Copper pyrite or chalcopyrite ($CuFeS_2$) is the main ore of copper. The extraction of copper from its ore involves, concentration, partial roasting, removal of iron and self-reduction.

Iron is removed during the extraction of copper as:

A. FeO

B. FeS

C. $FeSiO_3$

D. Fe_2O_3

Answer: C

View Text Solution

40. Conversion of chlorobenzene into phenol.

Which of the following statements is correct for the above conversion?

A. Heating it with alc. KOH at room temperature

B. Heating it with aqueous NaOH at 623 K under pressure followed by acidification with dilute HCl

C. Heating it with CuCN followed by acidification with dilute HCl

D. Heating it with sodium metal in the presence of dry ether

Answer: B

View Text Solution

41. Conversion of chlorobenzene into phenol.

What is the name of the above reaction?

A. Dow process

B. Wurtz reaction

C. Sandmeyer's reaction

D. Kolbe's reaction

Answer: A

View Text Solution

42. With reference to XeF_6 molecule, answer the following question.

What is the hybridisation of Xe atom in the given molecule?

A. sp^3d^3

B. sp^3d^2

C. sp^3

D. sp^3d

Answer: A

View Text Solution

43. With reference to XeF_6 molecule, answer the following question.

What is the geometry of this molecule?

A. Distorted octahedral

B. Square planer

C. Pyramidal

D. Tetrahedral Question

Answer: A

View Text Solution

44. An unknown alcohol is treated with Lucas reagent to determine whether the alcohol is primary, secondary or tertiary.

Which alcohol reacts fastest and by what mechanism?

A. Tertiary alcohol by S_N^2

B. Secondary alcohol by S_N^1

C. Tertiary alcohol by S_N^1

D. Secondary alcohol by S_N^2

Answer: C

View Text Solution

45. An unknown alcohol is treated with Lucas reagent to determine whether the alcohol is primary, secondary or tertiary.

What is the chemical composition of the Lucas reagent used above?

A. Anhydrous zinc chloride in concentrated HCl

B. Anhydrous aluminium chloride in concentrated HCl

C. Anhydrous lead chloride in concentrated HCl

D. Anhydrous barium chloride in concentrated HCl

Answer: A

View Text Solution

46. Ozone is prepared from oxygen:

Which method is used in the above preparation?

A. Oxidation at high temperature

B. Oxidation using catalyst

C. Silent electric discharge

D. Reduction at high temperature

Answer: C

View Text Solution

47. Ozone is prepared from oxygen:

The ozone obtained above acts as a:

A. reducing agent

B. oxidising agent

C. decomposer

D. dehydrating agent

Answer: B

View Text Solution

48. Copper metal crystallises with face centred cubic unit cell. If the edge length of copper atom is 361.5 pm. (Atomic weight of Cu=63.5, $N_A = 6.02 \times 10^{23} \ \ \text{mol}^{-1}$)

The density of copper metal is:

A. 7.86 g/cm^3

B. 8.93 g/cm^3

C. 9.76 g/cm^3

D. 10.5 g/cm^3

Answer: B

View Text Solution

49. Copper metal crystallises with face centred cubic unit cell. If the edge length of copper atom is 361.5 pm. (Atomic weight of Cu=63.5, $N_A = 6.02 \times 10^{23} \ \ \text{mol}^{-1}$)

The radius of copper metal is:

A. 180.75 pm

B. 156.53 pm

C. 127.79 pm

D. 104.86 pm

Answer: C

View Text Solution

50. An aqueous solution containing one gram of urea (molecular weight = 60) boils at $100.25^{\circ}C$. The same solution freezes at $-0.894^{\circ}C$. The aqueous solution containing 3 gram of glucose (Molecular weight = 180) in the same volume of solution:

What is the boiling point of glucose?

A. $100.75^\circ C$

B. $100.50^\circ C$

C. $100.25^\circ C$

D. $100.08^\circ C$

Answer: C

View Text Solution

51. An aqueous solution containing one gram of urea (molecular weight = 60) boils at $100.25^\circ C$. The same solution freezes at

$-0.894^{\circ}C$. The aqueous solution containing 3 gram of glucose (Molecular weight = 180) in the same volume of solution:

What is the freezing point of glucose?

A. $+0.894^{\circ}C$

B. $-0.894^{\circ}C$

C. $+0.447^{\circ}C$

D. $-0.447^{\circ}C$

Answer: B

View Text Solution

52. When two Faradays of electricity is passed through an aqueous solution of $CuSO_4$ and an aqueous solution of $AgNO_3$. (Atomic weight of Cu = 63.5 g mol^{-1}, Ag = 108 g mol^{-1})

The mass of copper deposited at the cathode is:

A. 127.02 g

B. 63.50 g

C. 31.75 g

D. 15.87 g

Answer: B

View Text Solution

53. When two Faradays of electricity is passed through an aqueous solution of $CuSO_4$ and an aqueous solution of $AgNO_3$. (Atomic weight of Cu = 63.5 g mol^{-1}, Ag = 108 g mol^{-1})

The mass of silver deposited at the cathode is:

A. 54 g

B. 108 g

C. 216 g

D. 270 g

Answer: C

View Text Solution

54. Gold has cubic crystal whose unit cell has an edge length of 407.9 pm. Density of gold is 19.3 g cm^{-3}. Atomic weight of gold is 197 g

mol^{-1}. ($N_A = 6.02 \times 10^{23}$ mol^{-1})

The number of atoms (Z) in a unit cell of gold is:

A. 1

B. 2

C. 3

D. 4

Answer: D

View Text Solution

55. Gold has cubic crystal whose unit cell has an edge length of 407.9 pm. Density of gold is 19.3 g cm^{-3}. Atomic weight of gold is 197 g mol^{-1}. ($N_A = 6.02 \times 10^{23}$ mol^{-1})

The type of crystal structure of gold is:

A. Simple cubic unit cell

B. Body centred cubic unit cell

C. Face centred cubic unit cell

D. Side centred cubic unit cell

Answer: C

View Text Solution

56. A solution of sucrose (molecular weight 342 g mol^{-1}) has been prepared by dissolving 68.4 g of sucrose in 1000 g of water.

(K_f for water = 1.86 K kg mol^{-1})

The freezing point of the solution obtained will be:

A. $-0.52^{\circ}C$

B. $+0.52^{\circ}C$

C. $-0.372^{\circ}C$

D. $+0.372^{\circ}$ C

Answer: D

View Text Solution

57. A solution of sucrose (molecular weight 342 g mol^{-1}) has been prepared by dissolving 68.4 g of sucrose in 1000 g of water.

(K_f for water = 1.86 K kg mol^{-1})

The molality of sucrose solution will be:

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: B

View Text Solution

58. The standard electrode potential for the reaction is:

(I)

$$Ag^{+} + e^{-} \rightarrow Ag_{s}, E^{\circ} Ag^{+} / Ag = +0.80V$$

(II)

$Sn^{2+} + 2e^- \rightarrow Sn_s, E^\circ Sn^{2+}/Sn = -0.14V$

The E° cell will be:

A. 0.66 V

B. 0.88 V

C. 0.94 V

D. 1.08 V

Answer: C

View Text Solution

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(I)

$Ag^+ + e^- \rightarrow Ag_s, E^\circ Ag^+ / Ag = +0.80V$

(II)

$Sn^{2+} + 2e^- \rightarrow Sn_s, E^\circ Sn^{2+} / Sn = -0.14V$

The value of standard Gibbs energy (ΔG°) will be:

(F=96,000 C mol^{-1})

A. -181.42 kJ

B. -90.71 kJ

C. -45.36 kJ

D. -22.68 kJ

Answer: A

View Text Solution

60. A metal has face centred cubic lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72 g/cm^3. ($N_A = 6.023 \times 10^{23} \ \ \text{mol}^{-1}$)

The molar mass of the metal is:

A. 20 g mol^{-1}

B. 27 g mol^{-1}

C. 30 g mol^{-1}

D. 40 g mol^{-1}

Answer: B

View Text Solution

61. A metal has face centred cubic lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72 g/cm^3. (

$N_A = 6.023 \times 10^{23}$ mol^{-1})

The radius of the metal atom in centimetre (cm) is:

A. 103.29×10^{-10} cm

B. 125.63×10^{-10} cm

C. 142.81×10^{-10} cm

D. 175.76×10^{-10} cm

Answer: C

View Text Solution

62. A binary solution contains 92 g ethyl alcohol and 72 g water.

(Atomic weight of C=12, H=1, O=16)

Mole fraction of ethyl alcohol is:

A. 0.4

B. 0.8

C. 0.66

D. 0.33

Answer: D

View Text Solution

63. A binary solution contains 92 g ethyl alcohol and 72 g water.

(Atomic weight of C=12, H=1, O=16)

Mole fraction of water is:

A. 0.33

B. 0.66

C. 0.2

D. 0.8

Answer: B

View Text Solution

64. The limiting molar conductivities ($\wedge_m^\infty$) for NaCl, KBr and KCl are 126, 152 and 150 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$ respectively.

The molar conductivity at infinite dilution for NaBr is:

A. 128 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

B. 176 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

C. 278 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

D. 302 $\text{ohm}^{-1}cm^2 \quad \text{mol}^{-1}$

Answer: A

View Text Solution

65. The limiting molar conductivities ($\wedge_m^\infty$) for NaCl, KBr and KCl are 126, 152 and 150 $\text{ohm}^{-1}cm^2 \quad \text{mol}^{-1}$ respectively.

The law applied to determine the molar conductivity of infinite dilution is known as:

A. Faraday's Law

B. Avogadro's Law

C. Kohlrausch's Law

D. Ohm's Law

Answer: C

View Text Solution

66. Assertion: Haloalkanes when treated with alcoholic KCN forms alkane nitrile as a major product.

Reason: Potassium cyanide is a covalent compound.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are false.

D. Both assertion and reason are true and reason is the correct explanation of the assertion.

Answer: B

View Text Solution

67. Assertion: Iron is found free in nature.

Reason: Iron is highly reactive element.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the

assertion.

Answer: A

View Text Solution

68. Assertion: Ethers are more volatile than alcohols having the same molecular formula.

Reason: Alcohols have intermolecular hydrogen bond.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the assertion.

Answer: D

View Text Solution

69. Assertion: SO_2 decolorises pink colour of acidified $KMnO_4$ solution.

Reason: SO_2 is an oxidising agent

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the

assertion.

Answer: B

View Text Solution

70. Assertion: Sulphide ores are concentrated by froth floatation process.

Reason: Sulphide ores are wetted by pine oil forming the froth while impurities are vetted by water.

A. Both assertion and reason are correct and reason is the correct explanation of the assertion.

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

C. Assertion is correct and the reason is wrong.

D. Both assertion and reason are wrong.

Answer: A

View Text Solution

71. Na and Mg crystallise in bcc and fcc structures respectively. The value of Z (number of atoms) for their crystals is:

A. 8 and 14

B. 2 and 4

C. 14 and 8

D. 6 and 4

Answer: B

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72. Colligative properties depend on:

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B. The number of solute particles in solution

C. The nature of solute and solvent particles

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View Text Solution

73. On dilution, the specific conductance of a solution:

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C. Decreases

D. First increases then decreases

Answer: C

View Text Solution

74. The flux used in the extraction of iron from haematite ore is:

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B. Silica

C. Coke

D. Calcium phosphate

Answer: A

View Text Solution

75. Which of the following xenon fluoride of xenon cannot be formed?

A. XeF_2

B. XeF_4

C. XeF_6

D. XeF_3

Answer: D

View Text Solution

76. The gas obtained on heating iodoform with silver powder is:

A. Propane

B. Ethane

C. Ethyne

D. Ethene

Answer: C

View Text Solution

77. Boiling point of ethyl alcohol is greater than diethyl ether due to:

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B. London forces

C. Polarity

D. Hydrogen bonding

Answer: B

View Text Solution

78. In a face centred cubic lattice, atom 'A' occupies the corner positions and atom 'B' occupies the face centred positions. If one atom of 'B' is missing from one of the face centred points, the formula of the compound will be:

A. AB_2

B. A_2B_3

C. A_2B_5

D. A_2B

Answer: C

View Text Solution

79. The standard reduction potential values of three metallic cations X, Y and Z are 0.52 V, -3.03 V and -1.18 V respectively. The order of

reducing power of the corresponding metals is:

A. $Y > Z > X$

B. $X > Y > Z$

C. $Z > Y > X$

D. $Z > X > Y$

Answer: A

View Text Solution

80. If molality of the dilute solution of a non-volatile, non-dissociating and non-associating electrolyte is doubled, the value of molal elevation constant or Ebullioscopic constant (K_b) will be:

A. Doubled

B. Halved

C. Tripled

D. Unchanged

Answer: D

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B. Roasting, followed by reduction with carbon

C. Roasting, followed by reduction with another metal

D. Roasting, followed by self-reduction

Answer: B

View Text Solution

82. The most powerful oxidizing agent is:

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

Answer: A

View Text Solution

83. During the course of S_N^1 reaction, the intermediate species formed is:

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B. A carbanion

C. A carbocation

D. An intermediate complex

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View Text Solution

84. Which type of defect has the presence of cations in the interstitial sites?

A. Schottky defect

B. Vacancy defect

C. Frenkel defect

D. Metal deficiency defect

Answer: D

View Text Solution

85. Reaction between acetone and methyl magnesium chloride, followed by hydrolysis will give:

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C. iso-propyl alcohol

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View Text Solution

86. If 5.85 g of NaCl are dissolved in 90 g of water, the mole fraction of solute is:

A. 0.2632

B. 0.0102

C. 0.0196

D. 0.1045

Answer: C

View Text Solution

87. When zinc granule is dipped into copper sulphate solution, copper is precipitated because:

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B. Both copper and zinc have a negative reduction potential.

C. Reduction potential of zinc is higher than that of copper.

D. Reduction potential of copper is higher than that of zinc.

Answer: D

View Text Solution

88. The optically active compound is:

A. Butan-1-ol

B. Butan-2-ol

C. Propan-1-ol

D. 2-methyl-propan-1-ol

Answer: B

View Text Solution

89. Chlorine reacts with cold and dilute NaOH under ordinary conditions to give:

A. NaCl and Cl_2O

B. NaCl and ClO_2

C. NaCl and NaClO

D. NaCl and $NaClO_3$

Answer: C

View Text Solution

90. Solutions which distil without any change in composition and temperature are called:

A. Ideal

B. Super saturated

C. Azeotropic

D. Isotonic

Answer: C

View Text Solution

91. The reaction: Sodium alkoxide + alkyl halide

$\rightarrow$ Ether + Sodium halide is called:

A. Wurtz reaction

B. Kolbe's reaction

C. Perkin's reaction

D. Williamson's synthesis

Answer: D

View Text Solution

92. Benzene diazonium chloride on hydrolysis gives:

A. Benzene

B. Phenol

C. Chlorobenzene

D. Benzyl alcohol

Answer: B

View Text Solution

93. The vacant space in body centred cubic lattice unit cell is:

A. $32\ \%$

B. $26\ \%$

C. $48\ \%$

D. $68\ \%$

Answer: A

View Text Solution

94. For a spontaneous reaction ΔG° and ΔE° cell will be respectively:

A. $-$ ve and -ve

B. $+$ ve and +ve

C. $+$ ve and -ve

D. − ve and +ve

Answer: D

View Text Solution

95. A liquid is mixed with ethanol and few drops of conc. H_2SO_4 is added. A compound with a fruity smell is formed. The liquid is:

A. HCHO

B. CH_3CHO

C. CH_3COOH

D. CH_3COCH_3

Answer: D

View Text Solution

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C. By Electromagnetic separation process

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View Text Solution

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A. Impure copper strip is used as cathode

B. Impurities do not settle as anode mud

C. Pure copper deposits at cathode

D. Acidified silver nitrate is used as electrolyte

Answer: C

View Text Solution

98. The reaction:

$$CH_2Br + OH^- \rightarrow CH_3OH + Br^-$$

The expected mechanism of the above reaction is:

A. S_N^1 mechanism

B. S_N^2 mechanism

C. S_E^1 mechanism

D. S_E^2 mechanism

Answer: B

View Text Solution

99. The reaction:

$CH_2Br + OH^- \rightarrow CH_3OH + Br^-$

The above reaction is:

A. Elimination reaction

B. Nucleophilic addition reaction

C. Nucleophilic substitution reaction

D. Electrophilic substitution reaction

Answer: C

View Text Solution

100. For the extraction of metal, answer the following:

The smelting of iron ore in blast furnace involves all the processes except:

A. Combustion

B. Reduction

C. Slag formation

D. Sublimation

Answer: D

View Text Solution

101. For the extraction of metal, answer the following:

Which of the following metal is obtained by leaching the concentrated ore with dilute sodium cyanide solution, followed by treatment with zinc?

A. Aluminium

B. Iron

C. Copper

D. Silver

Answer: D

View Text Solution

102. Phenol is heated with alcoholic KOH and chloroform:

What is the name of the reaction?

A. Cannizzaro reaction

B. Gattermann reaction

C. Reimer-Tiemann reaction

D. Kolbe reaction

Answer: C

View Text Solution

103. Phenol is heated with alcoholic KOH and chloroform:

What is the main product formed in this reaction?

A. Salicylaldehyde

B. Salicylic acid

C. Aniline

D. Phenyl isocyanide

Answer: A

View Text Solution

104. For IF_7 molecule:

The structure of the given molecule is:

A. Octahedral

B. Tetrahedral

C. Trigonal bipyramidal

D. Pentagonal bipyramidal

Answer: D

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105. For IF_7 molecule:

The type of hybridization of the given molecule is:

A. sp^3 hybridisation

B. sp^3d^3 hybridisation

C. sp^3d^2 hybridisation

D. sp^3d hybridisation

Answer: B

View Text Solution

106. Ethyl alcohol when reacts with PCl_5 gives a compound (A). When compound (A) is treated with alc. KOH, compound (B) is formed along with KCl and H_2O.

The compound (A) is:

A. $C_2H_4Cl_2$

B. CH_3CHO

C. C_2H_5Cl

D. CH_3OH

Answer: C

View Text Solution

107. Ethyl alcohol when reacts with PCl_5 gives a compound (A). When compound (A) is treated with alc. KOH, compound (B) is formed along with KCl and H_2O.

The compound (B) is:

A. C_2H_2

B. C_2H_4

C. C_2H_6

D. C_2H_5OH

Answer: B

View Text Solution

108. Copper pyrite or chalcopyrite ($CuFeS_2$) is the main ore of copper. The extraction of copper from its ore involves, concentration, partial roasting, removal of iron and self-reduction.

On heating the mixture of Cu_2O and Cu_2S which one of the following will be obtained?

A. Cu_2SO_3

B. $Cu + SO_3$

C. CuO + CuS

D. $Cu + SO_2$

Answer: D

View Text Solution

109. Copper pyrite or chalcopyrite ($CuFeS_2$) is the main ore of copper. The extraction of copper from its ore involves, concentration, partial roasting, removal of iron and self-reduction.

Iron is removed during the extraction of copper as:

A. FeO

B. FeS

C. $FeSiO_3$

D. Fe_2O_3

Answer: C

View Text Solution

110. Conversion of chlorobenzene into phenol.

Which of the following statements is correct for the above conversion?

A. Heating it with alc. KOH at room temperature

B. Heating it with aqueous NaOH at 623 K under pressure followed by acidification with dilute HCl

C. Heating it with CuCN followed by acidification with dilute HCl

D. Heating it with sodium metal in the presence of dry ether

Answer: B

View Text Solution

111. Conversion of chlorobenzene into phenol.

What is the name of the above reaction?

A. Dow process

B. Wurtz reaction

C. Sandmeyer's reaction

D. Kolbe's reaction

Answer: A

View Text Solution

112. With reference to XeF_6 molecule, answer the following question.

What is the hybridisation of Xe atom in the given molecule?

A. sp^3d^3

B. sp^3d^2

C. sp^3

D. sp^3d

Answer: A

View Text Solution

113. With reference to XeF_6 molecule, answer the following question.

What is the geometry of this molecule?

A. Distorted octahedral

B. Square planer

C. Pyramidal

D. Tetrahedral Question

Answer: A

View Text Solution

114. An unknown alcohol is treated with Lucas reagent to determine whether the alcohol is primary, secondary or tertiary.

Which alcohol reacts fastest and by what mechanism?

A. Tertiary alcohol by S_N^2

B. Secondary alcohol by S_N^1

C. Tertiary alcohol by S_N^1

D. Secondary alcohol by S_N^2

Answer: C

View Text Solution

115. An unknown alcohol is treated with Lucas reagent to determine whether the alcohol is primary, secondary or tertiary.

What is the chemical composition of the Lucas reagent used above?

A. Anhydrous zinc chloride in concentrated HCl

B. Anhydrous aluminium chloride in concentrated HCl

C. Anhydrous lead chloride in concentrated HCl

D. Anhydrous barium chloride in concentrated HCl

Answer: A

View Text Solution

116. Ozone is prepared from oxygen:

Which method is used in the above preparation?

A. Oxidation at high temperature

B. Oxidation using catalyst

C. Silent electric discharge

D. Reduction at high temperature

Answer: C

View Text Solution

117. Ozone is prepared from oxygen:

The ozone obtained above acts as a:

A. reducing agent

B. oxidising agent

C. decomposer

D. dehydrating agent

Answer: B

View Text Solution

118. Copper metal crystallises with face centred cubic unit cell. If the edge length of copper atom is 361.5 pm. (Atomic weight of Cu=63.5, $N_A = 6.02 \times 10^{23} \ \ \text{mol}^{-1}$)

The density of copper metal is:

A. 7.86 g/cm^3

B. 8.93 g/cm^3

C. 9.76 g/cm^3

D. 10.5 g/cm^3

Answer: B

View Text Solution

119. Copper metal crystallises with face centred cubic unit cell. If the edge length of copper atom is 361.5 pm. (Atomic weight of Cu=63.5, $N_A = 6.02 \times 10^{23} \ \ \text{mol}^{-1}$)

The radius of copper metal is:

A. 180.75 pm

B. 156.53 pm

C. 127.79 pm

D. 104.86 pm

Answer: C

View Text Solution

120. An aqueous solution containing one gram of urea (molecular weight = 60) boils at $100.25^{\circ}C$. The same solution freezes at $-0.894^{\circ}C$. The aqueous solution containing 3 gram of glucose (Molecular weight = 180) in the same volume of solution:

What is the boiling point of glucose?

A. $100.75^{\circ} C$

B. $100.50^{\circ} C$

C. $100.25^{\circ} C$

D. $100.08^{\circ} C$

Answer: C

View Text Solution

121. An aqueous solution containing one gram of urea (molecular weight = 60) boils at $100.25^{\circ} C$. The same solution freezes at

$-0.894^{\circ}C$. The aqueous solution containing 3 gram of glucose (Molecular weight = 180) in the same volume of solution:

What is the freezing point of glucose?

A. $+0.894^{\circ}C$

B. $-0.894^{\circ}C$

C. $+0.447^{\circ}C$

D. $-0.447^{\circ}C$

Answer: B

View Text Solution

122. When two Faradays of electricity is passed through an aqueous solution of $CuSO_4$ and an aqueous solution of $AgNO_3$. (Atomic weight of Cu = 63.5 g mol^{-1}, Ag = 108 g mol^{-1})

The mass of copper deposited at the cathode is:

A. 127.02 g

B. 63.50 g

C. 31.75 g

D. 15.87 g

Answer: B

View Text Solution

123. When two Faradays of electricity is passed through an aqueous solution of $CuSO_4$ and an aqueous solution of $AgNO_3$. (Atomic weight of Cu = 63.5 g mol^{-1}, Ag = 108 g mol^{-1})

The mass of silver deposited at the cathode is:

A. 54 g

B. 108 g

C. 216 g

D. 270 g

Answer: C

View Text Solution

124. Gold has cubic crystal whose unit cell has an edge length of 407.9 pm. Density of gold is 19.3 g cm^{-3}. Atomic weight of gold is 197 g

mol^{-1}. ($N_A = 6.02 \times 10^{23}$ mol^{-1})

The number of atoms (Z) in a unit cell of gold is:

A. 1

B. 2

C. 3

D. 4

Answer: D

View Text Solution

125. Gold has cubic crystal whose unit cell has an edge length of 407.9 pm. Density of gold is 19.3 g cm^{-3}. Atomic weight of gold is 197 g mol^{-1}. ($N_A = 6.02 \times 10^{23}$ mol^{-1})

The type of crystal structure of gold is:

A. Simple cubic unit cell

B. Body centred cubic unit cell

C. Face centred cubic unit cell

D. Side centred cubic unit cell

Answer: C

View Text Solution

126. A solution of sucrose (molecular weight 342 g mol^{-1}) has been prepared by dissolving 68.4 g of sucrose in 1000 g of water.

(K_f for water = 1.86 K kg mol^{-1})

The freezing point of the solution obtained will be:

A. $-0.52^{\circ}C$

B. $+0.52^{\circ}C$

C. $-0.372^{\circ}C$

D. $+0.372^{\circ}$ C

Answer: D

View Text Solution

127. A solution of sucrose (molecular weight 342 g mol^{-1}) has been prepared by dissolving 68.4 g of sucrose in 1000 g of water.

(K_f for water = 1.86 K kg mol^{-1})

The molality of sucrose solution will be:

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: B

View Text Solution

128. The standard electrode potential for the reaction is:

(I)

$$Ag^+ + e^- \rightarrow Ag_s, E^\circ Ag^+ / Ag = +0.80V$$

(II)

$Sn^{2+} + 2e^- \rightarrow Sn_s, E^\circ Sn^{2+}/Sn = -0.14V$

The E° cell will be:

A. 0.66 V

B. 0.88 V

C. 0.94 V

D. 1.08 V

Answer: C

View Text Solution

129. The standard electrode potential for the reaction is:

(I)

$Ag^+ + e^- \rightarrow Ag_s, E^\circ Ag^+ / Ag = +0.80V$

(II)

$Sn^{2+} + 2e^- \rightarrow Sn_s, E^\circ Sn^{2+} / Sn = -0.14V$

The value of standard Gibbs energy (ΔG°) will be:

(F=96,000 C mol^{-1})

A. -181.42 kJ

B. -90.71 kJ

C. -45.36 kJ

D. -22.68 kJ

Answer: A

View Text Solution

130. A metal has face centred cubic lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72 g/cm^3. ($N_A = 6.023 \times 10^{23} \ \ \text{mol}^{-1}$)

The molar mass of the metal is:

A. 20 g mol^{-1}

B. 27 g mol^{-1}

C. 30 g mol^{-1}

D. 40 g mol^{-1}

Answer: B

View Text Solution

131. A metal has face centred cubic lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72 g/cm^3. (

$N_A = 6.023 \times 10^{23}$ mol^{-1})

The radius of the metal atom in centimetre (cm) is:

A. 103.29×10^{-10} cm

B. 125.63×10^{-10} cm

C. 142.81×10^{-10} cm

D. 175.76×10^{-10} cm

Answer: C

View Text Solution

132. A binary solution contains 92 g ethyl alcohol and 72 g water.

(Atomic weight of C=12, H=1, O=16)

Mole fraction of ethyl alcohol is:

A. 0.4

B. 0.8

C. 0.66

D. 0.33

Answer: D

View Text Solution

133. A binary solution contains 92 g ethyl alcohol and 72 g water.

(Atomic weight of C=12, H=1, O=16)

Mole fraction of water is:

A. 0.33

B. 0.66

C. 0.2

D. 0.8

Answer: B

View Text Solution

134. The limiting molar conductivities ($\wedge_m^\infty$) for NaCl, KBr and KCl are 126, 152 and 150 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$ respectively.

The molar conductivity at infinite dilution for NaBr is:

A. 128 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

B. 176 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

C. 278 $\text{ohm}^{-1}cm^2 \ \text{mol}^{-1}$

D. 302 $\text{ohm}^{-1}cm^2 \quad \text{mol}^{-1}$

Answer: A

View Text Solution

135. The limiting molar conductivities ($\wedge_m^\infty$) for NaCl, KBr and KCl are 126, 152 and 150 $\text{ohm}^{-1}cm^2 \quad \text{mol}^{-1}$ respectively.

The law applied to determine the molar conductivity of infinite dilution is known as:

A. Faraday's Law

B. Avogadro's Law

C. Kohlrausch's Law

D. Ohm's Law

Answer: C

View Text Solution

136. Assertion: Haloalkanes when treated with alcoholic KCN forms alkane nitrile as a major product.

Reason: Potassium cyanide is a covalent compound.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are false.

D. Both assertion and reason are true and reason is the correct explanation of the assertion.

Answer: B

View Text Solution

137. Assertion: Iron is found free in nature.

Reason: Iron is highly reactive element.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the

assertion.

Answer: A

View Text Solution

138. Assertion: Ethers are more volatile than alcohols having the same molecular formula.

Reason: Alcohols have intermolecular hydrogen bond.

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the assertion.

Answer: D

View Text Solution

139. Assertion: SO_2 decolorises pink colour of acidified $KMnO_4$ solution.

Reason: SO_2 is an oxidising agent

A. Assertion is false but reason is true.

B. Assertion is true but reason is false.

C. Both assertion and reason are true but reason is not correct explanation of the assertion.

D. Both assertion and reason are true and reason is the correct explanation of the

assertion.

Answer: B

View Text Solution

140. Assertion: Sulphide ores are concentrated by froth floatation process.

Reason: Sulphide ores are wetted by pine oil forming the froth while impurities are vetted by water.

A. Both assertion and reason are correct and reason is the correct explanation of the assertion.

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

C. Assertion is correct and the reason is wrong.

D. Both assertion and reason are wrong.

Answer: A

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