CHEMISTRY

BOOKS - MBD CHEMISTRY (ODIA ENGLISH)

ELECTROCHEMISTRY

QUESTION BANK

1. What is the difference between electrochemical equivalent and chemical equivalent ?

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2. What is the value of one faraday ?

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3. What is electrochemical series ?

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4. Define cell potential.

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5. How electrode potential increases of an electrode ?

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6. What is standard electrode potential ?

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7. What is fuel cell?

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8. Define Galvanic-cell or Voltaic-cell.

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9. The unit of equivalent conductance is

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10. What is the unit of specific conductance?

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11. What is unit of molar conductivity or molar conductance ?

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12. Write the unit of cell constant.

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13. If a spoon to be electroplated with silver , would it be made as cathode or anode in the cell?

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14. The electrode potential of normal hydrogen electrode is

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15. Write the Nernst equation for a half cell reaction.

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18. How does specific conductance vary with dilution?

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19. What is the charge carried by 1 mole nitride ion?

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20. What is the ECE of Ag ?

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21. Define molar conductance.

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22. What is the potential of a standard hydrogen electrode ?

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23. What happens to equivalent conductance when solution is diluted?

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24. How many moles of H_2 will be liberated when 2 faradays of electricity is passed through 0.1M `H_2SO_4 solution?

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25. Write the equation that give the equivalent conductance at infinite dilution.

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26. What is the charge carried by one mole electron ?

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27. What is the difference between electrochemical equivalent and chemical equivalent ?

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28. What happens to conductance of an electrolyte on dilution ?

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29. Give an example of an inert electrode .

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30. State Faradey.s 1st law.

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31. State Faradey.s 2nd law.

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32. What is the difference between electrochemical equivalent and chemical equivalent ?

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33. How atomic weight, valency, eq.weight of a metal related ?

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34. Define specific conductance.

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35. Define equivalent conductance.

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36. Define molar conductance.

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37. What is the unit of cell constant ?

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38. Define the equivalent conductance and specific conductance.

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39. Give two applications of Kohlraush's law

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40. How degree of dissociation is related with eqconductacne of week electro-lytes ?

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41. What is the electrode potential?

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42. What is standard electrode potential ?

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43. What is the EMF of the cell when the cell reaction attains equilibrium ?

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44. Can you store copper sulphate solution in an iron vessel? Why ?

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45. If a spoon to be electroplated with silver , would it be made as cathode or anode in the cell?

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46. Galvanic cell converts ______ into_____.

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47. Specific conductance=_______x cell constant.

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48. The unit of cell constant is . . . .

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49. Molar conductance for weak electrolyte on dilution______.

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50. Charge on one mole of electron is ______

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51. Copper sulphate solution _____ stored in an iron vessel.

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52. I mole of electrons ______coulomb.

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53. Reduction takes place at______ during electrolysis.

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54. Oxidation takes place at_____ druing electrolyses.

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55. Equivalent conductance for strong electrolyte on dilution ______.

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56. The unit of specific conductance is . . ..

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57. Give the relationship between chemical equivalent and electrochemical equivalent of an element?

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58. pH value of aqueous solution of Nacl after electrolysis is _______

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59. Unit of electrochemical equivalent is ______.

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60. 96500 Coulomb will deposite . . .. of metal.

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61. Equivalent conductance ________ with dilution.

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62. What is the unit of molar conductance ?

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63. Relation between standard e.m.f. of a cell and equilibrium constant is ________.

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64. In an electrochemical cell, reduction taken place at ....

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65. In the electrochemical cell, oxidation takes place at ....

.

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66. Electroplated silver spoon acts as ____in a cell.

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67. The process of splitting up of electrolytes into the $+ve$ and $-ve$ ions are called_____.

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68. For strong electrolytes degree of ionisation is ________.

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69. I coulonmb=______x 1 second.

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70. Units of specific conductivity are _______.

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71. Electrochemical cell is also known as _____.

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72. In an electrochemical cell, reduction taken place at ……………………

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73. In an electrochemical cell, reduction taken place at ....

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74. Molten sodium chloride conducts electricity due to the presence of ....

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75. The electric charge for electrode deposition of the gram equivalent of a substance is

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76. 96500 Coulomb will deposite .... of metal.

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77. Unit of electrochemical equivalent is ______.

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78. pH value of aqueous solution of Nacl after electrolysis is _______

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79. The unit of specific conductance is . . . .

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80. How does specific conductance vary with dilution?

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81. How does specific conductance vary with dilution?

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82. Equivalent conductance for strong electrolyte on dilution ______.

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83. Equivalent conductance for week electrolyte on dilution _______.

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84. Molar conductance for weak electrolyte on dilution______.

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85. The best electronic conductor is ______.

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86. Electrolysis of molten sodium hydride liberates .... gas at the ....

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87. Oxidation takes place at_____ druing electrolyses.

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88. Reduction takes place at______ during electrolysis.

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89. Charge carried by 1 mole of electrons is _______.

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90. I coulomb is about ________electrons.

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91. The unit of electrochemical equivalent is

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92. Molar conductance for weak electrolyte on dilution______.

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93. Specific conductance=_______x cell constant.

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94. Equivalent conductance for strong electrolyte on dilution decreases rapidly.

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95. In an electrochemical cell, reduction taken place at ....

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96. In the electrochemical cell, oxidation takes place at ....
.

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97. Molten sodium chloride conducts electricity due to the presence of ....

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98. The electric charge for electrode deposition of the gram equivalent of a substance is

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99. How much time is required to pass 18000 coulombs of electricity through an electrolyte if the current strenght is 10 amperes ?

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100. I coulomb of charge contains how many number of electrons ?

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101. In an electrolytic cell 10 gm of chlorine is liberated from NaCl solution in 30 minutes. Find the amount of current passed.

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102. How many coulombs of electricity are required for reduction of 1 mol of Cu^{2+} to Cu ?

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103. How many moles of electrons are given by 45 coulombs ?

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104. Calculate the value of equilibrium constant for the reaction at 298 k.

$Cu(s) + 2Ag^{+}(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

E° (Ag2+/Ag) $= 0.80V$

and E° (Cu2+/Cu) $= 0.34V$

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105. What are fuel cells ? Write the electrode reaction of a fuel cell which uses the reaction of hydrogen with oxygen.

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106. How much copper is deposited on the cathode if a current of 5 A is passed throgh a solution of $CuSO_4$ for 45 minutes ?

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107. Explain why electrolysis of aqueous solution of $NaCl$ gives H_2 at cathode and Cl_2 at anode.

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108. State and explain Kohlrausch's law of independeat migration of ions.

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109. Define molar conductance . Write its unit.

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110. The specific conductance of a solution is 0.356 $ohm^{-1}\ cm^{-1}$. The conductance of this solution in a cell was 0.0268 ohm^{-1}. Calculate the cell constant.

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111. What is the potential of a standard hydrogen electrode ?

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112. A $0.1N$ solution of NaCl has specific conductance $0.0011 ohm^{-1} cm^{-1}$. Find its equivalent conductance.

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113. What do you mean by strong and weak electrolytes ?

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114. In a cell $Zn[Zn^{2+}(aq)(1.0M)]\,[Cu^{2+}(aq)(1.0M]Cu$, the standard reduction potentials are :

$Cu^{2+} + 2e^{-} \to Cu, E^{\circ} = 0.350V$ and

$Zn^{2+} + 2e^{-} \to Zn, E^{\circ} = -0.763V$.

What is the e.m.f.of the cell ?

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115. What is the basis on which anode or cathode identified in a chemical cell ?

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116. Give the relationship between chemical equivalent and electrochemical equivalent of an element?

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117. What product is obtained at the anode during electroluysis of fused sodium hydride ?

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118. What is an electrolyte ?Defind non-electrolyte.

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119. What is electrolysis ?

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120. Give relation between specific conductance and Equivalent conductance ?

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121. What is Galvanic cell ? Discuss the construction and working of Daniell cell.

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122. Write two applications of electrochemical series.

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123. State and explain Kohlrausch's law. How can this law be used to find equivalent conductance of acetic acid at infinite dilution?

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124. Three faradays of electricity are passed through molten Al_2O_3 ,aqueous solution of $CuSO_4$ and molten NaCl taken in different electrolytic cells. Calculate the molar ratio of Al, Cu and Na deposit at the cathodes .

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125. Represent the cell and calculate the Standard e.m.f. of the cell having following cell reaction:

$2Cr(s) + 3Cd^{2+}(aq) \rightarrow 2Cr^{3+}(aq) + 3Cd(s) E^0 Cr^{3+} / Cr = -0.73vo$ <

and $E^0 Cd^{2+} / Cd = -0.40$ volt

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126. Define equivalent conductance.

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127. Define specific conductance.

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128. What is galvantic cell?

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129. Write two applications of electrolysis.

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130. State and explain Faraday's laws of electrolysis. How many grams of aluminium can be produced by the electrolysis of molten alumina with a current of 3 amperes for 10 minutes?

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131. .... grams of chlorine can be prepared by the electrolysis of molten sodium chloride with 10 amperes current passed for 10min.

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132. Calculate the quantity of electricity required to deposit $0.108gm.$ of silver from $AgNO_3$ soln.

(At. Mass of Ag=108).

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133. What happens when $CuSO_4$ soln. Is stored in a Zinc container ?

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134. The specific conductance of a solution is 0.356 $ohm^{-1}\ cm^{-1}$. The conductance of this solution in a cell was 0.0268 ohm^{-1}. Calculate the cell constant.

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135. The equivalent conductance of 0.001N KCl solutin is 147 $ohm^{-1}cm^2gmeq^{-1}$ at $25^\circ C$. Find the specific conductance.

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136. How many moles of copper will be deposited at the cathode by passing 1.5 faraday of electricity through a sol^n of $CuSO_4$? (At. Mass of

Cu =63.5).

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137. A current strength of 3 amperes is passed for 20 minutes in $AgNO_3$ solution., 4gm. Ag metal is deposited, what is the ECE OF Ag ?

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138. For silver plating name the mterials that are to be taken as cathode, anode and electrolyte.

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139. What is the potential of a standard hydrogen electrode ?

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140. From the following molar conductivities at infinite dilution.

Λ_m° for $Ba(OH)_2 = 457.6\Omega^{-1}cm^2\text{mol}^{-1}$

Λ_m° for $BaCl_2 = 240.6\Omega^{-1}cm^2\text{mol}^{-1}$

Λ_m° for $NH_4Cl = 129.8\Omega^{-1}cm^2\text{mol}^{-1}$

Calculate Λ_m° for NH_4OH.

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141. A metal wire carries a current of 1 ampere. How many electrons pass a point in the wire in one second ?

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142. $A0.1N$ soln. of $NaCl$ has specific conductance $0.001119ohm^{-1}cm^{-1}$. Find out equivalent conductance.

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143. On electrolysis $CuSO_4$ solution in presence of non attackable Pt, electrodes, the soln. becomes colourless. Explain.

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144. What volume of hydrogen gas measured at $273K$ at 0.5 atmospheric pressure will be obtained when 0.1 faraday of electricity is passed through acidulated water ?

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145. Why Ag will not react with dilute H_2SO_4 whereas Zn reacts rapidly ?

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146. Colour of KI slon. containing starch turns blue when Cl_2 water is added. Why ?

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147. The metals given below are in the increasing order of their reduction potential.

Mg,Zn,Co,H,Cu,Ag

Which of these metals displaces hydrognen from dilute acid ?

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148. State whether the following representation of the cell is correct or not .

$Pb\left[Pb^{++}(IM)\right]\left[Mg^{++}(1M)\right]Mg$

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149. Write each half cell reaction and also the net cell reaction for a cell.

(i)$Cu\left[Cu^{++(aq)}\right]\left[Ag^{+(aq)}\right]Ag$

(ii) $Cd\left[Cd^{+2}\right]\left[Ni^{+2}\right]Ni$

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150. what happens when Zn metal is immersed in $CuSO_4$ solution ?

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151. What is the difference between electrochemical equivalent and chemical equivalent ?

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152. Explain Faraday's second law of electrolysis.

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153. What is electrochemical series ? Write some of its uses.

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154. How many grams of aluminium can be produced by electrolysis of molten alumina with a current of 1 amperes for 1 minutes ?

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155. 20 ampere current is flowing through $CuSO_4$ solution for 60 minutes. Find the amonut of cupper deposited. (At .wt. of Cu = 63.5)

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156. Calculate the normality of KCl solution having resistance 2000 ohm. The cell constant is$5.53cm^{-1}$ and the equivalent conductance is $138.25ohm^{-1}cm^2eq^{-1}$.

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157. Calculate the value of equilibrium constant for the reaction at 298 k.

$Cu(s) + 2Ag^{+}(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

E°(Ag2+/Ag) $= 0.80V$

and E°(Cu2+/Cu) $= 0.34V$

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158. How does molar conductivity vary with concentration for weak and strong electrolyte ?

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159. The specific conductance of a 0.12N solution of an electrolyte is $2.4 \times 10^{-2}\ ohm^{-1}cm^{-1}$ Calculate its equivalent conductance.

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160. How would you determine the standard electrode potential of the system Mg^{2+} / Mg ?

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161. State and explain Kohlrausch's law of independeat migration of ions.

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162. Give the relationship between chemical equivalent and electrochemical equivalent of an element?

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163. The resistance of a soln. is 3 ohms. The electrodes in the cell are 1.5 cm. apart and have an area of $4.5 cm^2$. What is specific conductance ?

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164. A current of 0.15 amperes strength is passed for 150 minutes through a soln. of a metal, 0.785 gm of metal was deposited. Find the valency of the metal. (At.wt.of the metal : 112)

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165. A current of 0.5 ampere is passed through acidulated water for 30 minutes. Calculate the wt. of H_2 and oxygen evolved ?

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166. When an electric current is passed simultaneously through acidulated water and copper sulphate soln.wt. of hydrogen and copper deposited are 0.0131 and $0.4164gm$ respectively. Calculate eq. mass of copper.

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167. State and explain Faraday's laws of electrolysis.

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168. When a current of 0.15 ampere is passsed through a solution of a salt of a metal for 150 minutes, 0.783 gm of the metal is deposited . Find the valency of the metal.(At. Wt. of metal = 112)

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169. State and explain Faraday's laws of electrolysis.

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170. How many grams of aluminium can be produced by electrolysis of molten alumina with a current of 3 amperes for 10 minutes ?

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171. Define and explain electrochemical equivalent.How is it related with chemical equivalent of the substance ?

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172. A current of 5 amperers is passed through an electrolyte for 15 minutes when 3 gm of the metal is deposited . Calculate the equivalent weight of the metal.

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173. Define equivalent and molar conductance. Give their relationship with specific conductance. How does equivalent conductance vary with increase in temperature?

How many atoms of calcium will be deposited from fused $CaCl_2$ by a current of 25 mA passes for 60 sec?

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174. Define equivalent and molar conductance. Give their relationship with specific conductance. How does equivalent conductance vary with increase in temperature?

How many atoms of calcium will be deposited from fused $CaCl_2$ by a current of 25 mA passes for 60 sec?

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175. Define specific, equivalent and molar conductance. Write their units. Derive the relation between specific conductance and molar conductance. What is the effect of dilution on specific and equivalent conductance?

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176. The specific conductivity of an $N/20$ solution of KCl at `25^@ C is 0.002765 mhos. If the resistance of the same solution placed in the cell is

2000 ohm, what is the cell constant ?

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177. Write short note on Nernst equation.

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178. What is standard electrode potential ?

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179. Write notes on electrode potential

Watch Video Solution

180. What is electrochemical series ?

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Watch Video Solution

181. Write notes on Fuel Cell

Watch Video Solution

182. Write notes on Corrosion

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183. The algebrac sum of potential of two electrodes of a galvanic cell is called :

A. Potential defference

B. Ionic difference

C. EMF

D. Electrode difference

Answer: C

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184. The standard emf of a galvanic cell can be calculated from :

A. The size of the solution

B. The pH of the solution

C. The amount of metal in the anode

D. The E° values of the two half cells

Answer: D

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185. The electrode potential of a glass electrode depends upon:

A. Concentration of chloride ions

B. Concentration of hydrogen ions

C. Concentration of KCl solution.

D. None of these

Answer: B

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186. Which solution will show highest resistance during the passage of current:

A. $1\mathbb{N}aCI$

B. $0.1\mathbb{N}aCI$

C. $2\mathbb{N}aCI$

D. $0.05\mathbb{N}aCI$

Answer: C

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187. The standard reduction potential at 290K for the following half reactions are,

(i)$Zn^{2+}+2e \rightarrow Zn(s), E^{\circ}=-0.762V$

(ii)$Cr^{3+}+3e \rightarrow Cr(s), E^{\circ}=-0.740V$

(iii)$2H^{+}2e \rightarrow H_2(g), E^{\circ}=-0.000V$

(iv)$Fe^{3+}+e \rightarrow Fe^{2}+, E^{\circ}=+0.77V$

Which it the strongest reducing agent :

A. Zn

B. Cr

C. Fe^{2+}

D. H_2

Answer: A

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188. Which represents disproportionation :

A. $2Cu^+ \rightarrow Cu^{2+} + Cu$

B. $3I_2 \rightarrow 5I^- + I^{5+}$

C. $H_2O + Cl_2 \rightarrow Cl^- + ClO^- + 2H^+$

D. All of these

Answer: D

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189. Electrochemical equivalent of a substance is equal to its quantity liberated at electrode on passing electricity equal to :

A. 1 coulomb

B. 1 ampere

C. 1 volt

D. 96,500 coulomb

Answer: A

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190. Consider the standard potential of the following cells,

(i)$Mg^{2+} + 2e \rightarrow Mg, E^{\circ} = -2.37V$

(ii)$Zn^{2+} + 2e \rightarrow Zn, E^{\circ} = -0.76V$

(iii)$Ni^{2+} + 2e \rightarrow Ni, E^{\circ} = -0.25V$

(iv)$Fe^{3+} + 3e \rightarrow Fe, E_0 = -0.04V$ find the strongest reducing agent

:

A. Mg^{2+}

B. Zn^{2+}

C. Fe^{3+}

D. Ni^{2+}

Answer: B

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191. The most poweful oxidising agent is :

A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer: A

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192. The product $(ampere \times \sec ond)$ is equal to the number of :

A. Coulomb transferred

B. Electrons transferred

C. Faraday transferred

D. Volt

Answer: A

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193. The oxidation potential of Mg and Al are `+2.37 and +1.66 volt respectively. The Mg in chemical reactions :

A. Will be replaced by Al

B. Will replace Al

C. Will not be able to replace Al

D. None of these

Answer: B

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194. When an aqueous solution of lithium chloride is electrolysesd using graphite electrodes :

A. pH of the resulting solution increases

B. pH of the resulting solution decreases

C. As the current flows, pH of the solution around the cathode increases

D. None of these

Answer: A

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195. A ditute aqueous solution of sodium fluoride is electrolysed, the products at the anode and cathode are:

A. O_2, H_2

B. F_2, Na

C. O_2, Na

D. F_2, H_2

Answer: A

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196. Of the following matals that cannot be obtained by electrolysis of the aqueous solutions of their cathode are :

A. Ag and Mg

B. Ag and Al

C. Mg and Al

D. Cu and Cr

Answer: C

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197. A certain metal fails to liberate H_2 gas from a moderately conc. HCl solution. However it desplaces Ag from $AgNO_3$ solution. Which among the following may it be :

A. Mg

B. Fe

C. Cu

D. Cd

Answer: C

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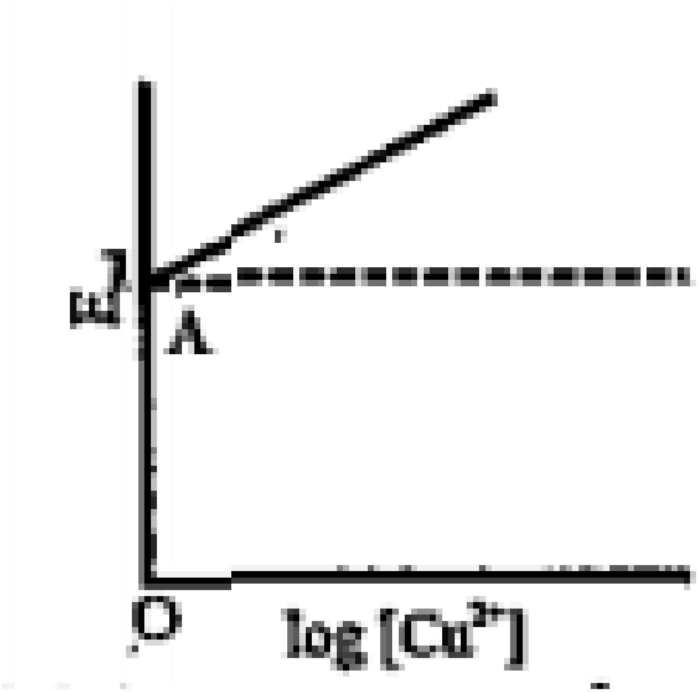
198. $Cu^{2+} + 2e \rightarrow Cu, \log[Cu^{2+}]$ vs E_{red}.graph is of the type as shown in figure where $OA = 0.34V$ then electrode otential of the half cell of

$Cu^{2+}(0.1M)$ will be :



A. $-0.34+\frac{0.0591}{2}V$

B. $0.34+0.0591V$

C. $0.34V$

D. None

Answer: A

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199. For which cell emf is independent of the concentration of electrolytes used :

A. $Fe[FeO(s)]KOH(aq)[NiO(s)[Ni_2O_3(s)]Ni$

B. $Pt(H_2)[HCI](Cl_2)$

C. $Zn\left[Zn(NO_3)_2\right][CuSO_4]Cu$

D. $Hg, HgCl_2[KCI][AgNO_2]Ag$

Answer: A

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200. The reaction,

$Cu^{2+}(aq) + 2CI^{-}$ (aq) $\rightarrow Cu(s) + CI_2(g)$ has $E^{\circ}_{cell} = 1.03V$.This reaction :

A. Can be made to produce electricity in voltaic cell

B. Can be made to occur in an electrolytic cell

C. Can occur in acidic medium only

D. Can occur in basic medium only

Answer: B

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201. For the electrochemical cell, $M[M^+]X^- \mid X, E^\circ\_(M+/M) = 0.44V$ and $E^\circ_{X/X^-} = 0.33V$.

From this data, one can duduce that :

A. $M + X \rightarrow M^+ + X^-$ is the spontaneous reaction

B. $M^+ + X^{- \rightarrow} M + X$ is the spontaneous reaction

C. $E_cell = 0.77V$

D. $E_{cell} = -0.77V$

Answer: B

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202. Electrolytic reduction of alumina to aluminium by Hall-Heroult process is carried out

A. In the presence of NaCI

B. In the presence of fluoride

C. In the presence of cryolite which forms a melt with lower melting tempeature

D. In the presence of cryolite which forms a melt with higher melting temperature

Answer: C

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203. When 9.65 coulomb of electricity is passed through a solution of $AgNO_3$(at.wt. 108.0) the amount of silver deposited is :

A. 10.8 mg

B. 5.4 mg

C. 16.2 mg

D. 21.2 mg

Answer: A

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204. E° values for $Fe^{3+} + 3e \rightarrow Fe$ and $Fe^{2+} + 2e \rightarrow Fe$ are - 0.036V and -0.44V respectively. Calculate the E^{0} and ΔG^{0} for the cell reaction $Fe + 2Fe^{3+} \rightarrow 3Fe^{2+}$.

A. $-0.476V$

B. $-0.404V$

C. $+0.404V$

D. $+0.772V$

Answer: D

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205. I mole of Al is deposited by X coulomb of electricity passing through aluminium nitrate solution. The number of mole of silver deposited by X coulomb of electricity from silver nitrate solution is :

A. 3

B. 4

C. 2

D. 1

Answer: A

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206. Copper from copper sulphate solution can be displaced by ....The standared reduction potentials of some electrodes are given below:

$$E^{\circ}\left(Fe^{2+}, Fe\right) = -0.44V$$

$$E^{\circ}\left(Zn^{2+}, Zn\right) = -0.76V$$

$$E^{\circ}\left(Cu^{2+}, Cu\right) = +0.34V$$

$$E^{\circ}\left(Cr^{3+}, Cr\right) = -0.74V$$

$$E^{\circ}\left(H^{+}, \frac{1}{2}H_2\right) = -0.00V$$

A. H_2

B. Zn

C. Cr

D. All

Answer: D

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207. The oxidation potential of a hydrogen electrode at pH =10 and P_{H_2} = 1 atm

A. $0.51V$

B. $0.00V$

C. $+0.59V$

D. $0.059V$

Answer: C

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208. The number of Faraday required to gneerate 1g of Mg from $MgCl_2$ is:

A. 1

B. 2

C. 3

D. 4

Answer: B

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209. emf of cell $Ni, Ni^{2+}(1.0M) \mid \mid Au^{3+}(1.0M), Au$ is ....If $E^{\circ} f \text{ or } Ni^{2+} \mid Ni$ is 0.25V, $E^{\circ} f \text{ or } Au^{3+} \mid Au$ is 1.50 V.

A. $+1.25V$

B. $1.75V$

C. $+1.75V$

D. $+4.0V$

Answer: C

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210. E° for the half cell reactions are as,

$Zn \rightarrow Zn^{2+} + 2e, E^{\circ} = +0.76V$

$Fe \rightarrow Fe^{2+} + 2e, E^{\circ} = +0.41V$

The E° for the cell reaction.

$Fe^{2+} + Zn \rightarrow Zn^{2+} + Fe$:

A. $-035V$

B. $+0.35V$

C. $+1.17V$

D. $-0.17V$

Answer: B

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211. A certaom cirrent liberates 0.504 g of hydrogen in 2 hr. How many gram of copper can be liberated by the same current flowing for the same time in $CuSO_4$ solution:

A. 12.7

B. 16

C. 31.8

D. 63.5

Answer: B

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212. The standard reduction electrode potentials of your metals A,B, C and D are $-3.65, -1.68, -0.80$ and $+0.86$.The highest chemical activity will be exhibited by :

A. A

B. B

C. C

D. D

Answer: A

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213. An apparatus used for the measurement of quantity of electricity is known as a :

A. Calorimeter

B. Cathetometer

C. Coulometer

D. Colorimeter

Answer: C

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214. The amount of an ion descharged during electrolyses is not dependent of :

A. Resistance of solution

B. Time

C. Current strength

D. Electrochemical equivalent of the element

Answer: A

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215. If an iron rod is deppedin $CuSO_4$ solution:

A. Blue colour of the solution turns red

B. Brown layer is deposited on irod rod

C. No change occous in the colour of the solution

D. None

Answer: B

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216. Which aqueous solution will conduct an electric current quite well :

A. Glycerol

B. Sugar

C. Hydrochloric acid

D. Pure water

Answer: C

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217. What is lead storage battery?

A. SO_2 is evolved

B. Lead is formed

C. Lead sulphate is consumed

D. Suophuric acid is consumed

Answer: D

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218. The unit of electrochemical equivalent is :

A. gram

B. gram/ampere

C. gram/coulomb

D. coulomb gram

Answer: C

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219. During the electrolysis of fused`NaCI, the reaction that occurs at the anode is :

A. Chloride ions are reduced

B. Chloride ions are oxidized

C. Sodium ions are oxidized

D. Sodium ions are reduced

Answer: A

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220. Each of the three metals X, Y and Z were put in turn into aqueous solution of the other two , X + Salt of Y (or Z)=Y (or Z) + Salt of X . Which observation is probably incorrect :

A. Y + Salt of X =No action observed

B. Y + Salt of Z =Z+ Salt of Y

C. Z + Salt of X=X+Salt of Z

D. Z + Salt of Y = No action observed

Answer: C

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221. Molten `NaCl conducts electricity due to the presence of :

A. Free electrons

B. Free molecules

C. Free ions

D. Atoms of Na and Cl

Answer: C

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222. Red hot carbon will remove oxygen from the oxides XO and YO but not form ZO . Y will remove oxygen from XO . Use this evidence to reduce the order of activity of the three metals X,Y and Z putting the most reactive first :

A. X,Y,Z

B. Z,Y,X

C. Y,X,Z

D. Z,X,Y

Answer: B

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223. The standard reduction potentials at 25° of $[Li^{+}/$ Li],$[Ba^{2+}/$ Ba],$[Na^{+}/$ Na] and $[Mg^{2+}/$ Mg] are $-3.05, -2.76, -2.71$ and $-2.37V$ respectively . Which is strogest reducing agent.

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224. Normal aluminum coupled with normal hydrogen electrode gives an emf of 1.66 V. The standard electrode potential of aluminium is :

A. $-1.66V$

B. $+1.66V$

C. $-0.83V$

D. $+0.83V$

Answer: B

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225. How many faraday are needed to reduce one mole of MnO_4^- to Mn^{2+}:

A. 4

B. 5

C. 3

D. 2

Answer: B

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226. Standard E° of the half cell Fe/Fe^{2+} is +0.44V and standard E° of half cell Cu /Cu^{2+} is -0.32V then:

A. Cu oxidises Fe^{2+} ion

B. Cu^{2+} oxidises Fe

C. Cu reduces $Fe^{2+} ion$

D. Cu^{2+} reduces Fe

Answer: B

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227. The standard reduction potentials of metal electrodes A,B,C and D are +0.14V,+0.34V,-0.74 V and -0.4V respectively, Which is the best reducing agent :

A. A

B. B

C. C

D. D

Answer: C

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228. The standard reduction potentials at $25^{\circ} of Li^{+}\left[Li, Ba^{2+}\left[Ba, Na^{+}\right]Na \text{ and } Mg^{2+}\right]Mg are -3.05, -2.76, -$

respectively . Which is strogest reducing agent.

A. Li

B. Ba

C. Na

D. Mg

Answer: A

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229. The standard reduction potentials of the metals A,B and C are $0.68, \ -2.50$ and $-0.50V$ respectively. The order of their reducing power is :

A. $A > B > C$

B. $A > C > B$

C. $C > B > A$

D. $B > C > A$

Answer: D

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230. The standard reduction potential for $Fe^{2+} \mid Fe$ and $Sn^{2+} \mid Sn$ electrodes are $-0.44V$ and $-0.14V$ respectively. For the cell reaction, $Fe^{2+} + Sn \rightarrow Fe + Sn^{2+}$, the standard emf is :

A. $+0.30V$

B. $0.58V$

C. $+0.58V$

D. $-0.30V$

Answer: D

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231. 3 Faraday of electricity are passed through molten Al_2O_3, aqueous solution of $CuSO_4$ and molten Nacl taken in three different electrolytic

cells. The amount of Al, cu and Na deposited at the cathodes will be in the ratio of :

A. 1 mole : 2 mole : 3 mole

B. 3 mole : 2 mole: 1 mole

C. 1 mole: 1.5 mole: 3 mole

D. 1.5 mole :2 mole : 3 mole

Answer: C

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232. An electroytic cell contains a solution of Ag_2SO_4 and platinum electrodes. A current is passeduntil 1.6 g of O_2 has been liberated at anode. The amount of Ag deposited at cathode would be :

A. $1.6g$

B. $0.8g$

C. $21.6g$

D. $107.88g$

Answer: C

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233. The electrode potential measure the :

A. Tendency of the electrode to gain or lose electrons

B. Tendency of the all cell reaction to accur

C. Difference in the ionisation potential of electrode and metalion

D. Current carried by an electrode

Answer: A

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234. Which is the correct representation for Nernst equation :

A. $E_{RP} = E^{\circ}_{RP} +^{0.059}_{n} \frac{\log[\otimes idant]}{reduc\tan t}$

B. $E_{OP} = E^{\circ}_{OP} +^{0.059}_{n} \frac{\log[\otimes idant]}{reduc\tan t}$

C. $E_{OP} = E^{\circ}_{OP} +^{0.59}_{n} \frac{\log[Reduc\tan t]}{\otimes idant}$

D. All of these

Answer: D

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235. The factor temperature coefficient for emf is :

A. $(\delta E / \delta T)_P$

B. $(\delta E / \delta P)_T$

C. $(\delta E / \delta V)_T$

D. None

Answer: A

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236. The emf of a voltaic cell is negative. So oxidation and reduction process respecttively can be written at the :

A. LHE,RHE

B. RHE,LHE

C. Both (a) and (b)

D. None

Answer: B

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237. Silver from silver nitrate is deposited by copper, because :

A. $E^{\circ}\left(Cu^{2+}/Cu\right) < E^{\circ}\left(Ag^{+}/Ag\right)$

B. $E^{\circ}\left(Cu^{2+}/Cu\right) > E^{\circ}\left(Ag^{+}/Ag\right)$

C. $E^{\circ}\left(Cu^{2+}/Cu\right) = E^{\circ}\left(Ag^{+}/Ag\right)$

D. None

Answer: A

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238. Standard reduction potential for, $Li^{+}Li, Zn^{2+}Zn, H^{+}H_{2}$ and $Ag^{+}Ag$ is -3.05,-0.762,0.00 and +80V. Which has highest reducing capacity?

A. Ag

B. H_{2}

C. Zn

D. Li

Answer: D

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239. Which one is correct :

A. Ni desplaces zinc from its solution

B. Zn desplaces iron from is solution

C. Ag displaces copper from its solution

D. Cu displaces nickel from its solution

Answer: B

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240. An unit of charge is :

A. Volt

B. Ampere

C. Coulomb

D. None

Answer: C

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241. The standard reduction potential of some electrodes are ,

$E^{\circ}(K^{+}/K) = -2.9V, E^{\circ}(Zn^{2+}/Zn) = -0.76V, E^{\circ}(H^{+}/H_{2}) =$ -

.

A. Copper

B. Zinc

C. Hydrogen

D. Cu^{2+}

Answer: D

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242. In galvanic cell

A. Complete the circuit

B. To reduce lizuid junction potential in the ccell

C. Separate cathode solution from anode solution

D. Carry salts for chemical reactions to occur in cell

Answer: B

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243. A current of 2 ampere was passed through solution of $CuSO_4$ and $AgNO_3$ in series.`0.635 g of copper was deposited .Then the weight of silver deposited will be:

A. 0.59g

B. 3.24g

C. 1.08g

D. 2.16g

Answer: D

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244. The emf of the cell involving following changes $Zn(s) + Ni^{2+}(1M) \rightarrow Zn^{2+}(1M) + Ni(s)$ is 0.5105V. The standard emf of the cell is :

A. 0.540V

B. 0.4810V

C. 0.5696V

D. 0.5105V

Answer: D

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245. A current of 2.6 ampere was passed through $CuSO_4$ solution for 380 sec. The amount of Cu deposited is (at .wt. of Cu (63.5):

A. 0.3250g

B. 0.635g

C. 6.35g

D. 3.175g

Answer: A

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246. E° values of Mg^{2+} / Mg is -2.37V, of Zn^{2+} / Zn is -0.76V and Fe^{2+} / Fe is -0.44V.

Which of the following statement is correct ?

A. Mg oxidises Fe

B. $Zn \otimes idisesFe$

C. $Znreduces Mg^{2+}$

D. $Znreduces Fe^{2+}$

Answer: D

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247. On passing electricity through diluteH_2SO4 solution the amount of substance libeated at the cathode and anode are in the ratio:

A. $1:8$

B. $8:1$

C. $16:1$

D. $1:16$

Answer: A

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248. Passage of 96500 coulmb of electricity liberates........ Litre of O_2 at NTP during electrolysis :

A. 5.6

B. 6.5

C. 22.2

D. 11.2

Answer: A

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249. During electrolysis of an aqueous solution of Cu^{2+} sulphate , 0.635 g of copper was deposited at cathode. The amount electricity consumed in coulomb is :

A. 1930

B. 3860

C. 96500

D. 4825

Answer: A

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250. The number of electrons involved in redox reactions when a faraday of electricity is passed through an electrolyte in solution is :

A. 6×10^{23}

B. 8×10^{19}

C. 96500

D. 6×10^{-23}

Answer: A

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251. If

$Mg^{2+} + 2e \rightarrow Mg(s), E = -2.37V, Cu^{2+} + 2e \rightarrow Cu(s), E = +0.34V$

then the emf of the cell $Mg|Mg^{+2}||Cu^{2+} \mid Cu$ is :

A. $2.71V$

B. $2.30V$

C. $2.80V$

D. $1.46V$

Answer: A

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252. A certain quantity of electricity is passed through aqueous solution of $AgNO_3$ and $CuSO_4$ connected in series, If Ag (at. Wt. 108) deposited at the cathode is 1.08 g then Cu deposited at the cathode is (at. wt. of Cu is 63.53):

A. 6.354

B. 0.317

C. 0.6354

D. 3.177

Answer: B

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253. Which is correct representation for a cell at equilibrium:

A. $\Delta G^\circ = -2.303 RT \log K_{eq}$

B. $E^\circ = \frac{2.303 RT}{nF} \log K_{eq}$

C. $-\Delta G^\circ = RT 1n K_{eq}$.

D. All

Answer: D

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254. Out of Cu, Ag, Fe and Zn the metal which can displace all other from their salt solutions is :

A. Ag

B. Cu

C. Zn

D. Fe

Answer: C

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255. The thermodynamic efficiency of cell is given by :

A. $\Delta H / \Delta G$

B. $nFE / \Delta G$

C. $nFE / \Delta H$

D. nFE°

Answer: C

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256. In which of the following will the corrosion of iron be most rapid :

A. In pure water

B. In pure oxygen

C. In air and moisture

D. In air and saline water

Answer: D

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257. In a concentration cell:

A. Two electrodes are of different elements

B. Two electrolytic solutions of the same electrolyte but having different concentrations are used

C. Electrolyte of one strength but electrodes of two different elements are used

D. Both (b) and (c)

Answer: D

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258. The electrolytic bath used in gold plating of copper articles contains :

A. Molten gold

B. $CuSO_4$

C. $AuCl_3$

D. $AuCl_3 + NaCN$

Answer: D

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259. If the cell reactin is spontaneous then :

A. $\Delta G^{\circ} is + ve$

B. $E^{\circ}_{red} is - ve$

C. $E^{\circ}_{red} is + ve$

D. $\Delta G is - ve$

Answer: D

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260. The cell reaction ,$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$ is best represented by :

A. $Cu/Cu^{2+} || Zn^{2+}/Zn$

B. $Zn/Zn^{2+} || Cu^{2+}/Cu$

C. $Cu^{2+}/Cu || Zn/Zn^{2+}$

D. $PI/Zn^{2+} || PI/Cu^{2+}$

Answer: B

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261. Mobility of H^{+} (in aq medium) is high because:

A. Of the small size of H^{+}

B. Of the high hydration energy of H^{+}

C. It exhibits a Grotthus type of conduction

D. Hydrogen is the lightest element

Answer: C

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262. A cell with two electrodes, one of grey tin and the other white tin, both dipping in solution of $(NH_4)_2SNCI_6$ showed zero emf at `18^@C. What conclusion may be draw from this "

A. The emf developed at the electrode -solution phase boundary cancels the normal emf

B. Grey tin being non-medallic ceases ti orivude a reversible electrode reaction

C. Electrode surface develops a ortective layer and the cell develops a very large internal resistance

D. The free energy chango of the cell becomes zero

Answer: D

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263. An ion is reduced to element when it absorbs 6×10^{20} electrons. The number of equivalent of ion is :

A. 0.10

B. 0.01

C. 0.001

D. 0.0001

Answer: C

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264. How many electrons are there in one coulomb:

A. 6.02×10^{21}

B. 6.25×10^{18}

C. 6.25×10^{15}

D. 6.024×10^{16}

Answer: B

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265. The number of electrons passing per second through a cross-section of Cu wire carrying 10 ampere is:

A. 6×10^{19}

B. 8×10^{19}

C. 1×10^{19}

D. 1.6×10^{19}

Answer: A

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266. The reduction electrode potential E of $0.1 M solution of M^{+} ions (E^{o}(rp) = -2.36V)$ is :

A. -2.41

B. $+2.41$

C. -4.82

D. None

Answer: A

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267. For reducing 1 mole of Fe^{2+} ions to Fe , the number of Faradays of electricity required are:

A. 2

B. 1

C. 2.5

D. 4.0

Answer: A

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268. A silver cup is plated with silver by passing 965 coulomb of electricity . The amount of Ag deposited is :

A. $1.08g$

B. $1.0002g$

C. $9.89g$

D. 107.89

Answer: A

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269. The same amount of electricity was passed through two cells containing molten Al_2O_3 and molten NaCl. If 1.8g of Al were liberated in one cell, the amonut of Na liberated in the other cell is :

A. $4.6g$

B. $2.3g$

C. $6.4g$

D. $3.2g$

Answer: A

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270. What is the charge in Coulombs on Cu^{2+} ion?

A. 3.2×10^{-19}

B. 2.3×10^{-12}

C. 0.23×10^{-19}

D. 0.32×10^{-19}

Answer: A

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271. The number of electrons required to deposit 1 g atom of $Al(at. Wt. = 27)$ from a solution of $AlCI_3$ are :

A. 1N

B. 2N

C. 3N

D. 4N

Answer: C

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272. The number of coulombs required for the deposition of$107.87g$ of silver is :

A. 96500

B. 48205

C. 19300

D. 10000

Answer: A

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273. Reaction taking place at anode in dry cell is :

A. $Zn^{2+} + 2e \rightarrow Zn(s)$

B. $Zn(s) \rightarrow Zn^{2+} + 2e$

C. $Mn^{2+} + 2e \rightarrow Mn(s)$

D. $Mn(s) \rightarrow Mn^{2+} + 2e$

Answer: B

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274. Hydrogen cannot reduce :

A. Heated cupric oxide

B. Heated ferric oxide

C. Heated stannic oxide

D. Heated aluminium oxide

Answer: D

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275. Which metal does not give the following reaction : $M +$ water or steam $\rightarrow$ metal oxide$+ H_2 \uparrow$

A. Iron

B. Sodium

C. Mercury

D. Magnesium

Answer: C

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276. Which metal is most readily corroded in moist air:

A. Copper

B. Iron

C. Silver

D. Nickel

Answer: B

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277. Which one will liberate Br_2 from KBr.

A. HI

B. I_2

C. CI_2

D. SO_2

Answer: C

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278. Which is not true for a standard hydrogen electrode :

A. The hydrogne ion cncentratin is 1 M

B. Temperature is $25^\circ C$

C. Pressure of hydrogen is atmosphere

D. It contains a metalli conductor which does not adsorn hydrgen

Answer: D

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279. The value of equilibrium constant fro a feasible cell reaction is :

A. < 1

B. Zero

C. $= 1$

D. > 1

Answer: D

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280. A galvanic cell is composed of two hydrogen electodes, one of which is a standard one . In which of the following solutins the other electrode be immersed to get maximum emf:

A. $0.1 MHCI$

B. $0.1 MCH_3COOH$

C. $0.1 MH_3PO_4$

D. $0.1 M H_2SO_4$

Answer: D

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281. Chlorine cannot displace :

A. Fluorine from NaF

B. Iodine from NaI

C. Bromine from NaBr

D. None

Answer: A

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282. The one that is a good conductor of electricity in the folowing list of solids is :

A. Sodium chloride

B. Graphite

C. Diamond

D. Sodium carbonate

Answer: B

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283. In the electrolysis of $CuCI_2$ solution using Cu electrodes the mass of cathode increases by 3.18 g. What happened at the other electrode:

A. 0.05 mble of Cu^{+2} ions passed into solution

B. 0.112litre of CI_2 was liberated

C. 0.56 litre O_2 was liberated

D. 0.1 mole of Cu^{2+} ions passed into the solution

Answer: A

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284. Number of Faraday required to liberate $8g$ of H_2 is :

A. 8

B. 16

C. 4

D. 2

Answer: A

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285. The weight ratio of Al and Ag deposited using the same quantity of curren is :

A. $9 : 108$

B. $2 : 12$

C. $108 : 9$

D. $3 : 8$

Answer: A

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286. 20g of chlorine are evolved in 6 hour from sodium chloride solution by the current of :

A. 5 ampere

B. 10 ampere

C. 2.5 ampere

D. 50 ampere

Answer: C

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287. What weight of copper will be depositeted by passing 2 faraday of electricty through a solution of Cu (II) salt:

A. $35.6g$

B. $63.5g$

C. $6.35g$

D. $3.56g$

Answer: B

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288. The weight ratio of Mg and Al deposited during the passage of same current through their molten salts:

A. $12 : 9$

B. $9 : 12$

C. $6 : 2$

D. $2 : 3$

Answer: A

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289. The number of electrons passing per second through a cross-section of copper wire carrying 10^{6} ampere:

A. 6.2×10^{23}

B. 6.2×10^{12}

C. 6.2×10^{10}

D. None

Answer: B

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290. 13.5 g of Al get deposited when electricity is passed through the solution of AICI3. The number of Faradays used are :

A. 0.50

B. 1.00

C. 1.50

D. 2.00

Answer: C

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291. If 1 faraday of electricity is passed through a solution of $CuSO_4$ the amount of copper deposited will be equal to its :

A. I mole of Cu

B. 1 g atom of Cu

C. 1 molecule of Cu

D. 1 g equivalent of Cu

Answer: D

Watch Video Solution

292. The ratio of weight of hydrogen and magnesium deposited by the same amonut of electrcity from H_2SO_4 and $MgSO_4$ in aqueous solution are :

A. $1:8$

B. $1:12$

C. $1:16$

D. None

Answer: D

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293. Chlorine gas is passed into a solution containig KF, KL and KBr and KBr and $CHCI_3$ is added . The intial colour in $CHCI_3$ layer is :

A. Violet due to frommation of I_2

B. Orange due to formation of Br_2

C. Colorless due to formation of F_2

D. No colour change due to no reaction

Answer: A

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294. Metals can be prevented from rusting by :

A. Connecting iror to more electropositive metal cathodic protection

B. Connecting iron to more electropositive metal anodic protection

C. Connecting iron to less electropositive metal anodic protection

D. Connecting iron to less electropositive metal cathodic protection

Answer: A

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295. For a given redox change, $E^{\circ}_{RP_2} + E^{\circ}_{OP_1}$ is equal to .... where 1 is oxidised and 2 is reduced :

A. Coulomb

B. Faraday

C. Ampere

D. Cell potential

Answer: D

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296. In an electrolytic cell the anode and cathode are respectively represented as :

A. Positive electrode , negative electrode

B. Negative electrode ,positive electrode

C. Positive and negative electrode both

D. None

Answer: A

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297. Stronger the oxidising agent , greater is the :

A. Reduction potential

B. Oxidation potential

C. Ionic behaviour

D. None

Answer: A

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298. Which does not oxidised by bromine water:

A. Fe^{2+} to Fe^{3+}

B. Cu^{+} toCu^{2+}

C. $Mn^{2+}$to MnO_4^-

D. Sn^{2+} to Sn^{4+}

Answer: C

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299. The standard H electrode is written as :

A. $Pt, H_2, H^+(a = 1)$

B. $Pt(H_2)/H^+(a = 1)$

C. $PtH_2(g)(1atm)/H^+(a + 1)$

D. None

Answer: C

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300. The reduction potentials of four metals P, Q, R and S are -2.90,+.34,+1.20 and -0.76` respectively. Reactivity dereases in the order.

A. $P > Q > R > S$

B. $Q > P > R > S$

C. $R > Q > S > P$

D. $P > S > Q > R$

Answer: D

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301. When lead accumulator is charged it is :

A. An electrolytic cell

B. A galvanic cell

C. A Daniell cell

D. None of the above

Answer: A

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302. The reaction, $(1/2)Hg(g) + AgCl(s) = H^+(aq) + Cl^{-(aq)} + Ag(s)$ occurs in the gal vanic cell:

A. $AgIAgCI(s)IKCI(so\ln.)AgNO_3(so\ln.)IAg$

B. $PtIH_2(g)|HCI(slon.)|AgNO_3(slon.)Iag$

C. $PtH_2(g)|HCI(slon.)|AgCI(s) \mid Ag$

D. $Pt|H_2(g)|KCI(slon.)|AgCI(s)|Ag$

Answer: C

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303. Number of Faraday needed to deposit 0.1 mole of copper from Cu(II) sulphate solution are :

A. 0.1

B. 0.2

C. 0.05

D. 0.5

Answer: B

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304. The amount of sodium deposited by 5 ampere current for 10 minute from fused $NaCI$ is :

A. 0.715 g

B. $71.5g$

C. $5.17g$

D. $0.517g$

Answer: B

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305. On electrolysis , 1 mole of aluminium will be deposited from its molten salt by :

A. 1 mole of electrons

B. 2 mole of electrons

C. 3 mole of electrons

D. 4 mole of electrons

Answer: A

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306. 10^{-2} g atom of Ag can be oxidised to Ag^{+} during the electrolsis of $AgNO_3$ solution using silver electrode by:

A. 965 coulomb

B. 96500 coulomb

C. 9650 coulomb

D. 96.500 coulomb

Answer: A

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307. Number of faraday required to reduce a mole of Fe^{3+} to Fe^{2+} are:

A. 1

B. 2

C. 3

D. 4

Answer: A

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308. The amount of silver deposited on passing 2 faraday of charge though an aqueous solution of $AgNO_3$ is :

A. 54 g

B. 108 g

C. 216 g

D. 324 g

Answer: C

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309. How many coulomb of electricity are consumed when 100 mA current is passed throught a solution of $AgNO_3$ for 30 minute during an electrolysis experiment:

A. 108

B. 18000

C. 180

D. 3000

Answer: C

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310. The amount of copper deposited by the passage of 96500 coulomb of electricity through copper sulphate solution is :

A. 2.0mole

B. 1.5 mole

C. 0.5 mole

D. 1.0 mole

Answer: C

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311. When 1 Faraday of electricity is passed through $CuSO_4$ solution, number of atoms formed is :

A. 6.02×10^{23}

B. 3.01×10^{23}

C. 2

D. 6.02×10^{23}

Answer: B

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312. Total charge on 1 mole of a monovalent metal ion is equal to :

A. 6.28×10^{18}coulomb

B. 1.6×10^{-19} coulomb

C. 9.65×10^{4} coulomb

D. None

Answer: C

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313. Faraday.s law of electrolysis fails when:

A. Temperature is increased

B. Inert electrodes are used

C. A mixture of electrolytes is used

D. In none of these cases

Answer: D

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314. A depolariser used in dry cell batteries is :

A. A mmonium chloride

B. Managanese dioxide

C. Potassium hydroxide

D. Sodium phosphate

Answer: B

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315. In electrolysis of a fused salt, the weight deposited on an electrode will not depend on:

A. Temperature of the bath

B. Current intensity

C. Electrochemical equivalent of ions

D. Time for electrolysis

Answer: A

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316. An electric current is passed through following aqueous solutions. Which one shall decompose:

A. Urea

B. Glucose

C. Silver nitrate

D. Ethyl alcohol

Answer: C

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317. The position of some metals in the electrochemical series in decreasing electropositive character is given as $Mg > Al > Zn > Cu > Ag$.What will happen if a copper spoon is used to stir a solution of aluminium nitrate:

A. The spoon will get coated with aluminium

B. An alloy of copper and aluminium is formed

C. The solution becomes blue

D. There is no reaction

Answer: D

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318. On electrolysing a solution of dilute H_2SO_4 between platinum electrodes, the gas evolved at the anode and cathode are respectively is :

A. SO_2 and O_2

B. SO_3 and H_2

C. O_2 and H_2

D. H_2 and O_2

Answer: C

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319. Among Na,Hg ,S,Pt and graphite which can be used as electrodes in electrolytic cells having aqueous solutions:

A. Na and S

B. Hg and Pt

C. $Na, Hg \text{ and } S$

D. `Hg,Pt and graphite

Answer: D

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320. An aqueous solution of an electrolyte:

A. Anions move towards anode, cations towards cathode

B. Anoins and cations both move towards anode

C. Anions move towards cathode, cations towards anode

D. No movement of ions takes place

Answer: A

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321. When same quantity of current is passed through two different electrolytes connected in series, the amount of products liberated at the electrodes are in the ratio of their.

A. At.no.

B. At.wt.

C. Sp.gravity

D. Eq.wt.

Answer: D

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322. The electrolysis of a solution resulted in the formation of H_2 at the cathode and Cl_2 at the anode. The liquid is :

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323. In electrolysis, oxidation takes place at:

A. Anode

B. Cathode

C. Both at the anode as well as cathode

D. The surface of electrolyte solution

Answer: A

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324. Which loses charge at catode:

A. Ions

B. Cations

C. Anions

D. Both anoions and cations

Answer: B

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325. In the electrolyses of $CuSO_4$ the reaction $Cu^{2+} + 2^{\circ -} \rightarrow Cu$, Takes place at :

A. Anode

B. Cathode

C. In solution

D. None

Answer: B

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326. A standard hydrogen electrode has zero electrode potential because :

A. Hydrogen is easiest to oxidise

B. This electrode potential is assumed to be zero

C. Hydrogen atom has only one electron

D. Hydrogen is the lightest element

Answer: B

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327. In an electrolytic cell current flows :

A. From cathode to anode in outer circuit

B. From anode to cathode outside the cell

C. From cathode to anode inside the cell

D. None

Answer: A

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328. In Dow.s method, sodium is prepared by the electrolysis of molten $NaCI$. The reaction at cathode is :

A. $2CI^{-\rightarrow}CI_2(g)+2e$

B. $Na^{+}+e\rightarrow Na(s)$

C. $Na^{+}(aq)+e\rightarrow Na^{+}+e$

D. $Na^{+}(aq)+e\rightarrow Na(s)$

Answer: B

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329. The ions discharged at anode by the electrolysis of very dilute H_2SO_4solution are:

A. H_3O^+

B. OH^-

C. HSO_4^-

D. SO_4^{2-}

Answer: B

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330. The reaction at cathode during the electrolysis of aqueous solution of $NaCI$ in Nelson cell is :

A. $2CI^{-} \to CI_2 + 2e$

B. $2H^+ + 2e \to H_2$

C. $2OH^{-} \to H_2 + O_2 + 2e$

D. $Na^{+} + e \rightarrow Na$

Answer: B

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331. In electrochemical corrosion of metals, the metal undergoing corrosion:

A. Acts as anode

B. Acts as cathode

C. Is reduced

D. Either of these

Answer: A

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332. The value of electronic charge is equal to :

A. $\frac{Faraday}{Av.\ Number}$

B. $Faraday \times Av.\ \nu mber$

C. $\frac{Av.\ \nu mber}{Faraday}$

D. None

Answer: A

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333. The number of electrons involved in redox reactions when a faraday of electricity is passed through an electrolyte in solution is :

A. 12×10^{46}

B. 96500

C. 8×10^{16}

D. `6.02xx10^(23)

Answer: D

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334. An electrolytec cell contains a solution of $AgNO_3$ and have platinum electrodes. A current is passed untill $1.6g$ of O_2 has been liberated at anode. The amount of silver peposited at cathode would be :

A. 107.88g

B. 1.6g

C. 0.8g

D. $21.60g$

Answer: D

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335. The standard oxidation potentials, E° for the half reactions are :

$Zn \rightarrow Zn^{2+} + 2e, E^\circ = +0.76V$

$Ag \rightarrow Ag^{+} + e, E^\circ = -0.77V$

The standard emf of the cell,

$Ag^{+} + Zn \rightarrow Zn^{2+} + Ag$ is :

A. $+1.53$

B. -1.53

C. $+0.01$

D. $+0.01$

Answer: A

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336. The solution of $CuSO_4$in which copper rod is immersed is diluted to 10 times, the reduction electrode potential :

A. Increases by 0.30 V

B. Decreases by $0.030V$

C. Increases by $0.059V$

D. Decreases by $0.059V$

Answer: B

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337. Deduce from the following E° values of half cells, what combination of two halt would resutlt in a cell with the largenst potential :

(i)$A + e \rightarrow A, E^{\circ} = -0.24V$

(ii) $B^{-+} e \rightarrow B^{2-}, E^{\circ} = +1.25V$

(iii) $C^{-+} 2e \rightarrow C^{3-}, E^{\circ} = -1.25V$

(iv) $D + 2e \rightarrow D^{2-}, E^{\circ} = +0.68V$

A. (ii) and (iii)

B. (ii) and (iv)

C. (i) and (iii)

D. (i) and (iv)

Answer: A

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338. Deduce from the following E° values of half cells, what combination of two halt would resutlt in a cell with the largenst potential :

(i)$A \rightarrow A^{+} + e, E^{\circ} = +1.2V$

(ii) $B^{- \rightarrow} B + e, E^{\circ} = -2.1V$

(iii) $C \rightarrow C^{2+} + 2e, E^{\circ} = -0.38V$

(iv)$D^{2-} \rightarrow D^{-+} e, E^{\circ} = -0.59V$

A. (i) and (iv)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (ii)

Answer: D

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339. Deduce from the following E° values of half cells , what combination of two half cells would result in a cell with largest potential :

(i) $A^{3-} \rightarrow A^{2-} + e^{-}, E^{\circ} = 1.5V$

(ii) $B^{2+} + e^{-} \rightarrow B^{+}, E^{\circ} = -2.1V$

(iii)$C^{2+} + e^{-} \rightarrow C^{+}, E^{\circ} = +0.5V$

(iv)$D \rightarrow D^{2} + 2e^{-}, E^{\circ} = -1.5V$

A. (i) and (iii)

B. (i) and (iv)

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C

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340. E° for $F_2 + 2e \rightarrow 2F^{-}$ is $2.8V$, $E^{\circ} f$ or $1/2F_2 + e \rightarrow F^{-}$ is :

A. $2.8V$

B. $1.4V$

C. $-2.8V$

D. $-1.4V$

Answer: A

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341. For the cell ,$Tl|Tl^{+}(0.001M)| \mid Cu, E_{cell} at 25^{\circ} C is 0.83V. E_{cell}$ can be increased :

A. By increasing $\left[Cu^{2+}\right]$

B. By increasing $\left[Ti^{+}\right]$

C. By decrasing $\left[Cu^{2+}\right]$

D. None of the above

Answer: A

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342. How much will the reduction potential of a hydrogen electrode change when its solution initially at $pH = 0$ is neutralised to $Ph = 7$:

A. Increaase by $0.059V$

B. Decrease by $0.059V$

C. Increase by $0.41V$

D. Decreases by $0.41V$

Answer: D

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343. The charge for the reduction of 1 mole of $Cr_2O_7^{2-}$ ions to Cr^{3+} is :

A. 96500C

B. $2 \times 96500C$

C. $3 \times 96500C$

D. $6 \times 96500C$

Answer: D

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344. 10800 C of electricity on passing through the electrolyte solution deposited 2.977g of metal with atomic mass $106.4 gmol^{-1}$ the charge on the metal cation is :

A. $+4$

B. $+3$

C. $+2$

D. $+1$

Answer: A

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345. I coulomb of charge passes through solution of $AgNO_3$ and $CuSO_4$ connected in series and the concentration of two solution being in the ratio $1:2$. The ratio of amount of Ag and Cu deposited on Pt. electrode is :

A. $107.9 : 63.54$

B. $54 : 31.77$

C. $107.9 : 31.77$

D. $54 : 63.54$

Answer: C

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346. During electrolysis of H_2O , the molar ratio of H_2 and O_2 formed is:

A. $2:1$

B. $1:2$

C. $1:3$

D. $1:1$

Answer: A

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347. On passing 3 faraday of electricity through the three electrolytic cells connected in series containing Ag^{+}, Ca^{2+} and AI^{3+} ions respectively. The molar ratio in which the three metal ions are liberated at the electrodes is :

A. $1:2:3$

B. $3:2:1$

C. $6:3:2$

D. $3:4:2$

Answer: C

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348. The weight of silver $(eq. wt, = 108)$displaced by that quanitiy of current which displaced 5600 mL of oxygen at STP is:

A. $54g$

B. $108g$

C. $5.4g$

D. None of these

Answer: A

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349. The volume of oxygen at NTP Liberated by 5 ampere current flowing for 193 second though acidulated water is :

A. 56

B. 112

C. 224

D. 5.6

Answer: A

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350. Salts of A (atomic weight 7), B (atomic weight 27) and C (atomic weight 48) were electrolysed under identical condition using the same quantity of electricity. It was found that when 2.1 g of A was deposited, the eight of B and C deposited were 2.7 and 7.2 g. The valencies of A,B and C are respectively :

A. $3, 1$ and 2

B. $1, 3$ and 2

C. $3, 1$ and 3

D. $2, 3$ and 2

Answer: B

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351. To produce 160 g of oxygen, the number of mole of water required to be electrolysed is :

A. 2.5

B. 5

C. 10

D. 20

Answer: C

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352. The weight of nickel $(at.\ wt. = 58.7)$ liberated by a current of 5 ampere flowing for193 second through $NiSO_4$ solution is :

A. $0.587g$

B. $5.87g$

C. $0.2935g$

D. $2.935g$

Answer: C

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353. Electrolytes when dissolved in water dissociate into ions, because :

A. They are unstable

B. The water dissolves them

C. The forces of repulsion increases

D. The forces of electrostatic attraction are broken down by water

Answer: C

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354. The metal that cannot be produced on reduction of is oxide by aluminium is :

A. K

B. Mn

C. Cr

D. Fe

Answer: A

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355. The best conductor of electricity is 1 M solution of :

A. CH_3COOH

B. H_2SO_4

C. H_3PO_4

D. Boric acid

Answer: B

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356. If mercury is used as cathode in the electrolysis of aqueous $NaCl$ solution, the ions dischaged at cathode are:

A. H^+

B. Na^+

C. OH^-

D. CI^-

Answer: B

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357. When sodium chloride solution is electrolysed, the gas that is liberated at the cathode is

A. Oxygen

B. Hydrogne

C. Chlorine

D. Air

Answer: B

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358. When electric current is passed through a cell having an electrolyte, the positive ions move towards the cathode and the negative ions towards the anode, if the cathode is pulled out of the solution:

A. The postive and the negative ions both will move towards the anode

B. The positive ions will start moving towards the anode,the negative ions will stop moving

C. The negative ions will conuinue to move towards the anode, the positive ions will stop moving

D. The positive ions and the negative ions will start moving randonly

Answer: D

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359. When a copper wire is immersed in a solution of $AgNO_3$ the colour of the, solution becomes blue because copper:

A. Forms a soluble complex with $AgNO_3$

B. Is oxidized to Cu^{2+}

C. Is reduced toCu^{2-}

D. Splits up into atomic form and dessolves

Answer: B

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360. When an electric current is passed through an aqueous solution of sodium chloride :

A. H_2 is evolved at the anode

B. Oxygen is evolved at the cathode

C. Its pH progressively decreases

D. Its pH progressively inreases

Answer: D

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361. Four colourless salt solutions are placed in separate test tubes and a strip of copper is placed in each. Which solution finally turns blue:

A. $Pb(NO_3)_2$

B. $Zn(NO_3)_2$

C. $AgNO_3$

D. $Cd(NO_3)_2$

Answer: C

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362. If a strip of copper metal is placed in a solution of ferrous sulphate:

A. Copper will precipitate out

B. Iron will precipitate out

C. Both copper and iron will be dissolved

D. No reaction will take place

Answer: D

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363. The electric charge for electrode deposition of the gram equivalent of a substance is

A. 1 ampere per second

B. 96,500 coulomb per second

C. 1 ampere for 1 hour

D. Charge on 1 mole of electrons

Answer: D

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364. Which metal can deposit copper from copper sulphate solution:

A. Mercury

B. Iron

C. Gold

D. Paltinum

Answer: B

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365. A student made the following observations in the laboratroy:

(i) clean copper metla didn not react with 1 molar $Pb(NO_3)_2$ solution

(ii) Clean lead metal dissolved in a 1 molar $AgNO_3$ solution and crystals of Ag metal appeared

(iii)Clean silver metal did not react with 1 molar $Cu(NO_3)_2$ soution

The order of decreasing reducing character of th three metals is :

A. Cu, Pb, Ag

B. Cu, Ag, Pb

C. Pb, Cu, Ag

D. Pb, Ag, Cu

Answer: C

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366. Two platinum electrodes were immersed in a solution of cupric and electric current passed through the solution. After some tiem it was found that the colour of copper sulphate disappeared with evolution of gas at the electrode. The colurless solution corttains :

A. Platinum sulphate

B. Copper hydroxide

C. Copper sulphate

D. Sulphuric acid

Answer: D

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367. Faraday's law of electrolysis are related to

A. Atomic number of the cation

B. Atomic number of the anion

C. Equivalent weight of the electroyte

D. Speed of the cation

Answer: C

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368. Electrolysis of aqueous HCl solution produces

A. H_2 gas at the anode

B. H_2 gas at the cathode

C. Cl_2gas at the cathode

D. Cl_2 and O_2 gases both at the anode

Answer: B

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369. A solution of sodium sulphate in water is electrolysed using inert electrodes. The products at the cathode and anode are respectvely:

A. H_2, O_2

B. $O_2 H_2$

C. O_2, Na

D. O_2, SO_2

Answer: A

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370. Identification of anode and cathode in an electrochemical cell is made by the use of :

A. Galvanometer

B. Salt bridge

C. Voltmeter

D. None

Answer: A

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371. During electrolysis of a $NaCI$ a part of the reaction is $Na^{+} + e^{-} \rightarrow Na$

This cannot be termed as :

A. Oxidation

B. Reduction

C. Deposition

D. Cathode reaction

Answer: A

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372. The cathodic reaction in electrolysis of dilute sulphuric acid with platinum electrode is :

A. Oxidation

B. Reduction

C. Both oxidation and reduction

D. Neutralization

Answer: B

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373. 2.5 Faraday of electricity are passed through a solution of a solution of $CuSO_4$. The Number of gram equivalents of copper deposited on the cathode are :

A. 1

B. 2

C. 2.5

D. 1.25

Answer: C

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374. The standard cell potential for the cell is , $Zn|Zn^{2+}(1M)||Cu^{2+}(1M)|Cu$

$[E^\circ f \text{ or } Zn^{2+}/Zn = -0.76V, E^\circ f \text{ or } Cu^{2+}/Cu = +0.34V]$

A. $-0.76+0.34 = \ -0.42V$

B. $-0.34-(\ -0.76) = \ +0.42V$

C. $0.34-(\ -0.76) = \ +1.10V$

D. $-0.76-(\ +.34) = \ -1.10V$

Answer: C

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375. Silver is removed electrolytically from $200mLofa0.1Nsolutionof$ AgNO_3`by a current of 0.1 ampere. Hoe long will it take to remove half of the silver from the solution:

A. 10 sec

B. 16 sec

C. 100 sec

D. 9650 sec

Answer: D

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376. The atomic weight of Al is 27. When a current of 5 Faraday is passed through a solution of Al^{3+} ions, the wt. of Al depostited is :

A. 27g

B. 36 g

C. 45 g

D. 9 g

Answer: C

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377. Maximum number of mole of oxygen gas that can be obtained by the electrolytic decomposition of 90 g of water will be

A. 1

B. 2.5

C. 5

D. 9

Answer: B

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378. For the reaction at 298K,

$$Ag^{+}(aq) + e^{-} = Ag(s), E^{\circ} = +0.80V$$

$$Sn^{2+}(aq) + 2e^{-} = Sn(s), E^{\circ} = -0.14V$$

what is the emf of the cell reprsented as $Sn|Sn^{2+}||Ag^{+}|Ag$, if each ion having unit concentration:

A. 0.66V

B. 0.80V

C. 0.94V

D. 1.08V

Answer: C

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379. What is the potential of the cell containing two hydrogen electrodes as represented below?

$PT, \frac{1}{2}H_2(g)\left|H^+\left(10^{-8}M\right)\right|\left|H^+(0.001M)\right|\frac{1}{2}H_2(g)$Pt:

A. $-0.295V$

B. $-0.0591V$

C. $0.295V$

D. $0.0591V$

Answer: C

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380. When an electric current is passed through acidified water, 112ml of H_2 gas collected at NTP at cathode in 965sec. the current strength is

A. 1.0

B. 0.5

C. 0.1

D. 2.0

Answer: A

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381. Chromium plating can involve the electrolysis of an electrolyte of an acidified mixuture of chromic acid and chromium sulphate . If during electrolysis the article being plated increases in mass by 2.6 g and 0.6 dm3 of oxygen are evolved at an inert anode, the oxidation state of chromium ions being discharged must be:

(assuming `Cr=52) and I mole of gas at room temperature and pressure occupies a volume of 24 dm^3)

A. -1

B. Zero

C. $+1$

D. $+2$

Answer: D

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382. A current of I ampere was passed for t second through three cell P,Q and R connected in series. These contains respectively silver nitrate. mercuric nitrate and mercurous nitrate. At the cathode of the cell P, 0.216 g of Ag was deposited. The weights of mercury deposited in the cathode of Q and R respectively are :

A. $0.4012 \text{ and } 0.8024g$

B. $0.4012 \text{ and } 0.2006g$

C. $0.2006 \text{ and } 0.4012g$

D. $0.1003 \text{ and } 0.2006g$

Answer: C

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383. An electric current of c ampere was passed through a solution of an electrolyte for t second depositing P g of the metal M on the cathode. The equivalent weight E of the metal will be :

A. $E = \frac{c \times t}{P \times 96500}$

B. $E = \frac{c \times P}{t \times 96500}$

C. $E = \frac{96500 \times P}{c \times t}$

D. $E = \frac{c \times t \times 96500}{P}$

Answer: C

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384. The electrochemical equivalent of silver is 0.0011180g . When an electric current of 0.5 ampere is passed through an aqueous silver nitrate solution for 200 sec, the amount of silver deposited is :

A. $1.1180g$

B. $0.11180g$

C. $5.590g$

D. $0.5590g$

Answer: B

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385. Two electrolytic cells, one containing acidified ferrous chloride and another acidified ferric chloride are connected in series. The ratio of iron deposited at cathodes in the two cells when electricity is passed through the cell will be:

A. $3:1$

B. $2:1$

C. $1:1$

D. $3:2$

Answer: D

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386. 1.8 g of metal were deposited by a current of 3 ampere for 50 minute. The equivlent wt. of metal is :

A. 20.5

B. 25.8

C. 19.3

D. 30.7

Answer: C

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387. A current of 9.65 ampere folwing for 10 minute depostits 3.0 g of a metal. The equivalent weight of the metal is :

A. 10

B. 30

C. 50

D. 96.5

Answer: C

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388. Consider the reaction,

$M^{n+}(aq) + \neq \rightarrow M^{\circ}(s) Thes \tan dardreductionpotentialvalueofthem$

M_1,M_2 and M_3are-0.34 V,-3.05 V and -1.66V respectively.The order of their reducing power will be :

A. $M_1 > M_2 > M_3$

B. $M_3 > M_2 > M_1$

C. $M_1 > M_3 > M_2$

D. $M_2 > M_3 > M_1$

Answer: D

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389. The electrode potential of normal hydrogen electrode is

A. $0.177V$

B. $-0.177V$

C. $0.087V$

D. $0.059V$

Answer: B

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390. The same amount of electricity was passed through two separate electrolyic cells containing solutions of nickel nitrate and chromium nitrate respectively.If 0.3 g of nickel was deposited in the first cell, the amount of chormium deposited is :

(at. wt. $Ni = 59, Cr = 52$)

A. $0.1g$

B. $0.17g$

C. $0.3g$

D. $0.6g$

Answer: B

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391. The standard emf for the cell reaction, $Zn + Cu^{2+} = Cu + Zn^{2+}$ is 1.10 volt at $25^{\circ} C$. The emf for the cell reaction, when

$0.1MCu^{2+}$ and $0.1MZn^{2+}$ solutions are used , at$25^\circ C$ is:

A. $1.10V$

B. $1.110V$

C. $-1.10V$

D. $-0.110V$

Answer: A

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392. Given electrode potentials are:

$Fe^{3+} + e \rightarrow Fe^{2+}, E^\circ = 0.771V$

$I_2 + 2e \rightarrow 2I^-, E^\circ = 0.536V$

E° cell for the cell reaction,

$2Fe^{3+} + 2I^{-\rightarrow} 2Fe(2+) + I_2$is:

A. $(2 \times 0.7710.536) = 1.006V$

B. $(0.771 - 0.5 \times 0.536) = 0.503V$

C. $0.771 - 0.536 = 0.235V$

D. $0.536 - 0.771 = -0.236V$

Answer: A

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393. The equation, E^@ =(RT)/(nF)In K_c` is called :

A. Gibb.s equatin

B. Gibb.s-Helmholtz equation

C. Nernest equation

D. van der Waals. equation

Answer: C

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394. On the basis of position in the electrochemial series, the metal does not displace hydrogen from water and acids is :

A. Hg

B. Al

C. Pb

D. Ba

Answer: A

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395. During the charging of lead storage battery, the reaction at anode is represented by:

A. $Pb^{2+} + SO_4^{2-} \rightarrow PbSO_4$

B. $PbSO_4 + 2H_2O \rightarrow PbO_2 + SO_4^{2-} + 4H^+ + 2e$

C. $Pb \rightarrow Pb^{2+} + 2e$

D. $Pb^{2+} + 2e \rightarrow Pb$

Answer: B

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396. If a salt bridge is removed from the two half cell, the voltage:

A. Drops to zero

B. Does not change

C. Increases gradually

D. Increases rapidly

Answer: A

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397. The calomel electrode is a:

A. Standard hydrogen electrode

B. Reference electrode

C. Platinum electrode

D. Mercury electrode.

Answer: B

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398. A gas X at 1 atm is bubbled through a solution containg a mixture of 1 M Y^{-} and 1M Z^{-} at $25^{\circ}C$. If the reduction potential of $Z > Y > X$, then :

A. Y will oxidise X and not Z

B. Y will oxidise Z and not X

C. Y will oxidise both X and Z

D. Y will reduce both X and Z

Answer: A

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399. In an aqueous solution, hydrogen (H_2) will not reduce:

A. Fe^{3+}

B. Cu^{2+}

C. Zn^{2+}

D. Ag^{+}

Answer: C

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400. If 1 faraday of electricity is passed through a solution of $CuSO_4$ the amount of copper deposited will be equal to its :

A. Gram equivalent weight

B. Gram molecular weight

C. Atomic weight

D. Electrochemical equivalent

Answer: A

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401. I faraday of electricity will liberate 1 g atom of the metal from the solution of :

A. $NaCI$

B. $BaCI_2$

C. $CuSO_4$

D. $AICI_3$

Answer: A

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402. Solid $NaCl$ is bad conductor of electricity because :

A. In solid there are no ions

B. Solid NaCl is covalent

C. In solid NaCl, there is no velocity of ions

D. None

Answer: C

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403. A fuel cell is :

A. The voltic cells in which continuous supply of fuels are send at anode to give oxidation

B. The voltaic cell in which fuels such as, CH_4, H_2, CO are used up at anode

C. It involves the reaction of $H_2 - O_2$ fuel cell such as :

Anode : $2H_2 + 4OH^{-} \rightarrow 4H_2O(l) + 4e$

Cathode: $O_2 + 2H_2O(l) + 4e \rightarrow 4OH^{-}$

D. All

Answer: D

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404. The standard reduction potential values of three metallic cations X, Y and Z are $0.52, \ -3.03$ and $-1.18V$ 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

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405. Which represents a concentration cell:

A. $PtH_2|HCI||HCI|PtH_2$

B. (b) $PtH_2|\overset{c_1}{HCl}||\overset{c_2}{Cl_2}Pt$

C. (c) $Zn|\overset{c_1}{Zn^{2+}}||Cu^{2+}|Cu$

D. $Fe|Fe^{2+}||Cu^{2+}|Cu$

Answer: A

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406. Aqueous solution of HCI conducts electricity because :

A. It undergoes ionisation

B. It associates

C. Forms hydrogen bonds

D. None

Answer: A

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407. When an electrolyte solution conducts electricity, current is carried out by:

A. Electrons

B. Cations and anions

C. Neutral atoms

D. None

Answer: B

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408. The reaction taking place at anode when an aqueous solution of $CuSO_4$ is electrolysed using inert Pt electrode:

A. $2SO_4^{2-} \rightarrow S_2O_3^{2-} + 2e$

B. $Cu^{2+} + 2e \rightarrow Cu$

C. $2H_2O \rightarrow O_2 + 4H^+ + 4e$

D. $2H^+ + 2e \rightarrow H_2$

Answer: C

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409. In the electrolysis of which solution, OH^- ions are discharged in preference to CI^- ions:`

A. Dilute NaCl

B. Very dilute NaCl

C. Fused NaCl

D. Solid NaCl

Answer: B

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410. Which reaction occurs at cathode during electrolysis of fused lead bromide :

A. $Pb \rightarrow Pb^{2+} + 2e$

B. $Br + e \rightarrow Br^{-}$

C. $Br^{-} \rightarrow Br + e$

D. $Pb^{2+} + 2e \rightarrow Pb$

Answer: D

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411. The process in which chemical change accompanies the passage of current is called :

A. Conduction

B. Metallic conduction

C. Electrolytic conduction

D. Non- electrolytic condution

Answer: C

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412. Which is correct about fuel cells :

A. Cells continuously run as long as fuels are supplied

B. These are more efficient and free from pollution

C. These are used to provide power and drinking water to astronauts in space programme

D. All

Answer: D

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413. Calculate the volume of hydrogen at NTP obtained by passing a current of 0.4 ampere through acidified water for 30 minute:

A. 0.0836 litre

B. 0.1672 litre

C. 0.0432 litre

D. 0.836 litre

Answer: A

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414. During electrolysis of us

A. Anide

$Na^{+} + e \rightarrow Na$ Cathode

$CI^{-} \rightarrow \frac{1}{2}CI + e$

B. Anide

$Na \rightarrow Na^{+} + e$ Cathode

$\frac{1}{2}CI_2 + e \rightarrow CI^{-}$

C. Anide

$CI^{-} \rightarrow \frac{1}{2}CI_2 + eNa^{+}e$ Cathode

$Na^{+}e \rightarrow Na$

D. Anide

$\frac{1}{2}CI_2 + e \rightarrow CI$ Cathode

$Na \rightarrow Na^{+} + e$

Answer: C

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415. At $25^{\circ} C$, the standard emf of cell having reactions involving two electron change is found to be $0.295 V$. The equilibrium constant of the reaction is :

A. 29.5×10^{-2}

B. 10

C. 10^{10}

D. 29.5×10^{10}

Answer: C

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416. The standard reduction potentials of Cu^{2+}/Cu and Cu^{2+}/Cu^{+} are 0.337 and 0.153 V respectively.The standard electrode potential of Cu^{+}/Cu half cell is :

A. $0.184V$

B. $0.827V$

C. $0.521V$

D. $0.490V$

Answer: C

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417. The emf of the cell,

$Zn|Zn^{2+}(1M)||Cu^{2+}|Cu(1M)$ is 1.1 volt, if the standard reduction potential of $Zn^{2+} \mid Zn$ is -0.78volt,what is the oxidation potential of $Cu \mid Cu^{2+}$?

A. $+1.86V$

B. $0.32V$

C. $-0.32V$

D. $-1.86V$

Answer: C

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418. For I_2+2e $\rightarrow 2I^-$, standard reduction potential $= +0.54$ volt. For $Br^- \rightarrow Br_2 + 2e^-$, standard oxidation potential $= -1.09$ volt. For $Fe \rightarrow Fe^{2+} + 2e^-$, standard oxidation potential $= +0.44$ volt. Which of the following reactions is non-spontaneous :

A. $Br_2 + 2I^- \rightarrow 2Br^- + I_2$

B. $Fe + Br_2 \rightarrow Fe^{2+} + 2Br^-$

C. $Fe + I_2 \rightarrow Fe^{2+} + 2I^-$

D. $I_2 + 2Br^- \rightarrow 2I^- + Br_2$

Answer: D

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419. For the cell prepared from electrode A and B: Electrode $A: Cr_2O_7^{2-} \mid Cr^{3+}, E^{\circ}_{red} = +1.33V$ and Electrode $B: Fe^{3+}/Fe^{2+}, E^{\circ}_{red} = 0.77V$. Which of the following statements are correct :

A. The electrons will flow from B to A when connection are made

B. The emf of the cell will be 0.56V

C. A will be positive electrode.

D. All of these

Answer: D

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420. The following facts are available : $2A^{-} + B_2 \rightarrow 2B^{-} + A_2, 2C^{-} + B_2 \rightarrow$ No reaction , $2D^{-} + A_2 \rightarrow 2A^{-} + D_2$.Which of the following statement is correct :

A. $E^{\circ}_{C^{I}C_2} > E^{\circ}_{B^{-I}B_2} > E^{\circ}_{A^{-I}A_2} > E^{\circ}_{D^{-I}D_2}$

B. $E^{\circ}_{C^{I}C_2} < E^{\circ}_{B^{-I}B_2} < E^{\circ}_{A^{-I}A_2} < E^{\circ}_{D^{-I}D_2}$

C. $E^{\circ}_{C^{I}C_2} < E^{\circ}_{B^{-I}B_2} > E^{\circ}_{A^{-I}A_2} > E^{\circ}_{D^{-I}D_2}$

D. $E^{\circ}_{C^{I}C_2} > E^{\circ}_{B^{-I}B_2} < E^{\circ}_{A^{-I}A_2} < E^{\circ}_{D^{-I}D_2}$

Answer: B

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421. Given that $E_{Fe^{3+}|Fe}$ and $E^{\circ}_{Fe^{2}|Fe}$ are $-0.36V$ and $-0.439V$, respectively.The value of $E^{\circ}_{Fe^{3+}fe^{2+}}$ would be:

A. $(-36 - 0.439)V$

B. $[3(-0.36) + 2(-0.439)]V$

C. $(-0.36 + 0.439)V$

D. $[3(-0.36) - 2(-0.439)]V$

Answer: D

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422. The standard oxidation potentials of the electrodes $Ag|Ag^{+}, Sn|Sn^{2+}, Ca|Ca^{2+}, Pb|Pb^{2+}$ are $-0.8, 0.136, 2.866$and $0.126V$ respectively. The most powerful oxidising agent among these metal ions is :

A. Pb^{2+}

B. Ca^{2+}

C. Sn^{2+}

D. Ag^{+}

Answer: D

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423. A current is passed through two valtameters connected in series. The first voltameter contains XSO_4(aq) while the second voltameter contains

$Y_2SO_4(aq)$.The relative masses of X and Y are in the ratio of 2:1.The ratio of the mass of X liberated to the mass of Y liberated is :

A. $1:1$

B. $1:2$

C. $2:1$

D. None of these

Answer: A

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424. The time required to coat a metal surface of $80cm^2$ with 5×10^{-3} cm thick layer of silver (density $10.5gcm^{-3}$ with th passage of 3A current through a silver nitrate solution is :

A. 115 sec

B. 125 sec

C. 135 sec

D. 145 sec

Answer: B

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425. A hydrogen electrode placed in a buffer solution of CH_3COONa and acetic acid in the ratio.s$x:y$ and $y:x$ has electrode potential values E_1 volt and E_2 volt respetively at $25^{\circ}C$ the pKa values of acetic acid is (E_1 and _2 are oxidation potential):

A. $(E_1 + E_2)/(0.118)$

B. $\frac{E_2 + E_1}{0.118}0$

C. $-(E_1 + E_2)/(0.118)$

D. $(E_1 + E_2)/(0.118)0$

Answer: A

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426. The amount of energy expanded during the passage of one ampere current for 100 second under a potential of 115 V is:

A. $20kJ$

B. $11.5kJ$

C. $115kJ$

D. $0.115kJ$

Answer: B

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427. The cell reaction for the given cell is :

$Pt(H_2)|pH=2||pH=3|Pt(H_2)$

$$\underset{P_1 = 1\text{ atm}}{Pt(H_2)}\,|\,pH=2\,||\,pH=3\,|\,\underset{P_2 = 1\text{ atm}}{Pt(H_2)}$$

A. Spontaneous

B. Non-spontaneous

C. In equilibrium

D. Either of these

Answer: B

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428. The cell reaction for the given cell is spontaneous if :

$Pt(H_2)|H^{=}(1M)||H^{+}(1M)|Pt(H_2)$

$$\underset{P_1}{Pt(H_2)}|H^{+}(1M)||H^{+}(1M)|\underset{P_2}{Pt(H_2)}$$

A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_1 = 1atm$

Answer: A

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429. The cell reaction for the given cell is spontaneous if :

$Pt|Cl_2|CI^-(1M)||CI^-(1M)|Cl_2|Pt$

$$PtCl_2 \mid Cl^-(1M) \parallel Cl^-(1M) \mid PtCl_2$$

P_1 P_2

A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_2 = 1$ atm

Answer: B

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430. Passage of threee faraday of charge through aqueous solution of $AgNO_3, CuSO_4, Al(NO_3)_3$ and $NaCl$ will deposit metals at the cathode in the molar ratio of :

A. $1:2:3:1$

B. $6:3:2:6$

C. $6:3:0:0$

D. $3:2:1:0$

Answer: C

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431. The approximate emf of a dry cell is :

A. $2.0V$

B. $1.2V$

C. 6V

D. 1.5V

Answer: D

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432. Which gains electrons more easily :

A. Hydrogen

B. Na

C. K

D. Mg

Answer: A

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433. Which will increase the voltage of the cell

$Sn(s) + 2Ag^{+}(aq) \rightarrow Sn^{2+}(aq) + 2Ag(s)$:

A. Increase in size of the silver rod

B. Increase in the concentration of Sn^{2+} ions

C. Increase in the concentration of Ag^{+} ions

D. None

Answer: C

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434. During electrolysis of fused CaH_2, H_2 is liberated at :

A. Anode

B. Cathode

C. Either electrode

D. Not at all

Answer: A

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435. Which defines the standard reduction electrode potential of Zn^{2+} ions :

A. $Zn^{2+}(aq)+2e \rightarrow Zn(s), \left[Zn^{2+}\right]=1M$

B. $Zn(g) \rightarrow Zn^{2+}+2e, \left[Zn^{2+}\right]=1M$

C. $Zn6(2+)(aq) \rightarrow Zn(s)+2e, \left[Zn^{2+}\right]=1M$

D. $Zn^{2+}(g) \rightarrow Zn(s)-2e, \left[ZN^{2+}\right]=1M$

Answer: A

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436. In which cell, electrical energy is converted into chemical energy:

A. Water voltameter

B. Silver voltameter

C. Coulmeter

D. Either of these

Answer: D

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437. E° for $Fe^{2+} + 2e \rightarrow Fe$ is -0.44 volt and E° for $Zn^{2+} + 2e \rightarrow Zn$ is -0.76 volt thus:

A. Zn is more electropositive than Fe

B. Fe is more electropositive than Zn

C. Zn is more electronegative

D. None

Answer: A

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438. In a galvanic cell, which is wrong :

A. Anode has negative polarity

B. Cathode has positive polarity

C. Reduction takes place at anode

D. Reduction takes place at cathode

Answer: C

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439. Using same quantity of current , which among `Na, Mg and Al is deposited more during electrolysis of their molten salt :

A. Na

B. Mg

C. Al

D. All in same amount

Answer: A

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440. A metal having negative reduciton potential when dipped in the solution of its ow ions, has a tendency:

A. To pass into the solution

B. To be deposited from the solution

C. To become electrically positive

D. To remain neutral

Answer: A

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441. In electrochemical corrosion of metals, the metal undergoing corrosion:

A. Acts as anode

B. Acts as cathode

C. Undergoes reduction

D. None

Answer: A

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442. The metal which cannot liberate H_2 from hydrochloric acid is :

A. Zn

B. Cu

C. Mg

D. Al

Answer: B

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443. $KCl(aq)$ cannot be used as a salt bridge for the cell $Cu(s)|CuSO_4(aq)||AgNO_3(aq)|Ag(s)$ because :

A. $CuCl_2$ is precipitated

B. Cl_2 gas is given out

C. $AgCl$ is precipitated

D. All

Answer: C

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444. The calomel electrode is reversible with respect to:

A. Hg_2^{2+}

B. H^+

C. Hg^{2+}

D. CI^-

Answer: A

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445. Standard reduction potential of an element is equal to:

A. $+1 \times$ its reduction potential

B. $-1XX$ its standard oxidation potential

C. $0.00V$

D. $+1 \times$ its standard oxidation potential

Answer: B

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446. Beryllium is placed above magnesium in the II group. Beryllium dust, therefore, therefore, when added to $MgCI_2$ solution will:

A. Have no effect

B. Precipitate Mg metal

C. Precipitate MgO

D. Lead to dissolution of Be metal

Answer: A

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447. For the cell $Zn|Zn^{2+}||Cu^{2+}|Cu$ if the concentration of Zn^{2+} and Cu^{2+} ions is doubled, the emf of the cell:

A. Doubles

B. Reduces of half

C. Remains same

D. Becomes zero

Answer: C

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448. Copper can be deposited from acidified copper sulphate and alkaline cuprous cyanide. If the same current is passed for a definite time:

A. The amount of copper deposited from acidic copper sulphate will be higher

B. The amount of copper deposited from alkaline cuprous cyanide will be higher

C. The same amount of copper will be deposited

D. None

Answer: B

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449. A cell necessarily does not contain:

A. An anode

B. A cathode

C. An electolyte or a fuel

D. A porous diaphagm

Answer: D

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450. Lithium is generally used as an electrode in high energy density batteries. This is because:

A. Lithium is the lightest element

B. Lithium has quite highnegative reduction potential

C. Lithium is quite reactive

D. Lithium does not corrode easily

Answer: B

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451. Cu (II) sulphate solution is treated separately with KCl and KI In which case, Cu^{2+} be reduced to Cu^{+}:

A. With KCl

B. With KI

C. With both (a) and (b)

D. None

Answer: B

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452. Which process occurs in the electrolysis of aqueous solution of nickel chloride at nickel anode:

A. $Ni^{2+} + 2e \rightarrow Ni$

B. $2H^{+} + 2e \rightarrow H_2$

C. $2Cl^{-} \rightarrow Cl_2 + 2e$

D. $Ni \rightarrow Ni^{2+} + 2e$

Answer: D

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453. In aqueous solution, weak electrolytes dissociates:

A. Completely

B. To a slight extent

C. Almost completely

D. To more the 80%

Answer: B

Watch Video Solution

454. Which reaction does not takes place at cathode ?

A. $Cl^{-} \rightarrow Cl + e$

B. $Ag^{+} + e \rightarrow Ag$

C. $Cu^{+2} + 2e \rightarrow Cu$

D. $H^{+} + e \rightarrow H$

Answer: A

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455. The electroplating with chromium is undertaken because :

A. Electrolysis of chromium is easier

B. Chromium can from alloys with other metals

C. Chromium gives a protective and decorative coating to the base metal

D. Of high reactivity of chromium metal

Answer: C

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456. For a given cell reaction ,

$Cr + 3H_2O + OCI^{-} \rightarrow Cr^{3+} + 3CI^{-6}OH^{-}$, the species undergoing reduction is :

A. Cr

B. Cr^{6+}

C. OCI^{-}

D. CI^{-}

Answer: C

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457. Molten $NaOH$ conducts electricity , because$NaOH$ is :

A. A non-electrolyte

B. A strong electrolyte

C. A weak electrolyte

D. A non-polar compound

Answer: B

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458. The standard reduction potentials of the metals A,B and C are $0.68, \ -2.50 \text{ and } \ -0.50V$ respectively. The order of their reducing power is :

A. $A > B > C$

B. $A > C > B$

C. $C > B > A$

D. $B > C > A$

Answer: D

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459. If the half cell reaction $A + e \rightarrow A^-$ has a large negative reduction potential, it follows that :

A. A is readily reduced

B. A is readily oxidised

C. A^- is readily reduced

D. A^- is readily oxidised

Answer: D

Watch Video Solution

460. Pure water does not conduct electricity because it is :

A. Neutral liquid

B. Low boiling b. pt. liquid

C. Almost non-ionised

D. None

Answer: C

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461. An aqueous solution of an electrolyte:

A. Conducts electricity without any chemical change

B. Conducts electricity with chemical decomposition

C. Is an ensulator

D. All are correct

Answer: B

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462. Which process involves corrosion ?

A. Brown deposits on iron articles

B. Green deposits on battery terminals

C. Black deposits on silver coin

D. All of these

Answer: D

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463. The metal that cannot be obtained by electrolysis of the aqueous of its salts are:

A. Ag

B. Cr

C. Cu

D. Al

Answer: D

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464. Water is a non-electrolyte but conducts electricity on dissolving a small amount of :

A. O_2

B. Sugar

C. Acetone

D. NaCl

Answer: D

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465. Rust is a mixture of :

A. FeO and $Fe(OH)_2$

B. FeO and Fe$(OH)_3$

C. Fe_2O_3 and $Fe(OH)_3$

D. Fe_3O_4 and $Fe(OH)_3$

Answer: C

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466. In a salt bridge,KCl is used because:

A. It is an electrolyte

B. It is good conductor of electricity

C. The transport number of K^{+} and CI^{-} ions are nearly same or both have same ionic mobility

D. Cu, Hg, Ag

Answer: C

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467. A solution containing one mole per litre each of $Cu(NO_3)_2$, $AgNO_3$, $Hg_2(NO_3)_2$ and $Mg(NO_3)_2$ is being electrolysed by using inert electrodes. The values of standard electrode potentials in volt (reduction potentials) are,

$Ag|Ag^{+} = 0.80.2Hg|Hg_2^{2+} = 0.79, Cu \mid Cu^{2+} = +0.34$ and $Mg^{2+} = -2.37$

With increasign voltage, the sequence of deposition of metals on the cathode will be :

A. Ag, Hg , Cu,Mg

B. Mg, Cu, Hg, Ag

C. Ag, Hg, Cu

D.

Answer: C

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468. In a galvanic cell energy changes occurs as:

A. Chemical energy $\rightarrow$ Electrical energy

B. Electrical energy $\rightarrow$ Electrical energy

C. Chemical energy $\rightarrow$ Internal energy

D. Internal energy $\rightarrow$ Electric energy

Answer: A

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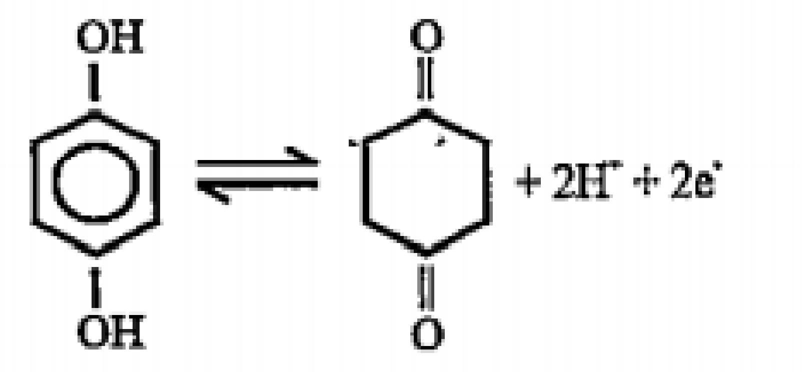
469. $At pH = 2$, $E^{\circ}_{\text{Quinhydrone}} = 1.30V$, $E_{\text{Quinhydrone}}$ will be:



A. 1.36V

B. 1.30V

C. 1.42V

D. 1.20V

Answer: C

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470. The passage of electricity in the Daniell cell when Zn and Cu electrodes are connected :

A. From Cu toZn inside the cell

B. From Cu to Zn outside the cell

C. From Zn to Cu outside the cell

D. None

Answer: B

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471. A correct electrochemical series can be obtained from K,Ca,Na,Al,Mg,Zn,Fe,Pb,H,Cu,Hg,Ag,Au by interchanging:

A. Al and Mg

B. Zn and Fe

C. Zn and Pb

D. Pb and H

Answer: A

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472. Indicator electrode is :

A. SHE

B. Calomel electrode

C. Ag / Ag Cl electrode

D. Quinhydrone electrode

Answer: D

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473. When iron or zinc is added to $CuSO_4$ solution, copper is precipitated. It is due to,

A. Standard reduction potential of zinc is more than copper

B. Standard reduction potential of zinc is less than copper

C. Atomic number of zinc is largest than copper

D. Atomic number of zinc is lower than copper

Answer: B

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474. The standard oxidation potentials of Zn and Ag in water at $25^{\circ} C$ are.

$Zn(s) \rightarrow Zn^{2+} = 2e, E^{\circ} = 0.76V$

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

Which reaction actually takes place:

A. $Zn(s) + 2Ag^{+}(aq) \rightarrow Zn^{2+} + 2Ag(s)$

B. $Zn^{2+} + 2A^{+}(s) \rightarrow 2Ag^{+}(aq) + Zn(s)$

C. $Zn(s) + 2Ag(s) \rightarrow Zn^{2+}(aq) + Ag^{+}(aq)$

D. $Zn^{2+}(aq) + Ag^{+}(aq) \rightarrow Zn(s) + Ag(s)$

Answer: A

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475. The standard reduction potentials of the elemtnts A, B.Care +2.37V,-1.85V and 1.36V respectively. The order of the their reducing power is :

A. $B > C > A$

B. $A > B > C$

C. $C > B > A$

D. $B > A > C$

Answer: A

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476. Is the reaction, $2Al + 3Fe^{2+} \rightarrow 2Al^{3+} + 3Fe$ possible?

A. No , because standard oxidation potential of $AI < Fe$

B. Yes, because standard oxidation potential of $AI > Fe$

C. Nither (a) nor(b)

D. Data are unpredictable

Answer: B

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477. Whether tin can displace lead from aqueous lead bromide solution:

A. No

B. Yes , because standard redution potential of $Sn < Pb$

C. Yes, because standard reduction potential of $Sn > Pb$

D. None

Answer: B

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478. Faraday is equal to :

A. 96.5 coulombequivalent $^{-1}$

B. 96.5×10^3 coulomb equivalent $^{-1}$

C. 96.5×10^{10} coulomb equivalent $^{-1}$

D. 96.5×10^{23} coulomb mol^{-1}

Answer: B

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479. The most electropositive element is :

A. Postive reduction potential

B. Tendency to gain electrons

C. Negative reduction potential

D. Negative oxidation potential

Answer: C

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480. Based on the data given below , the correct order of reducing power is :

$Fe^{3+}(aq) + e \rightarrow Fe^{2+}(aq), E^{\circ} = +0.77V$

$AI^{3+}(aq) + 3e \rightarrow AI(s), E^{\circ} = -1.66V$

$Br_2(aq) + 2e \rightarrow 2Br^{-(aq)}, E^{\circ}$ =+1.08V`

A. $Br^{-<}Fe^{2+} < AI$

B. $Fe^{2+} < AI < Br^-$

C. $Al < Br^{-<} Fe^{2+}$

D. $AI < Fe^{2+} < Br^-$

Answer: A

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481. Galvanised iron sheets have coating of :

A. Cu

B. Sn

C. Zn

D. Carbon

Answer: C

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482. The electrochemical that is easiest to be reduced is :

A. Fe

B. Cu

C. Ag

D. Sn

Answer: C

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483. An electrochemical cell consists of :

A. Cadmium cell

B. Lead accumulator

C. Two half cells

D. None

Answer: C

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484. The correct order of chemical reactivity with water according to electrochemical series is :

A. $K > Mg > Zn > Cu$

B. $Mg > Zn > Cu > K$

C. $K > Zn > Mg > Cu$

D. $Cu > Zn > Mg > fK$

Answer: A

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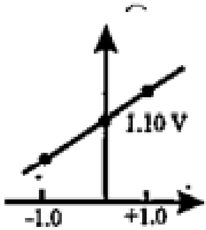
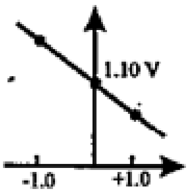
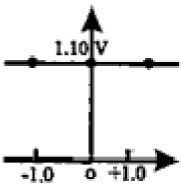
485. Which graph correctly correlates E_{cell} as a function of concentrations for the cell (for deifferent values of M and M):

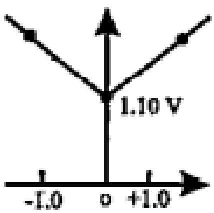
$$Zn(s) + Cu^{2+}(M) \rightarrow Zn^{2+}(M) + Cu(s), E^{\circ}_{cell} = 1.10V$$

$$X - a\xi s : \frac{\log_{10}[Zn^{2+}]}{Cu^{2+}}, Y - a\xi s : E_{cell}$$

A. 

B. 

C. 

D. 

Answer: B

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486. Faraday.s laws hold good at:

A. All pressures

B. Only at 298 K

C. In different solvents

D. All of these

Answer: A

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487. What is the function of a salt bridge?

A. To allow ions to go from one cell to another

B. To provide link between two half cells

C. To keep the emf of the cell positive

D. To maintain electrical neutrality of the solution in two half cells

Answer: D

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488. A substance that will reduce Ag + to Ag but will not reduce Ni^{2+} to Ni is :

A. Zn

B. Pb

C. Mg

D. Al

Answer: B

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489. A dilute aqueous solution of Li_2SO_4 is electrolysed . The products formed at the anode and cathode, respectively are:

A. S and Li

B. O_2 and Li

C. SO_2 and O_2

D. O_2 and H_2

Answer: D

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490. Blocks of magnesium metal are often strapped to the steel hulls of ocean going ships in order to :

A. Provide cathodic protection

B. Protect oxidation of steel

C. Both (a) and (b) correct

D. Neither (a) nor (b) is correct

Answer: C

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491. Which statement is true about spontaneous cell reaction in galvanic cell:

A. $E^{\circ}_{cell} > 0, \Delta G^{\circ} < 0, Q < K_c$

B. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q < K_c$

C. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q > K_c$

D. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q < K_c$

Answer: A

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492. It is impossible to measure the actual voltage of any half cell by itselft because :

A. Both half cell reactions takes place simultaneously

B. Of resistance of wire

C. A reaction does not take place on its own

D. None

Answer: A

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493. Which metal will dissolve if the cell works $Cu|Cu^{2+}|\,|Ag^{+}|Ag$:

A. Cu

B. Ag

C. Both (a) and (b)

D. None

Answer: A

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494. In which cell, electrical energy is converted into chemical energy:

A. Oxidation of fuel

B. Heat energy

C. Chemical reaction

D. Transfer of a substance from one concentration to other

Answer: D

Watch Video Solution

495. The Zn acts as sacrificial or cathodic porection to prevent rusting of iron because :

A. $E^\circ_{OP} of_{Zn} < E^\circ_{OP} of Fe$

B. $E^\circ_{OP} of_{Zn} > E^\circ_{OP} of Fe$

C. $E^\circ_{OP} of_{Zn} = E^\circ_{OP} of Fe$

D. Zn is cheaper than iron

Answer: B

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496. The number of faraday required to liberate 1 mole of any element indicates :

A. Weight element

B. Conductance of electrolyte

C. Charge on the ion of that element

D. None

Answer: C

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497. Quantity of electricity is measured in :

A. ampere sec

B. ampere

C. $ampere^{-1}$

D. $ampere^{-1}$ sec

Answer: A

Watch Video Solution

498. Which are used as secondary reference electrodes :

A. Calomel electrode

B. $Ag/AgCI$ electrode

C. $H\frac{g}{H}g, CI, -KCI$electrode

D. All of these

Answer: D

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499. The corrosion of iron object is favoured by:

A. Presence of H^{+} ion

B. Presence of moisture in air

C. Presence of imputities in iron object

D. All of these

Answer: D

Watch Video Solution

500. For a redox reaction to proceed spontaneously in a given direction, the emf should:

A. be zero

B. have $+ve$ sign

C. have $-ve$ sign

D. have either $+ve$ or $-ve$ sign

Answer: B

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501. In a cell containing zinc electrode and standard hydrogen electrode(SHE),the zinc electrode acts as :

A. Anode

B. Cathode

C. Neither cathode nor anode

D. Both anode and cathode

Answer: A

Watch Video Solution

502. A cell in which electric current is produced by net oxidation and reduction process is called:

A. Voltaic cell

B. Electrolytic cell

C. Concentration cell

D. None

Answer: A

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503. Faraday's first law of electrolysis can be expressed as :

A. $W \propto Q$

B. $W \propto 1/Q$

C. $W \propto Q^2$

D. $W \propto Q^3$

Answer: A

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504. I faraday of electricity will liberate 1 g atom of the metal from the solution of :

A. $AuCl_3$

B. $AgNO_3$

C. $CaCl_2$

D. $CuSO_4$

Answer: B

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505. In the electro-deposition of Ag, the silver ions are :

A. Reduced at anode

B. Reduced at cathode

C. Oxidised at anode

D. Oxidised at cathode

Answer: B

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506. For the cell reaction ,

$Cu^{2+}(aq)(C_2) + Zn(s) \rightarrow Zn^{2+}(aq)(C_1) + Cu(s)$, the change in free energy(ΔG) at a given temperature is a function of :

A. $\ln C_1$

B. $\ln(C_2 / C_1)$

C. $\ln(C_1 + C_2)$

D. $\ln C_2$

Answer: B

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507. In an electrochemical cell ,the electrons flow:

A. From cathode to anode

B. From anode to cathode

C. From anode to solution

D. From solution to cathode

Answer: B

Watch Video Solution

508. The art of electroplating was given by:

A. Faraday

B. Edison

C. Graham

D. Brugan

Answer: A

Watch Video Solution

509. Which of the following is correct ?

A. Zinc acts as cathode in Daniell cell

B. In a Li-Zn couple, zinc acts as anode

C. Copper will displace iron in solution

D. Zinc displaces tin from its solution

Answer: D

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510. In an electrolytic cell of $Ag|AgNO_3|AgNO_3 \mid Ag$,when current is passed the concetration of $AgNO_3$

A. Increases

B. Decreases

C. Remains same

D. None

Answer: C

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511. Give examples of weak electrolytes.

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512. How electrochemiacl equivalent is related to chemical equivalent ?

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513. Define degree of dissociation.

Watch Video Solution

514. What is the value of one faraday ?

Watch Video Solution

515. Define emf of a cell or cell potential .

Watch Video Solution

516. What is the significance of leaching in the extraction of aluminium?

Watch Video Solution

517. What is electrochemical series ?

Watch Video Solution

518. Define cell potential.

Watch Video Solution

519. How electrode potential increases of an electrode ?

Watch Video Solution

520. What is standard electrode potential ?

Watch Video Solution

521. What is fuel cell?

Watch Video Solution

Watch Video Solution

522. Define Galvanic-cell or Voltaic-cell.

Watch Video Solution

523. The unit of equivalent conductance is

Watch Video Solution

524. What is the unit of specific conductance?

Watch Video Solution

525. What is unit of molar conductivity or molar conductance ?

Watch Video Solution

526. Write the unit of cell constant.

Watch Video Solution

527. If a spoon to be electroplated with silver , would it be made as cathode or anode in the cell?

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528. Give two applications of Kohlrausch Law.

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529. The electrode potential of normal hydrogen electrode is

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530. Write the Nernst equation for a half cell reaction.

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531. What is galvanization ?

Watch Video Solution

532. What is electromotive force?

Watch Video Solution

533. Write the relationship between cell potential and equilibrium constant.

Watch Video Solution

534. Which substance is used for Cu-plating?

Watch Video Solution

535. How does specific conductance vary with dilution?

Watch Video Solution

536. What is the charge carried by 1 mole nitride ion?

Watch Video Solution

537. What is the ECE of Ag ?

Watch Video Solution

538. Define molar conductance.

Watch Video Solution

539. What is the potential of a standard hydrogen electrode ?

Watch Video Solution

540. Between zinc and copper which metal will react dilute sulphuric acid ?

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541. What is the charge in Coulombs on CO_3^{2-} ion?

Watch Video Solution

542. How does equivalent conductance of a weak electrolyte vary with dilution?

Watch Video Solution

543. How many moles of H_2 will be liberated when 2 faradays of electricity is passed through 0.1M `H_2SO_4 solution?

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544. Write the equation that give the equivalent conductance at infinite dilution.

Watch Video Solution

545. What is the charge carried by one mole electron ?

Watch Video Solution

546. What is the relation between electrochemical equivalent and chemical equivalent of Zinc?

Watch Video Solution

547. What happens to conductance of an electrolyte on dilution ?

Watch Video Solution

548. Give an example of an inert electrode .

Watch Video Solution

549. State Faradey.s 1st law.

Watch Video Solution

550. State Faradey.s 2nd law.

Watch Video Solution

551. Give the relationship between chemical equivalent and electrochemical equivalent of an element?

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552. How atomic weight, valency, eq.weight of a metal related ?

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553. Define specific conductance.

Watch Video Solution

554. Define equivalent conductance.

Watch Video Solution

555. Define molar conductance.

Watch Video Solution

556. What is the unit of cell constant ?

Watch Video Solution

557. How cell constant is related with observed conductance and specific conductance ?

Watch Video Solution

558. Give two applications of Kohlrausch Law.

Watch Video Solution

559. How degree of dissociation is related with eqconductacne of week electro-lytes ?

Watch Video Solution

560. What is the electrode potential?

Watch Video Solution

561. What is standard electrode potential ?

Watch Video Solution

562. What is the EMF of the cell when the cell reaction attains equilibrium ?

Watch Video Solution

563. Can you store copper sulphate solution in an iron vessel? Why ?

Watch Video Solution

564. If a spoon to be electroplated with silver , would it be made as cathode or anode in the cell?

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565. Galvanic cell converts ______ into_____.

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566. Specific conductance=_______x cell constant.

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567. The unit of cell constant is . . . .

Watch Video Solution

568. Molar conductance for weak electrolyte on dilition______.

Watch Video Solution

569. Charge on one mole of electron is ______

Watch Video Solution

570. Copper sulphate solution _____ stored in an iron vessel.

Watch Video Solution

571. I mole of electrons ______coulomb.

Watch Video Solution

572. Reduction takes place at_____ during electrolysis.

Watch Video Solution

573. Oxidation takes place at_____ druing electrolyses.

Watch Video Solution

574. Equivalent conductance for strong electrolyte on dilution _____.

Watch Video Solution

575. Units of specific conductivity are _______.

Watch Video Solution

576. Chemical equivalent =______x Electro chemical equivalent.

Watch Video Solution

577. pH value of aqueous solution of Nacl after electrolysis is _______

Watch Video Solution

578. Unit of electrochemical equivalent is ______.

Watch Video Solution

579. 96500 Coulomb will deposite . . . . of metal.

Watch Video Solution

580. Equivalent conductance ________ with dilution.

Watch Video Solution

581. What is the unit of molar conductance ?

Watch Video Solution

582. Relation between standard e.m.f. of a cell and equilibrium constant is

_______.

Watch Video Solution

583. In an electrochemical cell, reduction taken place at

. . ..

Watch Video Solution

584. In the electrochemical cell, oxidation takes place at ....

Watch Video Solution

585. Electroplated silver spoon acts as ____in a cell.

Watch Video Solution

586. The process of splitting up of electrolytes into the $+ve$ and $-ve$ ions are called_____.

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587. For strong electtolytes degree of ionisation is ________.

Watch Video Solution

588. I coulonmb=_______x 1 second.

Watch Video Solution

589. Units of specific conductivity are ________.

Watch Video Solution

590. Electrochemical cell is also known as _____.

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591. In an electrochemical cell, reduction taken place at ……………………

Watch Video Solution

592. In an electrochemical cell, reduction taken place at ……………………

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593. Molten sodium chloride conducts electricity due to the presence of ………………….

Watch Video Solution

594. Fill in the blanks : The electric charge for the deposition of 1 gm equivalent of a substance is ....

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595. 96500 Coulomb will deposite …………………… of metal.

Watch Video Solution

596. Unit of electrochemical equivalent is ______.

Watch Video Solution

597. pH value of aqueous solution of Nacl after electrolysis is _______

Watch Video Solution

598. The unit of specific conductance is . . ..

Watch Video Solution

599. Specific conductance for strong electrolyte on dilution _______

Watch Video Solution

600. Specific conductance for strong electrolyte on dilution _______

Watch Video Solution

601. Equivalent conductance for strong electrolyte on dilution ______.

Watch Video Solution

602. Equivalent conductance for weak electrolyte on dilution _______.

Watch Video Solution

603. Molar conductance for weak electrolyte on dilition______.

Watch Video Solution

604. The best electronic conductor is ______.

Watch Video Solution

605. Electrolysis of molten sodium hydride liberates .... gas at the ....

Watch Video Solution

606. Oxidation takes place at_____ druing electrolyses.

Watch Video Solution

607. Reduction takes place at______ during electrolysis.

Watch Video Solution

608. Charge carried by 1 mole of electrons is _______.

Watch Video Solution

609. I coulomb is about _______electrons.

Watch Video Solution

610. Unit of electrochemical equivalent is kg/Faraday. Is it true or false?

Watch Video Solution

611. Molar conductance for weak electrolyte on dilution decreases slowly. Is it true or false?

Watch Video Solution

612. Specific conductance =molar conductance $\times$ cell constant. Is it true or false?

Watch Video Solution

613. Equivalent conductance for strong electrolyte on dilution decreases rapidly. Is it true or false?

Watch Video Solution

614. In an electrochemical cell, reduction taken place at ....

Watch Video Solution

615. In the electrochemical cell, oxidation takes place at ....

Watch Video Solution

616. Molten sodium chloride conducts electricity due to the presence of electrons. Is it true or false?

Watch Video Solution

617. The electric charge for the deposition of 1 gram equivalent of a substance is 965 Faraday. Is it true or false?

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618. How much time is required to pass 36000 coulombs of electricity through an electrolyte if the current strenght is 10 amperes ?

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619. I coulomb of charge contains how many number of electrons ?

Watch Video Solution

620. In an electrolytic cell 10 gm of chlorine is liberated from NaCl solution in 30 minutes. Find the amount of current passed.

Watch Video Solution

621. How many coulombs of electricity are required for reduction of 1 mol of Cu^{2+} to Cu ?

Watch Video Solution

622. How many moles of electrons are given by 289500 coulombs ?

Watch Video Solution

623. Calculate the value of equilibrium constant for the reaction at 298 k.

$Cu(s) + 2Ag^{+}(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

E° (Ag2+/Ag) $= 0.80V$

and E° (Cu2+/Cu) $= 0.34V$

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624. What are fuel cells ? Write the electrode reaction of a fuel cell which uses the reaction of hydrogen with oxygen.

Watch Video Solution

625. Calculate the value of equilibrium constant for the reaction at 298 k.

$Cu(s) + 2Ag^+(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

E° (Ag2+/Ag) $= 0.80V$

and E° (Cu2+/Cu) $= 0.34V$

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626. How much copper is deposited on the cathode if a current of 5 A is passed throgh a solution of $CuSO_4$ for 45 minutes ?

Watch Video Solution

627. Explain why electrolysis of aqueous solution of $NaCl$ gives H_2 at cathode and Cl_2 at anode.

Watch Video Solution

628. State and explain Kohlrausch's law. How can this law be used to find equivalent conductance of acetic acid at infinite dilution?

Watch Video Solution

629. Define molar conductance . Write its unit.

Watch Video Solution

630. The specific conductance of a solution is 0.356 $ohm^{-1}\ cm^{-1}$. The conductance of this solution in a cell was 0.0268 ohm^{-1}. Calculate the cell constant.

Watch Video Solution

631. What is the potential of a standard hydrogen electrode ?

Watch Video Solution

632. A $0.1N$ solution of NaCl has specific conductance $0.0011 ohm^{-1} cm^{-1}$. Find its equivalent conductance.

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633. What do you mean by strong and weak electrolytes ?

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634. In a cell $Zn\left[Zn^{2+}(aq)(1.0M)\right]\left[Cu^{2+}(aq)(1.0M]Cu\right.$, the standard reduction potentials are :

$Cu^{2+} + 2e^{-\rightarrow} Cu, E^{\circ} = 0.350V$ and

$Zn^{2+} + 2e^{-\rightarrow} Zn, E^{\circ} = -0.763V$.

What is the e.m.f.of the cell ?

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635. What is the basis on which anode or cathode identified in a chemical cell ?

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636. Give the relationship between chemical equivalent and electrochemical equivalent of an element?

Watch Video Solution

637. What product is obtained at the anode during electroluysis of fused sodium hydride ?

Watch Video Solution

638. What is an electrolyte ?Defind non-electrolyte.

Watch Video Solution

639. What is electrolysis ?

Watch Video Solution

640. Give relation between specific conductance and Equivalent conductance ?

Watch Video Solution

641. What is galvantic cell?

Watch Video Solution

642. Write two applications of electrochemical series.

Watch Video Solution

643. State and explain Kohlrausch's law. How can this law be used to find equivalent conductance of acetic acid at infinite dilution?

Watch Video Solution

644. Three faradays of electricity are passed through molten Al_2O_3 ,aqueous solution of $CuSO_4$ and molten NaCl taken in different electrolytic cells. Calculate the molar ratio of Al, Cu and Na deposit at the cathodes .

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645. Represent the cell and calculate the Standard e.m.f. of the cell having following cell reaction: $2Cr(s)+3Cd^{2+}(aq) \rightarrow 2Cr^{3+}(aq)+3Cd(s)E^{0}Cr^{3+}/Cr= -0.73vo$ <

and $E^{0}Cd^{2+}/Cd= -0.40$ volt

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646. Define equivalent conductance.

Watch Video Solution

647. Define specific conductance.

Watch Video Solution

648. What is galvanic cell? Give an example.

Watch Video Solution

649. Write two applications of electrolysis.

Watch Video Solution

650. What is an electrochemical cell?

Watch Video Solution

651. How many grams of aluminium can be produced by electrolysis of molten alumina with a current of 3 amperes for 10 minutes ?

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652. How many grams of chlorine can be produced by the electrolysis of molten $NaCl$ with 10 amperes of current flowing for 10 minutes (mol wt of $Cl_2 = 71$)

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653. Calculate the quantity of electricity required to deposit $0.108 gm.$ of silver from $AgNO_3$ soln.

(At. Mass of Ag=108).

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654. What happens when $CuSO_4$ soln. Is stored in a Zinc container ?

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655. The specific conductance of a solution is 0.356 ohm^{-1} cm^{-1}. The conductance of this solution in a cell was 0.0268 ohm^{-1}. Calculate the cell constant.

Watch Video Solution

656. The equivalent conductance of 0.001N KCl solutin is 147 $ohm^{-1}cm^2gmeq^{-1}$ at $25^\circ C$. Find the specific conductance.

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657. How many moles of copper will be deposited at the cathode by passing 1.5 faraday of electricity through a sol^n of $CuSO_4$? (At. Mass of Cu =63.5).

Watch Video Solution

658. A current strength of 3 amperes is passed for 20 minutes in $AgNO_3$ solution., 4gm. Ag metal is deposited, what is the ECE OF Ag ?

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659. For silver plating name the mterials that are to be taken as cathode, anode and electrolyte.

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660. What is the potential of a standard hydrogen electrode ?

Watch Video Solution

661. A metal wire carries a current of 1 ampere. How many electrons pass a point in the wire in one second ?

Watch Video Solution

662. $A 0.1N$ soln. of $NaCl$ has specific conductance $0.001119 ohm^{-1} cm^{-1}$. Find out equivalent conductance.

Watch Video Solution

663. On electrolysis $CuSO_4$ solution in presence of non attackable Pt, electrodes, the soln. becomes colourless. Explain.

Watch Video Solution

664. What volume of hydrogen gas measured at $273K$ at 0.5 atmospheric pressure will be obtained when 0.1 faraday of electricity is passed through acidulated water ?

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665. Why Ag will not react with dilute H_2SO_4 whereas Zn reacts rapidly ?

Watch Video Solution

666. Colour of KI slon. containing starch turns blue when Cl_2 water is added. Why ?

Watch Video Solution

667. The metals given below are in the increasing order of their reduction potential.

Mg,Zn,Co,H,Cu,Ag

Which of these metals displaces hydrognen from dilute acid ?

Watch Video Solution

668. State whether the following representation of the cell is correct or not .

$Pb[Pb^{++}(IM)][Mg^{++}(1M)]Mg$

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669. Write each half cell reaction and also the net cell reaction for a cell.

(i)$Cu\left[Cu^{++(aq)}\right]\left[Ag^{+(aq)}\right]Ag$

(ii) $Cd\left[Cd^{+2}\right]\left[Ni^{+2}\right]Ni$

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670. what happens when Zn metal is immersed in $CuSO_4$ solution ?

Watch Video Solution

671. Define electrochemical equivalent and chemical equivalent. How are they related with each other ? A current of 5 amperes is passed through an electrolyte for 15 minutes when 3 gms of the metal was deposited. Calculate the electrochemical equivalent of the metal.

Watch Video Solution

672. Explain Faraday's second law of electrolysis.

Watch Video Solution

673. What is electrochemical series ? Write some of its uses.

Watch Video Solution

674. How many grams of aluminium can be produced by electrolysis of molten alumina with a current of 1 amperes for 1 minutes ?

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675. 20 ampere current is flowing through $CuSO_4$ solution for 60 minutes. Find the amonut of cupper deposited. (At .wt. of Cu = 63.5)

Watch Video Solution

676. Calculate the normality of KCl solution having resistance 2000 ohm. The cell constant is$5.53 cm^{-1}$ and the equivalent conductance is $138.25 ohm^{-1} cm^2 eq^{-1}$.

Watch Video Solution

677. Calculate the value of equilibrium constant for the reaction at 298 k.

$Cu(s) + 2Ag^{+}(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

E°(Ag2+/Ag) $= 0.80V$

and E°(Cu2+/Cu) $= 0.34V$

Watch Video Solution

678. How does molar conductivity vary with concentration for weak and strong electrolyte ?

Watch Video Solution

679. The specific conductance of a 0.12N solution of an electrolyte is $2.4 \times 10^{-2}\ ohm^{-1}cm^{-1}$ Calculate its equivalent conductance.

Watch Video Solution

680. How would you determine the standard electrode potential of the system Mg^{2+}/Mg ?

Watch Video Solution

681. State and explain Kohlrausch's law. How can this law be used to find equivalent conductance of acetic acid at infinite dilution?

Watch Video Solution

682. Define electrochemical equivalent and chemical equivalent. Show that

chemical equivalent = 96500 x electrochemical equivalent

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683. The resistance of a soln. is 3 ohms. The electrodes in the cell are 1.5 cm. apart and have an area of $4.5cm^2$. What is specific conductance ?

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684. A current of 0.15 amperes strength is passed for 150 minutes through a soln. of a metal, 0.785 gm of metal was deposited. Find the valency of the metal. (At.wt.of the metal : 112)

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685. A current of 0.5 ampere is passed through acidulated water for 30 minutes. Calculate the wt. of H_2 and oxygen evolved ?

Watch Video Solution

686. When an electric current is passed simultaneously through acidulated water and copper sulphate soln.wt. of hydrogen and copper deposited are 0.0131 and $0.4164 gm$ respectively. Calculate eq. mass of copper.

Watch Video Solution

687. State and explain Faraday's laws of electrolysis.

Watch Video Solution

688. When a current of 0.15 ampere is passsed through a solution of a salt of a metal for 150 minutes, 0.783 gm of the metal is deposited . Find the valency of the metal.(At. Wt. of metal = 112)

Watch Video Solution

689. State and explain Faraday's laws of electrolysis.

Watch Video Solution

690. How many grams of aluminium can be produced by electrolysis of molten alumina with a current of 3 amperes for 10 minutes ?

Watch Video Solution

691. Define and explain electrochemical equivalent.How is it related with chemical equivalent of the substance ?

Watch Video Solution

692. A current of 5 amperers is passed through an electrolyte for 15 minutes when 3 gm of the metal is deposited . Calculate the equivalent weight of the metal.

Watch Video Solution

693. Define equivalent and molar conductance. Give their relationship with specific conductance. How does equivalent conductance vary with increase in temperature?

How many atoms of calcium will be deposited from fused $CaCl_2$ by a current of 25 mA passes for 60 sec?

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694. How many atoms of calcium will be deposited from fused $CaCl_2$ by a current of 25 milliamperes passed over 60 seconds ?

Watch Video Solution

695. Define specific and equivalent conductacne. How are the related ? What is the effect of dilution on them ?

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696. The specific conductivity of an $N/20$ solution of KCl at `25^@ C is 0.002765 mhos. If the resistance of the same solution placed in the cell is 2000 ohm, what is the cell constant ?

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697. Write short note on Nernst equation.

Watch Video Solution

698. What is standard electrode potential ?

Watch Video Solution

699. Write notes on electron potentioal

Watch Video Solution

700. Define electrochemical series ?

Watch Video Solution

701. Write notes on Fuel Cell

Watch Video Solution

702. Write notes on Corrosion

Watch Video Solution

703. The algebrac sum of potential of two electrodes of a galvanic cell is called :

A. Potential defference

B. Ionic difference

C. EMF

D. Electrode difference

Answer: C

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704. The standard emf of a galvanic cell can be calculated from :

A. The size of the solution

B. The pH of the solution

C. The amount of metal in the anode

D. The E° values of the two half cells

Answer: D

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705. The electrode potential of a glass electrode depends upon:

A. Concentration of chloride ions

B. Concentration of hydrogen ions

C. Concentration of KCL solution.

D. None of these

Answer: B

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706. Which solution will show highest resistance during the passage of current:

A. $1\mathbb{N}aCI$

B. $0.1\mathbb{N}aCI$

C. $2\mathbb{N}aCI$

D. $0.05\mathbb{N}aCI$

Answer: C

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707. The standard reduction potential at 290K for the following half reactions are,

(i)$Zn^{2+} + 2e \rightarrow Zn(s), E^{\circ} = -0.762V$

(ii)$Cr^{3+} + 3e \rightarrow Cr(s), E^{\circ} = -0.740V$

(iii)$2H^{+} 2e \rightarrow H_2(g), E^{\circ} = -0.000V$

(iv)$Fe^{3+} + e \rightarrow Fe^{2} +, E^{\circ} = +0.77V$

Which it the strongest reducing agent :

A. Zn

B. Cr

C. Fe^{2+}

D. H_2

Answer: A

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708. Which represents disproportionation :

A. $2Cu^{+} \rightarrow Cu^{2+} + Cu$

B. $3I_2 \rightarrow 5I + I^{5+}$

C. $H_2O + CI_2 \rightarrow CI^{-} + CIO^{-} + 2H^{+}$

D. All of these

Answer: D

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709. Electrochemical equivalent of a substance is equal to its quantity liberated at electrode on passing electricity equal to :

A. 1 coulomb

B. 1 ampere

C. 1 volt

D. 96,500 coulomb

Answer: A

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710. Consider the standard potential of the following cells,

(i)$Mg^{2+} + 2e \rightarrow Mg, E^{\circ} = -2.37V$

(ii)$Zn^{2+} + 2e \rightarrow Zn, E^{\circ} = -0.76V$

(iii)$Ni^{2+} + 2e \rightarrow Ni, E^{\circ} = -0.25V$

(iv)$Fe^{3+} + 3e \rightarrow Fe, E_0 = -0.04V$ find the strongest reducing agent

:

A. Mg^{2+}

B. Mg

C. Fe^{3+}

D. Fe

Answer: B

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711. The most poweful oxidising agent is :

A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer: A

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712. The product $(ampere \times \sec ond)$ is equal to the number of :

A. Coulomb transferred

B. Electrons transferred

C. Faraday transferred

D. Volt

Answer: A

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713. The oxidation potential of Mg and Al are `+2.37 and +1.66 volt respectively. The Mg in chemical reactions :

A. Will be replaced by Al

B. Will replace Al

C. Will not be able to replace Al

D. None of these

Answer: B

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714. When an aqueous solution of lithium chloride is electrolysesd using graphite electrodes :

A. pH of the resulting solution increases

B. ph of the resulting solution decreases

C. As the current flows, pH of the solution around the cathode increases

D. None of these

Answer: A

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715. A ditute aqueous solution of sodium fluoride is electrolysed, the products at the anode and cathode are:

A. O_2, H_2

B. F_2, Na

C. O_2, Na

D. F_2, H_2

Answer: A

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716. Of the following matals that cannot be obtained by electrolysis of the aqueous solutions of their cathode are :

A. Ag and Mg

B. Ag and Al

C. Mg and Al

D. Cu and Cr

Answer: C

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717. A certain metal fails to liberate H_2 gas from a moderately conc. HCl solution. However it desplaces Ag from $AgNO_3$ solution. Which among the following may it be :

A. Mg

B. Fe

C. Cu

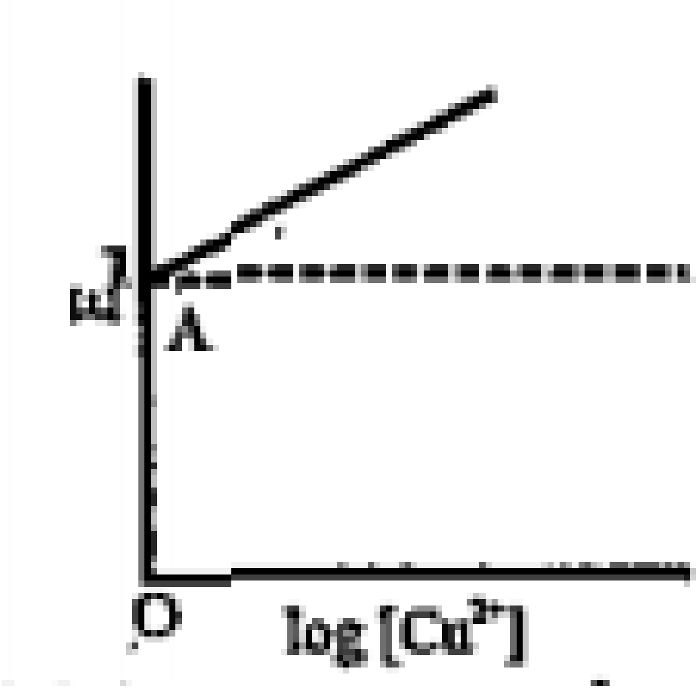
D. Cd

Answer: C

Watch Video Solution

718. $Cu^{2+} + 2e \rightarrow Cu, \log[Cu^{2+}]$ vs E_{red}.graph is of the type as shown in figure where $OA = 0.34V$ then electrode otential of the half cell of

$Cu^{2+}(0.1M)$ will be :



A. $-0.34+\frac{0.091}{2}V$

B. $0.34+0.0591V$

C. $0.34V$

D. None

Answer: A

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719. For which cell emf is independent of the concentration of electrolytes used :

A. $Fe[FeO(s)]KOH(aq)[NiO(s)[Ni_2O_3(s)]Ni$

B. $Pt(H_2)[HCI](Cl_2)$

C. $Zn\left[Zn(NO_3)_2\right][CuSO_4]Cu$

D. $Hg, HgCl_2[KCI][AgNO_2]Ag$

Answer: A

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720. The reaction,

$Cu^{2+}(aq) + 2CI^-$ (aq) $\rightarrow Cu(s) + CI_2(g)$ has $E^\circ_{cell} = 1.03V$.This reaction :

A. Can bemade to produce electricity in voltiac cell

B. Can be made to occur in an electrolytic cell

C. Can occur in acidic medium only

D. Can occur in basic medium only

Answer: B

Watch Video Solution

721. For the electrochemical cell,

$M[M^{+}]X^{-} \mid X, E^{\circ}\_(M+/M) = 0.44V$ and $E^{\circ}_{X/X^{-}} = 0.33V$.

From this data, one can duduce that :

A. $M + X \rightarrow M^{+} + X$ is the spontaneous reaction

B. $M^{+}X \rightarrow M + X$ is the spontaneous reaction

C. $E_{c}ell = 0.77V$

D. $E_{cell} = -0.77V$

Answer: B

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722. Electrolytic reduction of alumina to aluminium by Hall-Heroult process is carried out

A. In the presence of NaCI

B. In the presence of fluoride

C. In the presence of cryolite which forms a melt with lower melting tempeature

D. In the presence of cryolite which forms a melt with higher melting temperature

Answer: C

Watch Video Solution

723. When 9.65 coulomb of electricity is passed through a solution of $AgNO_3$(at.wt. 108.0) the amount of silver deposited is :

A. 10.8 mg

B. 5.4 mg

C. 16.2 mg

D. 21.2 mg

Answer: A

Watch Video Solution

724. Standard electrode potentials of $Fe^{2+} + 2e \to Fe$ and $Fe^{3+} + 3e \to Fe$ are $-0.440V$ and $-0.036V$ respectively. The standard electrode potential (E°) for $Fe^{3+} + e \to Fe^{2+}$ is :

A. $-0.476V$

B. $-0.404V$

C. $+0.404V$

D. $+0.772V$

Answer: D

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725. I mole of Al is deposited by X coulomb of electricity passing through aluminium nitrate solution. The number of mole of silver deposited by X coulomb of electricity from silver nitrate solution is :

A. 3

B. 4

C. 2

D. 1

Answer: A

Watch Video Solution

726. Copper from copper sulphate solution can be displaced by ....The standard reduction potentials of some electrodes are given below:

$$E^\circ(Fe^{2+}, Fe) = -0.44V$$

$$E^\circ(Zn^{2+}, Zn) = -0.76V$$

$$E^\circ(Cu^{2+}, Cu) = +0.34V$$

$$E^\circ(Cr^{3+}, Cr) = -0.74V$$

$$E^\circ\left(H^+, \frac{1}{2}H_2\right) = -0.00V$$

A. H_2

B. Zn

C. Cr

D. All

Answer: D

Watch Video Solution

727. The oxidation potential of a hydrogen electrode at pH =10 and P_{H_2} = 1 atm

A. $0.51V$

B. $0.00V$

C. $+0.59V$

D. $0.059V$

Answer: C

Watch Video Solution

728. The number of Faraday required to gneerate 1g of Mg from $MgCl_2$ is:

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

729. emf of cell $Ni, Ni^{2+}(1.0M) \mid \mid Au^{3+}(1.0M), Au$ is ....If $E^\circ f \text{ or } Ni^{2+} \mid Ni$ is 0.25V, $E^\circ f \text{ or } Au^{3+} \mid Au$ is 1.50 V.

A. $+1.25V$

B. $1.75V$

C. $+1.75V$

D. $+4.0V$

Answer: C

Watch Video Solution

730. E° for the half cell reactions are as,

$Zn \rightarrow Zn^{2+} + 2e, E^\circ = +0.76V$

$Fe \rightarrow Fe^{2+} + 2e, E^\circ = +0.41V$

The E° for the cell reaction.

$Fe^{2+} + Zn \rightarrow Zn^{2+} + Fe$:

A. $-035V$

B. $+0.35V$

C. $+1.17V$

D. $-0.17V$

Answer: B

Watch Video Solution

731. A certaom cirrent liberates 0.504 g of hydrogen in 2 hr. How many gram of copper can be liberated by the same current flowing for the same time in $CuSO_4$ solution:

A. 12.7

B. 16

C. 31.8

D. 63.5

Answer: B

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732. The standard reduction electrode potentials of your metals A,B, C and D are $-3.65, -1.68, -0.80$ and $+0.86$.The highest chemical activity will be exhibited by :

A. A

B. B

C. C

D. D

Answer: A

Watch Video Solution

733. An apparatus used for the measurement of quantity of electricity is known as a :

A. Calorimeter

B. Cathetometer

C. Coulometer

D. Colorimeter

Answer: C

Watch Video Solution

734. The amount of an ion descharged during electrolyses is not dependent of :

A. Resistance of solution

B. Time

C. Current strength

D. Electrochemical equivalent of the element

Answer: A

Watch Video Solution

735. If an iron rod is deppedin $CuSO_4$ solution:

A. Blue colour of the solution turns red

B. Brown layer is deposited on irod rod

C. No change occous in the colour of the solution

D. None

Answer: B

Watch Video Solution

736. Which aqueous solution will conduct an electric current quite well :

A. Glycerol

B. Sugar

C. Hydrochloric acid

D. Pure water

Answer: C

Watch Video Solution

737. When a lead storage battery is discharged:

A. SO_2 is evolved

B. Lead is formed

C. Lead sulphate is consumed

D. Suophuric acid is consumed

Answer: D

Watch Video Solution

738. The unit of electrochemical equivalent is :

A. gram

B. gram/ampere

C. gram/coulomb

D. coulomb gram

Answer: C

Watch Video Solution

739. During the electrolysis of fused`NaCl, the reaction that occurs at the anode is :

A. Chloride ions are oxidized

B. Chloride ions are oxidized

C. Sodium ions are oxidized

D. Sodium ions are reduced

Answer: A

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740. Each of the three metals X, Y and Z were put in turn into aqueous solution of the other two , X + Salt of Y (or Z)=Y (or Z) + Salt of X . Which observation is probably incorrect :

A. Y + Salt of X =No action observed

B. Y + Salt of Z =Z+ Salt of Y

C. Z + Salt of X=X+Salt of Z

D. Z + Salt of Y = No action observed

Answer: C

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741. Molten NaCl conducts electricity due to the presence of:

A. Free electrons

B. Free molecules

C. Free ions

D. Atoms of Na and Cl

Answer: C

Watch Video Solution

742. Red hot carbon will remove oxygen from the oxides XO and YO but not form ZO . Y will remove oxygen from XO . Use this evidence to reduce the order of activity of the three metals X,Y and Z putting the most reactive first :

A. X,Y,Z

B. Z,Y,X

C. Y,X,Z

D. Z,X,Y

Answer: B

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743. The standard reduction potentials at $25^{\circ} of Li^{+}[Li, Ba^{2+}[Ba, Na^{+}]Na$ and $Mg^{2+}]Mgare -3.05, \; -2.76, \; -$

respectively . Which is strogest reducing agent.

A. $ZnCl_2$ is formed

B. Zinc dissolves in the solution

C. No reaction takes place

D. Mg is precipitated

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744. Normal aluminum coupled with normal hydrogen electrode gives an emf of 1.66 V. The standard electrode potential of aluminium is :

A. $-1.66V$

B. $+1.66V$

C. $-0.83V$

D. $+0.83V$

Answer: B

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745. How many faraday are needed to reduce one mole of MnO_4^- to Mn^{2+}:

A. 4

B. 5

C. 3

D. 2

Answer: B

Watch Video Solution

746. Standard E° of the half cell Fe/Fe^{2+} is +0.44V and standard E° of half cell Cu /Cu^{2+} is -0.32V then:

A. Cu oxidises Fe^{2+} ion

B. Cu^{2+} oxidises Fe

C. Cu reduces $Fe^{2+} ion$

D. `Cu^(2+) reduces Fe

Answer: B

Watch Video Solution

747. The standard reduction potentials of metal electrodes A,B,C and D are +0.14V,+0.34V,-0.74 V and -0.4V respectively, Which is the best reducing agent :

A. A

B. B

C. C

D. D

Answer: C

Watch Video Solution

748. The standard reduction potentials at $25^{\circ} of Li^{+}\left[Li, Ba^{2+}\left[Ba, Na^{+}\right]Na \text{ and } Mg^{2+}\right]Mg are -3.05, \ -2.76, \ -$

respectively . Which is strogest reducing agent.

A. Li

B. Ba

C. Na

D. Mg

Answer: A

Watch Video Solution

749. The standard reduction potentials of the metals A,B and C are $0.68, \ -2.50 \text{ and } \ -0.50V$ respectively. The order of their reducing power is :

A. $A > B > C$

B. $A > C > B$

C. $C > B > A$

D. $B > C > A$

Answer: D

Watch Video Solution

750. The standard reduction potential for $Fe^{2+} \mid Fe$ and $Sn^{2+} \mid Sn$ electrodes are $-0.44V$ and $-0.14V$ respectively. For the cell reaction, $Fe^{2+} + Sn \rightarrow Fe + Sn^{2+}$, the standard emf is :

A. $+0.30V$

B. $0.58V$

C. $+0.58V$

D. $-0.30V$

Answer: D

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751. 3 Faraday of electricity are passed through molten Al_2O_3, aqueous solution of $CuSO_4$ and molten Nacl taken in three different electrolytic cells. The amount of Al, cu and Na deposited at the cathodes will be in the ratio of :

A. 1 mole : 2 mole : 3 mole

B. 3 mole : 2 mole: 1 mole

C. 1 mole: 1.5 mole: 3 mole

D. 1.5 mole :2 mole : 3 mole

Answer: C

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752. An electroytic cell contains a solution of Ag_2SO_4 and platinum electrodes. A current is passeduntil 1.6 g of O_2 has been liberated at anode. The amount of Ag deposited at cathode would be :

A. $1.6g$

B. $0.8g$

C. $21.6g$

D. $107.88g$

Answer: C

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753. The electrode potential measure the :

A. Tendency of the electrode to gain or lose electrons

B. Tendency of the all cell reaction to accur

C. Defference in the ionisation potential of electrode and metalion

D. Current carried by an electrode

Answer: A

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754. Which is the correct representation for Nernst equation :

A. $E_{RP} = E^{\circ}_{RP} +^{0.059}_{n} \log[\otimes idant]/[reduc\tan t]$

B. $E_{OP} = E^{\circ}_{OP} +^{0.059}_{n} \frac{\log[\otimes idant]}{reduc\tan t}$

C. $E_{OP} = \ = E^{\circ}_{OP} +^{0.59}_{n} \frac{\log[Reduc\tan t]}{\otimes idant}$

D. All of these

Answer: D

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755. The factor temperature coefficient for emf is :

A. $(\delta E/\delta T)_P$

B. $(\delta E/\delta P)_T$

C. $(\delta E/\delta V)_T$

D. None

Answer: A

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756. The emf of a voltaic cell is negative. So oxidation and reduction process respecttively can be written at the :

A. LHE,RHE

B. RHE,LHE

C. Both (a) and (b)

D. None

Answer: B

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757. Silver from silver nitrate is deposited by copper, because :

A. $E^\circ\left(Cu^{2+}/Cu\right) < E^\circ\left(Ag^+/Ag\right)$

B. $E^\circ\left(Cu^{2+}/Cu\right) < E^\circ\left(Ag^+/Ag\right)$

C. $E^\circ\left(Cu^{2+}/Cu\right) - E^\circ\left(Ag^+/Ag\right)$

D. None

Answer: A

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758. Standard reduction potential for, Li^+Li, $Zn^{2+}Zn$, H^+H_2 and Ag^+Ag is -3.05,-0.762,0.00 and +80V. Which has highest reducing capacity?

A. Ag

B. H_2

C. Zn

D. Li

Answer: D

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759. Which one is correct :

A. Ni desplaces zinc from its solution

B. Zn desplaces iron from is solution

C. Ag displaces copper from its solution

D. Cu displaces nickel from its solution

Answer: B

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760. An unit of charge is :

A. Volt

B. Ampere

C. Coulomb

D. None

Answer: C

Watch Video Solution

761. A cell is set up between 'Zn' and 'Cu' electrode. If the two half cells work under standard condition, calculate the cell potential. Given $E^\circ(Zn^{2+}/Zn) = -0.76V$ and $E^\circ(Cu^{2+}/Cu) = +0.34V$.

A. Copper

B. Zinc

C. Hydrogen

D. Cu^{2+}

Answer: D

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762. In galvanic cell, the salt bridge is used to :

A. Complete the circuit

B. To reduce lizuid junction potential in the ccell

C. Separate cathode solution from anode solution

D. Carry salts for chemical reactions to occur in cell

Answer: B

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763. A current of 2 ampere was passed through solution of $CuSO_4$ and $AgNO_3$ in series.`0.635 g of copper was deposited .Then the weight of silver deposited will be:

A. 0.59g

B. 3.24g

C. 1.08g

D. 2.16g

Answer: D

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764. The emf of the cell involving following changes $Zn(s) + Ni^{2+}(1M) \rightarrow Zn^{2+}(1M) + Ni(s) is 0.5105V$. The standard emf of the cell is :

A. 0.540V

B. 0.4810V

C. 0.5696V

D. 0.5105V

Answer: D

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765. A current of 2.6 ampere was passed through $CuSO_4$ solution for 380 sec. The amount of Cu deposited is (at .wt. of Cu (63.5):

A. 0.3250g

B. 0.635g

C. 6.35g

D. 3.175g

Answer: A

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766. E° values of Mg^{2+}/Mg is -2.37V, of Zn^{2+}/Zn is -0.76V and Fe^{2+}/Fe is -0.44V.

Which of the following statement is correct ?

A. $Mg \otimes idisesFe$

B. $Zn \otimes idisesFe$

C. $ZnreducesMg^{2+}$

D. $ZnreducesFe^{2+}$

Answer: D

Watch Video Solution

767. On passing electricity through diluteH_2SO4 solution the amount of substance libeated at the cathode and anode are in the ratio:

A. $1:8$

B. $8:1$

C. $16:1$

D. $1:16$

Answer: A

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768. Passage of 96500 coulmb of electricity liberates........ Litre of O_2 at NTP during electrolysis :

A. 5.6

B. 6.5

C. 22.2

D. 11.2

Answer: A

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769. During electrolysis of an aqueous solution of Cu^{2+} sulphate , 0.635 g of copper was deposited at cathode. The amount electricity consumed in coulomb is :

A. 1930

B. 3860

C. 96500

D. 4825

Answer: A

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770. The number of electrons involved in redox reactions when a faraday of electricity is passed through an electrolyte in solution is :

A. 6×10^{23}

B. 8×10^{19}

C. 96500

D. 6×10^{-23}

Answer: A

Watch Video Solution

771. If

$Mg^{2+} + 2e \rightarrow Mg(s), E = -2.37V, Cu^{2+} + 2e \rightarrow Cu(s), E = +0.34V$

then the emf of the cell $Mg \left| Mg^{+2} \right| \left| Cu^{2+} \mid Cu \right.$ is :

A. $2.71V$

B. $2.30V$

C. $2.80V$

D. $1.46V$

Answer: A

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772. A certain quantity of electricity is passed through aqueous solution of $AgNO_3$ and$CuSO_4$ connected in series, If Ag (at. Wt. 108) deposited at the cathode is 1.08 g then Cu deposited at the cathode is (at. wt. of Cu is 63.53):

A. 6.354

B. 0.317

C. 0.6354

D. 3.177

Answer: B

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773. Which is correct representation for a cell at equilibrium:

A. $\Delta G^{\circ} = -2.303 RT \log K_{eq}$

B. $E^{\circ} = \frac{2.3.3RT}{nF} \log K_{eq}$

C. $-\Delta G^\circ = RT1nK_eq.$

D. All

Answer: D

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774. Out of Cu, Ag, Fe and Zn the metal which can displace all other from their salt solutions is :

A. Ag

B. Cu

C. Zn

D. Fe

Answer: C

Watch Video Solution

775. The thermodynamic efficiency of cell is given by :

A. $\Delta H / \Delta G$

B. $nFE / \Delta G$

C. $nFE / \Delta H$

D. nFE°

Answer: C

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776. In which of the following will the corrosion of iron be most rapid :

A. In pure water

B. In pure oxygen

C. In air and moisture

D. In air and saline water

Answer: D

Watch Video Solution

777. In a concentration cell:

A. Two electrodes are of different are of different elements

B. Two electrolytic solutions of the same electrolyte but having different concentrations are used

C. Electrolyte of one strength but electrodes of two different concentration are used

D. Both (b) and (c)

Answer: D

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778. The electrolytic bath used in gold plating of copper articles contains :

A. Molten gold

B. $CuSO_4$

C. $AuCl_3$

D. $AuCI_3 + NaCN$

Answer: D

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779. If the cell reactin is spontaneous then :

A. $\Delta G^\circ is + ve$

B. $E^\circ_{red} is - ve$

C. $E^\circ_{red} is + ve$

D. $\Delta G is - ve$

Answer: D

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780. The cell reaction ,$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$ is best represented by :

A. $Cu / Cu^{2+} \mid \mid Zn^{2+} / Zn$

B. $Zn / Zn^{2+} \mid \mid Cu^{2+} / Cu$

C. $Cu^{2+} / Cu \mid \mid Zn / Zn^{2+}$

D. $PI / Zn^{2+} \mid \mid PI / Cu^{2+}$

Answer: B

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781. Mobility of H^{+} (in aq medium) is high because:

A. Of the small size of H^{+}

B. Of the high hydration energy of H^{+}

C. It exhibits a Grotthus type of conduction

D. Hydrogen is the lightest elecment

Answer: C

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782. A cell with two electrodes, one of grey tin and the other white tin, both dipping in solution of $(NH_4)_2SNCI_6$ showed zero emf at `18^@C. What conclusion may be draw from this "

A. The emf developed at the electrode -solution phase boundary cancels the normal emf

B. Grey tin being non-medallic ceases ti orivude a reversible electrode reaction

C. Electrode surface develops a ortective layer and the cell develops a very large internal resistance

D. The free energy chango of the cell becomes zero

Answer: D

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783. An ion is reduced to element when it absorbs 6×10^{20} electrons. The number of equivalent of ion is :

A. 0.10

B. 0.01

C. 0.001

D. 0.0001

Answer: C

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784. How many electrons are there in one coulomb:

A. `6.02xx10^(21)

B. 6.24×10^{18}

C. 6.24×10^{15}

D. 6.024×10^{16}

Answer: B

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785. The number of electrons passing per second through a cross-section of Cu wire carrying 10 ampere is:

A. 6×10^{19}

B. 8×10^{19}

C. 1×10^{19}

D. 1.6×10^{19}

Answer: A

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786. The reduction electrode potential E of $0.1 M solution of M^{+} ions (E^{o}(rp) = -2.36 V)$ is :

A. -2.41

B. $+2.41$

C. -4.82

D. None

Answer: A

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787. For reducing 1 mole of Fe^{2+} ions to Fe , the number of Faradays of electricity required are:

A. 2

B. 1

C. 2.5

D. 4.0

Answer: A

Watch Video Solution

788. A silver cup is plated with silver by passing 965 coulomb of electricity . The amount of Ag deposited is :

A. $1.08g$

B. $1.0002g$

C. $9.89g$

D. 107.89

Answer: A

Watch Video Solution

789. The same amount of electricity was passed through two cells containing molten Al_2O_3 and molten NaCl. If 1.8g of Al were liberated in one cell, the amonut of Na liberated in the other cell is :

A. $4.6g$

B. $2.3g$

C. $6.4g$

D. $3.2g$

Answer: A

Watch Video Solution

790. What is the charge in Coulombs on Cu^{2+} ion?

A. 3.2×10^{-19}

B. 2.3×10^{-12}

C. 0.23×10^{-19}

D. 0.32×10^{-19}

Answer: A

Watch Video Solution

791. The number of electrons required to deposit 1 g atom of $Al(at. Wt. = 27)$ from a solution of $AlCI_3$ are :

A. 1N

B. 2N

C. 3N

D. 4N

Answer: C

Watch Video Solution

792. The number of coulombs required for the deposition of$107.87g$ of silver is :

A. 96500

B. 48205

C. 19300

D. 10000

Answer: A

Watch Video Solution

793. Reaction taking place at anode in dry cell is :

A. $Zn^{2+} + 2e \rightarrow Zn(s)$

B. $Zn(s) \rightarrow Zn^{2+} + 2e$

C. $Mn^{2+} + 2e \rightarrow Mn(s)$

D. $Mn(s) \rightarrow Mn^{2+} + 2e$

Answer: B

Watch Video Solution

794. In an aqueous solution, hydrogen (H_2) will not reduce:

A. Heated cupric oxide

B. Heated ferric oxide

C. Heated stannic oxide

D. Heated aluminium oxide

Answer: D

Watch Video Solution

795. Which metal does not give the following reaction : $M +$ water or steam $\rightarrow$ metal oxide$+ H_2 \uparrow$

A. Iron

B. Sodium

C. Mercury

D. Magmesium

Answer: C

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796. Which metal is most readily corroded in moist air:

A. Copper

B. Iron

C. Silver

D. Nickel

Answer: B

Watch Video Solution

797. Which one will liberate Br_2 from KBr.

A. HI

B. I_2

C. CI_2

D. SO_2

Answer: C

Watch Video Solution

798. Which is not true for a standard hydrogen electrode :

A. The hydrogne ion cncentratin is 1 M

B. Temperature is $25^\circ C$

C. Pressure of hydrogen is atmosphere

D. It contains a metalli conductor which does not adsorn hydrgen

Answer: D

Watch Video Solution

799. The value of equilibrium constant fro a feasible cell reaction is :

A. < 1

B. Zero

C. $= 1$

D. > 1

Answer: D

Watch Video Solution

800. A galvanic cell is composed of two hydrogen electodes, one of which is a standard one . In which of the following solutins the other electrode be immersed to get maximum emf:

A. $0.1MHCI$

B. $0.1MCH_3COOH$

C. $0.1MH_3PO_4$

D. $0.1MH_2SO_4$

Answer: D

Watch Video Solution

801. Chlorine cannot displace :

A. Fluorine from NaF

B. Iodine from Nal

C. Bromine from NaBr

D. None

Answer: A

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802. The one that is a good conductor of electricity in the folowing list of solids is :

A. Sodium shloride

B. Graphite

C. Diamond

D. Sodium carbonate

Answer: B

Watch Video Solution

803. In the electrolysis of $CuCI_2$ solution using Cu electrodes the mass of cathode increases by 3.18 g. What happened at the other electrode:

A. 0.05 mble of Cu^{+2} ions passed into solution

B. 0.112litre of CI_2 was liberated

C. 0.56 litre O_2 was liberated

D. 0.1 mole of Cu^{2+} ions passed into the solution

Answer: A

Watch Video Solution

804. Number of Faraday required to liberate $8g$ of H_2 is :

A. 8

B. 16

C. 4

D. 2

Answer: A

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805. The weight ratio of Al and Ag deposited using the same quantity of curren is :

A. $9 : 108$

B. $2 : 12$

C. $108 : 9$

D. $3 : 8$

Answer: A

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806. 20g of chlorine are evolved in 6 hour from sodium chloride solution by the current of :

A. 5 ampere

B. 10 ampere

C. 2.5 ampere

D. 50 ampere

Answer: C

Watch Video Solution

807. What weight of copper will be depositeted by passing 2 faraday of electricty through a solution of Cu (II) salt:

A. $35.6g$

B. $63.5g$

C. $6.35g$

D. $3.56g$

Answer: B

Watch Video Solution

808. The weight ratio of Mg and Al deposited during the passage of same current through their molten salts:

A. $12:9$

B. $9:12$

C. $6:2$

D. $2:3$

Answer: A

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809. The number of electrons passing per second through a cross-section of copper wire carrying `10^(-6) ampere:

A. 6.2×10^{23}

B. 6.2×10^{12}

C. 6.2×10^{10}

D. None

Answer: B

Watch Video Solution

810.

$13.5 g of Al \geq t deposited when e \leq ctricity is pass through the solution of$

AICl_3`. The number of Faradays used are :

A. 0.50

B. 1.00

C. 1.50

D. 2.00

Answer: C

Watch Video Solution

811. If 1 faraday of electricity is passed through a solution of $CuSO_4$ the amount of copper deposited will be equal to its :

A. I mole of Cu

B. 1 g atom of Cu

C. 1 molecule of Cu

D. 1 g equivalent of Cu

Answer: D

Watch Video Solution

812. The ratio of weight of hydrogen and magnesium deposited by the same amonut of electrcity from H_2SO_4 and $MgSO_4$ in aqueous solution are :

A. $1:8$

B. $1:12$

C. $1:16$

D. None

Answer: D

Watch Video Solution

813. Chlorine gas is passed into a solution containig KF, KL and KBr and KBr and $CHCI_3$ is added . The intial colour in $CHCI_3$ layer is :

A. Violet due to frommation of I_2

B. Orange due to formation of Br_2

C. Colorless due to formation of F_2

D. No colour change due tono reaction

Answer: A

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814. Metals can be prevented from rusting by :

A. Connecting iror to more electropositive metal cathodic protection

B. Connecting iron to more electropositive metal anodic protection

C. Connecting iron to less electropositive metal anodic protection

D. Connecting iron to less electropositive metal cathodic protection

Answer: A

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815. For a given redox change, $E^{\circ}_{RP_2} + E^{\circ}_{OP_1}$ is equal to .... where 1 is oxidised and 2 is reduced :

A. Coulomb

B. Faraday

C. Ampere

D. Cell potential

Answer: D

Watch Video Solution

816. In an electrolytic cell the anode and cathode are respectively represented as :

A. Positive electrode , negative electrode

B. Negative electrode ,positive electrode

C. Positive and negative electrode both

D. None

Answer: A

Watch Video Solution

817. Stronger the oxidising agent , greater is the :

A. Reduction potential

B. Oxidation potential

C. Ionic behaviour

D. None

Answer: A

Watch Video Solution

818. Which does not oxidised by bromine water:

A. Fe^{2+} to Fe^{3+}

B. Cu^{+} toCu^{2+}

C. $Mn^{2+}$to MnO_4^-

D. Sn^{2+} to Sn^{4+}

Answer: C

Watch Video Solution

819. The standard H electrode is written as :

A. $Pt, H_2, H^+(a=1)$

B. $Pt(H_2)/H^+(a=1)$

C. $PtH_2(g)(1atm)/H^+(a+1)$

D. None

Answer: C

Watch Video Solution

820. The reduction potentials of four metals P, Q, R and S are -2.90,+.34,+1.20 and -0.76` respectively. Reactivity dereases in the order.

A. $P > Q > R > S$

B. $Q > P > R > S$

C. $R > Q > S > P$

D. $P > S > Q > R$

Answer: D

Watch Video Solution

821. When lead accumulator is charged it is :

A. An electrolytic cell

B. A galvanic cell

C. A Daniell cell

D. None of the above

Answer: A

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822. The reaction, $(1/2)Hg(g) + AgCl(s) = H^+(aq) + Cl^{-(aq)} + Ag(s)$ occurs in the gal vanic cell:

A. $AgIAgCI(s)IKCI(so\ln.)AgNO_3(so\ln.)IAg$

B. $PtIH_2(g)|HCI(slon.)|AgNO_3(slon.)Iag$

C. $PtH_2(g)|HCI(slon.)|AgCI(s) \mid Ag$

D. $Pt|H_2(g)|KCI(slon.)|AgCI(s)|Ag$

Answer: C

Watch Video Solution

823. Number of Faraday needed to deposit 0.1 mole of copper from Cu(II) sulphate solution are :

A. 0.1

B. 0.2

C. 0.05

D. 0.5

Answer: B

Watch Video Solution

824. The amount of sodium deposited by 5 ampere current for 10 minute from fused $NaCI$ is :

A. 0.715 g

B. $71.5g$

C. $5.17g$

D. $0.517g$

Answer: B

Watch Video Solution

825. On electrolysis , 1 mole of aluminium will be deposited from its molten salt by :

A. 1 mole of electrons

B. 2 mole of electrons

C. 3 mole of electrons

D. 4 mole of electrons

Answer: A

Watch Video Solution

826. 10^{-2} g atom of Ag can be oxidised to Ag^{+} during the electrolsis of $AgNO_3$ solution using silver electrode by:

A. 965 coulomb

B. 96500 coulomb

C. 9650 coulomb

D. 96.500 coulomb

Answer: A

Watch Video Solution

827. Number of faraday required to reduce a mole of Fe^{3+} to Fe^{2+} are:

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

828. The amount of silver deposited on passing 2 faraday of charge though an aqueous solution of $AgNO_3$ is :

A. 54 g

B. 108 g

C. 216 g

D. 324 g

Answer: C

Watch Video Solution

829. How many coulomb of electricity are consumed when 100 mA current is passed throught a solution of $AgNO_3$ for 30 minute during an electrolysis experiment:

A. 108

B. 18000

C. 180

D. 3000

Answer: C

Watch Video Solution

830. The amount of copper deposited by the passage of 96500 coulomb of electricity through copper sulphate solution is :

A. 2.0mole

B. 1.5 mole

C. 0.5 mole

D. 1.0 mole

Answer: C

Watch Video Solution

831. When 1 Faraday of electricity is passed through $CuSO_4$ solution, number of atoms formed is :

A. 6.02×10^{23}

B. 3.01×10^{23}

C. 2

D. 6.02×10^{23}

Answer: B

Watch Video Solution

832. Total charge on 1 mole of a monovalent metal ion is equal to :

A. 6.28×10^{18}coulomb

B. 1.6×10^{-19} coulomb

C. 9.65×10^{4} coulomb

D. None

Answer: C

Watch Video Solution

833. Faraday.s law of electrolysis fails when:

A. Temperature is increased

B. Inert electrodes are used

C. A mixture of electrolytes is used

D. In none of these cases

Answer: D

Watch Video Solution

834. A depolariser used in dry cell batteries is :

A. A mmonium chloride

B. Managanese dioxide

C. Potassium hydroxide

D. Sodium phosphate

Answer: B

Watch Video Solution

835. In electrolysis of a fused salt, the weight deposited on an electrode will not depend on:

A. Temperature of the bath

B. Current intensity

C. Electrochemical equivalent of ions

D. Time for electrolysis

Answer: A

Watch Video Solution

836. An electric current is passed through following aqueous solutions. Which one shall decompose:

A. Urea

B. Glucose

C. Silver nitrate

D. Ethyl alcohol

Answer: C

Watch Video Solution

837. The position of some metals in the electrochemical series in decreasing electropositive character is given as $Mg > Al > Zn > Cu > Ag$.What will happen if a copper spoon is used to stir a solution of aluminium nitrate:

A. The spoon will get coated with aluminium

B. An alloy of copper and aluminium is formed

C. The solution becomes blue

D. There is no reaction

Answer: D

Watch Video Solution

838. On electrolysing a solution of dilute H_2SO_4 between platinum electrodes, the gas evolved at the anode and cathode are respectively is :

A. SO_2 and O_2

B. SO_3 and H_2

C. O_2 and H_2

D. H_2 and O_2

Answer: C

Watch Video Solution

839. Among Na,Hg ,S,Pt and graphite which can be used as electrodes in electrolytic cells having aqueous solutions:

A. Na and S

B. Hg and Pt

C. $Na, Hg \text{ and } S$

D. `Hg,Pt and graphite

Answer: D

Watch Video Solution

840. If the current is passed into the solution of an electrolyte :

A. Anions move towards anode, cations towards cathode

B. Anoins and cations both move towards anode

C. Anions move towards cathode, ctions towards anode

D. No movement of ions takes place

Answer: A

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841. When same quantity of current is passed through two different electrolytes connected in series, the amount of products liberated at the electrodes are in the ratio of their.

A. At.no.

B. At.wt.

C. Sp.gravity

D. Eq.wt.

Answer: D

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842. The electrolysis of a solution resulted in the formation of H_2 at the cathode and Cl_2 at the anode. The liquid is :

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843. In electrolysis, oxidation takes place at:

A. Anode

B. Cathode

C. Both at the anode as well as cathode

D. The surface of electrolyte solution

Answer: A

Watch Video Solution

844. Which loses charge at catode:

A. Ions

B. Cations

C. Anions

D. Both anoions and cations

Answer: B

Watch Video Solution

845. In the electrolyses of $CuSO_4$ the reaction $Cu^{2+} + 2^{\circ -} \rightarrow Cu$, Takes place at :

A. Anode

B. Cathode

C. In solution

D. None

Answer: B

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846. A standard hydrogen electrode has zero electrode potential because :

A. Hydrogen is easiest to oxidise

B. This electrode potential is assumed to be zero

C. Hydrogne atom has only one electron

D. Hydrogen is the lightest element

Answer: B

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847. In an electrolytic cell current flows :

A. From cathode to anode in outer circuit

B. From anode to cathode outside the cell

C. From cathode to anode inside the cell

D. None

Answer: A

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848. In Dow.s method, sodium is prepared by the electrolysis of molten $NaCI$. The reaction at cathode is :

A. $2CI^{-\rightarrow}CI_2(g)+2e$

B. $Na^{+}+e\rightarrow Na(s)$

C. $Na^{+}(aq)+e\rightarrow Na^{+}+e$

D. $Na^{+}(aq)+e\rightarrow Na(s)$

Answer: B

Watch Video Solution

849. The ions discharged at anode by the electrolysis of very dilute H_2SO_4solution are:

A. H_3O^+

B. OH^-

C. HSO_4^-

D. SO_4^{2-}

Answer: B

Watch Video Solution

850. The reaction at cathode during the electrolysis of aqueous solution of $NaCI$ in Nelson cell is :

A. $2CI^{-\rightarrow}CI_2 + 2e$

B. $2H^+ + 2e \rightarrow H_2$

C. $2OH^{-\rightarrow}H_2 + O_2 + 2e$

D. $Na^{+} + e \rightarrow Na$

Answer: B

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851. In electrochemical corrosion of metals, the metal undergoing corrosion:

A. Acts as anode

B. Acts as cathode

C. Is reduced

D. Either of these

Answer: A

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852. The value of electronic charge is equal to :

A. $\frac{Faraday}{Av.\ Number}$

B. $Faraday \times Av.\ \nu mber$

C. $\frac{Av.\ \nu mber}{Faraday}$

D. None

Answer: A

Watch Video Solution

853. The number of electrons involved in redox reactions when a faraday of electricity is passed through an electrolyte in solution is :

A. 12×10^{46}

B. 96500

C. 8×10^{16}

D. `6.02xx10^(23)

Answer: D

Watch Video Solution

854. An electrolytec cell contains a solution of $AgNO_3$ and have platinum electrodes. A current is passed untill $1.6g$ of O_2 has been liberated at anode. The amount of silver peposited at cathode would be :

A. 107.88g

B. 1.6g

C. 0.8g

D. $21.60g$

Answer: D

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855. The standard oxidation potentials, E° for the half reactions are :

$Zn \rightarrow Zn^{2+} + 2e, E^\circ = +0.76V$

$Ag \rightarrow Ag^+ + e, E^\circ = -0.77V$

The standard emf of the cell,

$Ag^+ + Zn \rightarrow Zn^{2+} + Ag$ is :

A. $+1.53$

B. -1.53

C. $+0.01$

D. $+0.01$

Answer: A

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856. The solution of $CuSO_4$in which copper rod is immersed is diluted to 10 times, the reduction electrode potential :

A. Increases by 0.30 V

B. Decreases by $0.0.30V$

C. Increases by $0.059V$

D. Decreases by $0.059V$

Answer: B

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857. Deduce from the following E° values of half cells, what combination of two halt would resutlt in a cell with the largenst potential :

(i)$A + e \rightarrow A, E^{\circ} = -0.24V$

(ii) $B^{-+}e \rightarrow B^{2-}, E^{\circ} = +1.25V$

(iii) $C^{-+}2e \rightarrow C^{3-}, E^{\circ} = -1.25V$

(iv) $D + 2e \rightarrow D^{2-}, E^{\circ} = +0.68V$

A. (ii) and (iii)

B. (ii) and (iv)

C. (i) and (iii)

D. (i) and (iv)

Answer: A

Watch Video Solution

858. Deduce from the following E° values of half cells, what combination of two halt would resutlt in a cell with the largenst potential :

(i)$A \rightarrow A^{+} + e, E^{\circ} = +1.2V$

(ii) $B^{-} \rightarrow B + e, E^{\circ} = -2.1V$

(iii) $C \rightarrow C^{2+} + 2e, E^{\circ} = -0.38V$

(iv)$D^{2-} \rightarrow D^{-} + e, E^{\circ} = -0.59V$

A. (i) and (iv)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (ii)

Answer: D

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859. Deduce from the following E° values of half cells , what combination of two half cells would result in a cell with largest potential :

(i) $A^{3-} \rightarrow A^{2-} + e^{-}, E^{\circ} = 1.5V$

(ii) $B^{2+} + e^{- \rightarrow} B^{+}, E^{\circ} = -2.1V$

(iii)$C^{2+} + e^{- \rightarrow} C^{+}, E^{\circ} = +0.5V$

(iv)$D \rightarrow D^{2} + 2e^{-}, E^{\circ} = -1.5V$

A. $(i) \text{ and } (iii)$

B. $(i) \text{ and } (iv)$

C. $(ii) \text{ and } (iv)$

D. $(iii) \text{ and } (iv)$

Answer: C

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860. E° for $F_2 + 2e \rightarrow 2F^{-}$ is $2.8V$, $E^{\circ} f$ or $1/2F_2 + e \rightarrow F^{-}$ is :

A. $2.8V$

B. $1.4V$

C. $-2.8V$

D. $-1.4V$

Answer: A

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861. For the cell ,$Tl|Tl^{+}(0.001M)| \, | \, Cu, E_{cell} at 25^{\circ} C is 0.83V. E_{cell}$ can be increased :

A. By increasing [Cu^(2+)]`

B. By increasing $[Ti^{+}]$

C. By decrasing $[Cu^{2+}]$

D. None of the above

Answer: A

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862. How much will the reduction potential of a hydrogen electrode change when its solution initially at $pH = 0$ is neutralised to $Ph = 7$:

A. Increaase by $0.059V$

B. Decrease by $0.059V$

C. Increase by $0.41V$

D. Decreases by $0.41V$

Answer: D

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863. The charge for the reduction of 1 mole of $Cr_2O_7^{2-}$ ions to Cr^{3+} is :

A. 96500C

B. $2 \times 96500C$

C. $3 \times 96500C$

D. $6 \times 96500C$

Answer: D

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864. 10800 C of electricity on passing through the electrolyte solution deposited 2.977g of metal with atomic mass $106.4 gmol^{-1}$ the charge on the metal cation is :

A. $+4$

B. $+3$

C. $+2$

D. $+1$

Answer: A

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865. I coulomb of charge passes through solution of $AgNO_3$ and $CuSO_4$ connected in series and the concentration of two solution being in the ratio $1:2$. The ratio of amount of Ag and Cu deposited on Pt. electrode is :

A. $107.9 : 63.54$

B. $54 : 31.77$

C. $107.9 : 31.77$

D. $54 : 63.54$

Answer: C

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866. During electrolysis of H_2O , the molar ratio of H_2 and O_2 formed is:

A. $2:1$

B. $1:2$

C. $1:3$

D. $1:1$

Answer: A

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867. On passing 3 faraday of electricity through the three electrolytic cells connected in series containing Ag^{+}, Ca^{2+} and AI^{3+} ions respectively. The molar ratio in which the three metal ions are liberated at the electrodes is :

A. $1:2:3$

B. $3:2:1$

C. $6:3:2$

D. $3:4:2$

Answer: C

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868. The weight of silver $(eq. wt, = 108)$displaced by that quanitiy of current which displaced 5600 mL of oxygen at STP is:

A. $54g$

B. $108g$

C. $5.4g$

D. None of these

Answer: A

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869. The volume of oxygen at NTP Liberated by 5 ampere current flowing for 193 second though acidulated water is :

A. 56

B. 112

C. 224

D. 5.6

Answer: A

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870. Salts of A (atomic weight 7), B (atomic weight 27) and C (atomic weight 48) were electrolysed under identical condition using the same quantity of electricity. It was found that when 2.1 g of A was deposited, the eight of B and C deposited were 2.7 and 7.2 g. The valencies of A,B and C are respectively :

A. $3, 1 \text{ and } 2$

B. $1, 3$ and 2

C. $3, 1$ and 3

D. $2, 3$ and 2

Answer: B

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871. To produce 160 g of oxygen, the number of mole of water required to be electrolysed is :

A. 2.5

B. 5

C. 10

D. 20

Answer: C

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872. The weight of nickel $(at. wt. = 58.7)$ liberated by a current of 5 ampere flowing for193 second through $NiSO_4$ solution is :

A. $0.587g$

B. $5.87g$

C. $0.2935g$

D. $2.935g$

Answer: C

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873. Electrolytes when dissolved in water dissociate into ions, because :

A. They are unstable

B. The water dissolves them

C. The forces of repulsion increases

D. The forces of electrostatic attraction are broken down by water

Answer: C

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874. The metal that cannot be produced on reduction of is oxide by aluminium is :

A. K

B. Mn

C. Cr

D. Fe

Answer: A

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875. The best conductor of electricity is 1 M solution of :

A. CH_3COOH

B. H_2SO_4

C. H_3PO_4

D. Boric acid

Answer: B

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876. If mercury is used as cathode in the electrolysis of aqueous $NaCl$ solution, the ions dischaged at cathode are:

A. H^+

B. Na^+

C. OH^-

D. CI^-

Answer: B

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877. When sodium chloride solution is electrolysed, the gas that is liberated at the cathode is

A. Oxygen

B. Hydrogne

C. Chlorine

D. Air

Answer: B

Watch Video Solution

878. When electric current is passed through a cell having an electrolyte, the positive ions move towards the cathode and the negative ions towards the anode, if the cathode is pulled out of the solution:

A. The postive and the negative ions both will move towards the anode

B. The positive ions will start moving towards the anode,the negative ions will stop moving

C. The negative ions will conuinue to move towards the anode, the positive ions will stop moving

D. The positive ions and the negative ions will start moving randonly

Answer: D

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879. When a copper wire is immersed in a solution of $AgNO_3$ the colour of the, solution becomes blue because copper:

A. Forms a soluble complex with $AgNO_3$

B. Is oxidized to Cu^{2+}

C. Is reduced to Cu^{2-}

D. Splits up into atomic form and dessolves

Answer: B

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880. When an electric current is passed through an aqueous solution of sodium chloride :

A. H_2 is evolved at the anode

B. Oxygen is evolved at the cathode

C. Its pH progressively decreases

D. Its pH progressively inreases

Answer: D

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881. Four colourless salt solutions are placed in separate test tubes and a strip of copper is placed in each. Which solution finally turns blue:

A. $Pb(NO_3)_2$

B. $Zn(NO_3)_2$

C. $AgNO_3$

D. $Cd(NO_3)_2$

Answer: C

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882. If a strip of copper metal is placed in a solution of ferrous sulphate:

A. Copper will precipitate out

B. Iron will precipitate out

C. Both copper and iron will be dissolved

D. No reaction will take place

Answer: D

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883. The electric charge for electrode deposition of the gram equivalent of a substance is

A. 1 ampere per second

B. 96,500 coulomb per second

C. 1 ampere for 1 hour

D. Charge on 1 mole of electrons

Answer: D

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884. Which metal can deposit copper from copper sulphate solution:

A. Mercury

B. Iron

C. Gold

D. Paltinum

Answer: B

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885. A student made the following observations in the laboratroy:

(i) clean copper metla didn not react with 1 molar $Pb(NO_3)_2$ solution

(ii) Clean lead metal dissolved in a 1 molar $AgNO_3$ solution and crystals of Ag metal appeared

(iii)Clean silver metal did not react with 1 molar $Cu(NO_3)_2$ soution

The order of decreasing reducing character of th three metals is :

A. Cu, Pb, Ag

B. Cu, Ag, Pb

C. Pb, Cu, Ag

D. Pb, Ag, Cu

Answer: C

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886. Two platinum electrodes were immersed in a solution of cupric and electric current passed through the solution. After some tiem it was found that the colour of copper sulphate disappeared with evolution of gas at the electrode. The colurless solution corttains :

A. Platinum sulphate

B. Copper hydroxide

C. Copper sulphate

D. Sulphuric acid

Answer: D

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887. Faraday's law of electrolysis are related to

A. Atomic number of the cation

B. Atomic number of the anion

C. Equivalent weight of the electroyte

D. Speed of the cation

Answer: C

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888. Electrolysis of aqueous HCl solution produces

A. H_2 gas at the anode

B. H_2 gas at the cathode

C. CI_2gas at the cathode

D. CI_2 and O_2 gases both at the anode

Answer: B

Watch Video Solution

889. A solution of sodium sulphate in water is electrolysed using inert electrodes. The products at the cathode and anode are respectvely:

A. H_2, O_2

B. O_2H_2

C. O_2, Na

D. O_2, SO_2

Answer: A

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890. Identification of anode and cathode in an electrochemical cell is made by the use of :

A. Galvanometer

B. Salt bridge

C. Valtameter

D. None

Answer: A

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891. During electrolysis of a $NaCI$ a part of the reaction is $Na^{+} + e^{-} \rightarrow Na$

This cannot be termed as :

A. Oxidation

B. Reduction

C. Deposition

D. Cathode reaction

Answer: A

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892. The cathodic reaction in electrolysis of dilute sulphuric acid with platinum electrode is :

A. Oxidation

B. Reduction

C. Both oxidation and reduction

D. Neutralization

Answer: B

Watch Video Solution

893. 2.5 Faraday of electricity are passed through a solution of a solution of $CuSO_4$. The Number of gram equivalents of copper deposited on the cathode are :

A. 1

B. 2

C. 2.5

D. 1.25

Answer: C

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894. The standard cell potential for the cell is , $Zn|Zn^{2+}(1M)||Cu^{2+}(1M)|Cu$

$\left[E^{\circ} f \text{ or } Zn^{2+}/Zn = -0.76V, E^{\circ} f \text{ or } Cu^{2+}/Cu = +0.34V\right]$

A. $-0.76 + 0.34 = -0.42V$

B. $-0.34 - (-0.76) = +0.42V$

C. $0.34 - (-0.76) = +1.10V$

D. $-0.76 - (+.34) = -1.10V$

Answer: C

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895. Silver is removed electrolytically from $200mLofa0.1Nsolutionof$ AgNO_3`by a current of 0.1 ampere. Hoe long will it take to remove half of the silver from the solution:

A. 10 sec

B. 16 sec

C. 100 sec

D. 9650 sec

Answer: D

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896. The atomic weight of Al is 27. When a current of 5 Faraday is passed through a solution of Al^{3+} ions, the wt. of Al depostited is :

A. 27g

B. 36 g

C. 45 g

D. 9 g

Answer: C

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897. Maximum number of mole of oxygen gas that can be obtained by the electrolytic decomposition of 90 g of water will be

A. 1

B. 2.5

C. 5

D. 9

Answer: B

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898. For the reaction at 298K,

$$Ag^{+}(aq) + e^{-} = Ag(s), E^{\circ} = +0.80V$$

$$Sn^{2+}(aq) + 2e^{-} = Sn(s), E^{\circ} = -0.14V$$

what is the emf of the cell reprsented as $Sn|Sn^{2+}||Ag^{+}|Ag$, if each ion having unit concentration:

A. 0.66V

B. 0.80V

C. 0.94V

D. 1.08V

Answer: C

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899. What is the potential of the cell containing two hydrogen electrodes as represented below?

$PT, \frac{1}{2}H_2(g)\left|H^+(10^{-8}M)\right|\left|H^+(0.001M)\right|\frac{1}{2}H_2(g)$Pt:

A. $-0.295V$

B. $-0.0591V$

C. $0.295V$

D. $0.0591V$

Answer: C

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900. When an electric current is passed through acidified water, 112ml of H_2 gas collected at NTP at cathode in 965sec. the current strength is

A. 1.0

B. 0.5

C. 0.1

D. 2.0

Answer: A

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901. Chromium plating can involve the electrolysis of an electrolyte of an acidified mixuture of chromic acid and chromium sulphate . If during electrolysis the article being plated increases in mass by 2.6 g and 0.6 dm3 of oxygen are evolved at an inert anode, the oxidation state of chromium ions being discharged must be:

(assuming `Cr=52) and I mole of gas at room temperature and pressure occupies a volume of 24 dm^3)

A. -1

B. Zero

C. $+1$

D. $+2$

Answer: D

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902. A current of I ampere was passed for t second through three cell P,Q and R connected in series. These contains respectively silver nitrate. mercuric nitrate and mercurous nitrate. At the cathode of the cell P, 0.216 g of Ag was deposited. The weights of mercury deposited in the cathode of Q and R respectively are :

A. $0.4012 \text{ and } 0.8024g$

B. $0.4012 \text{ and } 0.2006g$

C. $0.2006 \text{ and } 0.4012g$

D. $0.1003 \text{ and } 0.2006g$

Answer: C

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903. An electric current of c ampere was passed through a solution of an electrolyte for t second depositing P g of the metal M on the cathode. The equivalent weight E of the metal will be :

A. $E = \frac{c \times t}{P \times 96500}$

B. $E = \frac{c \times P}{t \times 96500}$

C. $E = \frac{96500 \times P}{c \times t}$

D. $E = \frac{c \times t \times 96500}{P}$

Answer: C

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904. The electrochemical equivalent of silver is 0.0011180g . When an electric current of 0.5 ampere is passed through an aqueous silver nitrate solution for 200 sec, the amount of silver deposited is :

A. $1.1180g$

B. $0.11180g$

C. $5.590g$

D. $0.5590g$

Answer: B

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905. Two electrolytic cells, one containing acidified ferrous chloride and another acidified ferric chloride are connected in series. The ratio of iron deposited at cathodes in the two cells when electricity is passed through the cell will be:

A. $3:1$

B. $2:1$

C. $1:1$

D. $3:2$

Answer: D

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906. 1.8 g of metal were deposited by a current of 3 ampere for 50 minute. The equivlent wt. of metal is :

A. 20.5

B. 25.8

C. 19.3

D. 30.7

Answer: C

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907. A current of 9.65 ampere folwing for 10 minute depostits 3.0 g of a metal. The equivalent weight of the metal is :

A. 10

B. 30

C. 50

D. 96.5

Answer: C

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908. Consider the reaction,

$M^{n+}(aq) + \text{ne} \rightarrow M(s)$

The standard reduction potential value of the metals M_1, M_2 and M_3 are -0.34 V,-3.05 V and -1.66V respectively.The order of their reducing power will be :

A. $M_1 > M_2 > M_3$

B. $M_3 > M_2 > M_1$

C. $M_1 > M_3 > M_2$

D. $M_2 > M_3 > M_1$

Answer: D

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909. The hydrogen electrode is dipped in solution of pH $= 3$ at $25^\circ C$.

The reduction potential of the cell would be:

A. $0.177V$

B. $-0.177V$

C. $0.087V$

D. $0.059V$

Answer: B

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910. The same amount of electricity was passed through two separate electrolyic cells containing solutions of nickel nitrate and chromium nitrate respectively.If 0.3 g of nickel was deposited in the first cell, the amount of chormium deposited is :

(at. wt. $Ni = 59, Cr = 52$)

A. $0.1g$

B. $0.17g$

C. $0.3g$

D. $0.6g$

Answer: B

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911. The standard emf for the cell reaction, $Zn + Cu^{2+} = Cu + Zn^{2+}$ is 1.10 volt at $25^{\circ} C$. The emf for the cell reaction, when $0.1 M Cu^{2+}$ and $0.1 M Zn^{2+}$ solutions are used , at$25^{\circ} C$ is:

A. $1.10 V$

B. $1.110 V$

C. $-1.10 V$

D. $-0.110 V$

Answer: A

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912. Given electrode potentials are:

$Fe^{3+} + e \to Fe^{2+}, E^{\circ} = 0.771 V$

$I_2 + 2e \to 2I^{-}, E^{\circ} = 0.536 V$

E° cell for the cell reaction,

$2Fe^{3+} + 2I^{- \to} 2Fe(2+) + I_2$is:

A. $(2 \times 0.7710.536) = 1.006V$

B. $(0.771 - 0.5 \times 0.536) = 0.503V$

C. $0.771 - 0.536 = 0.235V$

D. $0.536 - 0.771 = -0.236V$

Answer: A

Watch Video Solution

913. The equation, E^@ =(RT)/(nF)In K_c` is called :

A. Gibb's equatin

B. Gibb's-Helmholtz equation

C. Nernest equation

D. van der Waals' equation

Answer: C

Watch Video Solution

914. On the basis of position in the electrochemial series, the metal does not displace hydrogen from water and acids is :

A. Hg

B. Al

C. Pb

D. Ba

Answer: A

Watch Video Solution

915. During the charging of lead storage battery, the reaction at anode is represented by:

A. $Pb^{2+} + SO_4^{2-} \rightarrow PbSO_4$

B. $PbSO_4 + H_2O \rightarrow PbO_2 + SO_4^{2-} + 2H^+$

C. $Pb \rightarrow Pb^{2+} + 2e$

D. $Pb^{2+} + 2e \rightarrow Pb$

Answer: B

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916. If a salt bridge is removed from the two half cell, the voltage:

A. Drops to zero

B. Does not change

C. Increases gradually

D. Increases rapidly

Answer: A

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917. The calomel electrode is a:

A. Standard hydrogen electrode

B. Reference electrode

C. Platinum electrode

D. Mercury electrode.

Answer: B

Watch Video Solution

918. A gas X at 1 atm is bubbled through a solution containg a mixture of 1 M Y^{-} and 1M Z^{-} at $25^{\circ}C$. If the reduction potential of $Z > Y > X$, then :

A. Y will oxidise X and not Z

B. Y will oxidise Z and not X

C. Y will oxidise both X and Z

D. Y will reduce both X and Z

Answer: A

Watch Video Solution

919. In an aqueous solution, hydrogen (H_2) will not reduce:

A. $\left(Fe^{3+}\right.$

B. Cu^{2+}

C. Zn^{2+}

D. Ag^{+}

Answer: C

Watch Video Solution

920. If 1 faraday of electricity is passed through a solution of $CuSO_4$ the amount of copper deposited will be equal to its :

A. Gram equivalent weight

B. Gram molecular weight

C. Atomic weight

D. Electrochemical equivalent

Answer: A

Watch Video Solution

921. I faraday of electricity will liberate 1 g atom of the metal from the solution of :

A. $NaCI$

B. $BaCI_2$

C. $CuSO_4$

D. $AICI_3$

Answer: A

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922. Solid $NaCl$ is bad conductor of electricity because :

A. In solid there are no ions

B. Solid NaCI is convalent

C. In solid NaCI, there is no velocity of ions

D. None

Answer: C

Watch Video Solution

923. A fuel cell is :

A. The voltic cells in which continuous supply of fuels are send at anode to give oxidation

B. The voltic cell in which fuels such as,CH_4H_2, CO are used up at anode

C. It involves the reaction of$H_2 - O_2$ fuel cell such as :

Anode : $2H_2 + 4OH^{- \rightarrow} 4H_2O(l) + 4e$

Cathode:$O_2 + 2H_2O(l) + 4e \rightarrow 4OH^-$

D. All

Answer: D

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924. The standard reduction potential values of three metallic cations X, Y and Z are $0.52, \ -3.03$ and $-1.18V$ 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

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925. Which represents a concentration cell:

A. $PtH_2|HCI||HCI|PtH_2$

B. (b) $PtH_2|\overset{c_1}{HCl}||\overset{c_2}{Cl_2}Pt$

C. (c) $Zn|\overset{c_1}{Zn^{2+}}||Cu^{2+}|Cu$

D. $Fe|Fe^{2+}||Cu^{2+}|Cu$

Answer: A

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926. Aqueous solution of HCl conducts electricity because :

A. It undergoes ionisation

B. It associates

C. Forms hydrogen bonds

D. None

Answer: A

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927. When an electrolyte solution conducts electricity, current is carried out by:

A. Electrons

B. Cations and anions

C. Neutral atoms

D. None

Answer: B

Watch Video Solution

928. The reaction taking place at anode when an aqueous solution of $CuSO_4$ is electrolysed using inert Pt electrode:

A. $2SO_4^{2-} \rightarrow S_2O_3^{2-} + 2e$

B. $Cu^{2+} + 2e \rightarrow Cu$

C. $2H_2O \rightarrow O_2 + 4H^+ + 4e$

D. $2H^+ + 2e \rightarrow H_2$

Answer: C

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929. In the electrolysis of which solution, OH^- ions are discharged in preference to CI^- ions:`

A. Dilute NaCl

B. Very dilute NaCl

C. Fused NaCl

D. Solid NaCl

Answer: B

Watch Video Solution

930. Which reaction occurs at cathode during electrolysis of fused lead bromide :

A. $Pb \rightarrow Pb^{2+} + 2e$

B. $Br + e \rightarrow Br^{-}$

C. $Br^{-} \rightarrow Br + e$

D. $Pb^{2+} + 2e \rightarrow Pb$

Answer: D

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931. The process in which chemical change accompanies the passage of current is called :

A. Conduction

B. Matallic conduction

C. Electrolytic conduction

D. Non- electrlytic condution

Answer: C

Watch Video Solution

932. Which is correct about fuel cells :

A. Cells continuously run as long as fuels are supplied

B. These are more efficient and free from pollution

C. These are used to provide power and drinking water to astronauts in space programme

D. All

Answer: D

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933. Calculate the volume of hydrogen at NTP obtained by passing a current of 0.4 ampere through acidified water for 30 minute:

A. 0.0836 litre

B. 0.1672 litre

C. 0.0432 litre

D. 0.836 liter

Answer: A

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934. During electrolysis of aqueous solution of NaCl at which electrode chlorine is liberated.

A. Anide

$Na^{+} + e \rightarrow Na$ Cathode

$CI^{-} \rightarrow \frac{1}{2} CI + e$

B. Anide

$Na \rightarrow Na^{+} + e$ Cathode

$\frac{1}{2} CI_2 + e \rightarrow CI^{-}$

C. Anide

$CI^{-} \rightarrow \frac{1}{2} CI_2 + eNa^{+} e$ Cathode

$Na^{+} e \rightarrow Na$

D. Anide

$\frac{1}{2} CI_2 + e \rightarrow CI$ Cathode

$Na \rightarrow Na^{+} + e$

Answer: C

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935. At $25^{\circ}C$, the standard emf of cell having reactions involving two electron change is found to be $0.295V$. The equilibrium constant of the reaction is :

A. 29.5×10^{-2}

B. 10

C. 10^{10}

D. 29.5×10^{10}

Answer: C

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936. The standard reduction potentials of Cu^{2+}/Cu and Cu^{2+}/Cu^{+} are 0.337 and 0.153 V respectively.The standard electrode potential of Cu^{+}/ Cu half cell is :

A. $0.184V$

B. $0.827V$

C. $0.521V$

D. $0.490V$

Answer: C

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937. The emf of the cell,

$Zn\left|Zn^{2+}(1M)\right|\left|Cu^{2+}\right|Cu(1M)$ is 1.1 volt, if the standard reduction potential of $Zn^{2+} \mid Zn$ is -0.78volt,what is the oxidation potential of $Cu \mid Cu^{2+}$?

A. $+1.86V$

B. $0.32V$

C. $-0.32V$

D. $-1.86V$

Answer: C

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938. For I_2+2e $\rightarrow 2I^-$, standard reduction potential $= +0.54$ volt. For $Br^- \rightarrow Br_2 + 2e^-$, standard oxidation potential $= -1.09$ volt. For $Fe \rightarrow Fe^{2+} + 2e^-$, standard oxidation potential $= +0.44$ volt. Which of the following reactions is non-spontaneous :

A. $Br_2 + 2I^{- \rightarrow} 2Br^{- +} I_2$

B. $Fe + Br_2 \rightarrow Fe^{2+} + 2Br^-$

C. $Fe + I_2 \rightarrow Fe^{2+} = 2I^-$

D. $I_2 + 2Br^{- \rightarrow} 2I^{- +} Br_2$

Answer: D

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939. For the cell prepared from electrode A and B: Electrode $A : Cr_2O_7^{2-} \mid Cr^{3+}, E^{\circ}_{red} = +1.33V$ and Electrode $B : Fe^{3+}/ Fe^{2+}, E^{\circ}_{red} = 0.77V$. Which of the following statements are correct :

A. The electrons will flow from B to A when connection are made

B. The emf of the cell will be 0.56V

C. A will be positive electrode.

D. All of these

Answer: D

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940. The following facts are available : $2A^{-+}B_2 \rightarrow 2B^{-+}A_2, 2C^{-+}B_2 \rightarrow$ No reaction , $2D^{-+}A_2 \rightarrow 2A^{-+}D_2$.Which of the following statement is correct :

A. $E^{\circ}_{C^I C_2} > E^{\circ}_{B^- I B_2} > E^{\circ}_{A^- I A_2} > E^{\circ}_{D^- I D_2}$

B. $E^{\circ}_{C^I C_2} < E^{\circ}_{B^- I B_2} < E^{\circ}_{A^- I A_2} < E^{\circ}_{D^- I D_2}$

C. $E^{\circ}_{C^I C_2} < E^{\circ}_{B^- I B_2} > E^{\circ}_{A^- I A_2} > E^{\circ}_{D^- I D_2}$

D. $E^{\circ}_{C^I C_2} > E^{\circ}_{B^- I B_2} < E^{\circ}_{A^- I A_2} < E^{\circ}_{D^- I D_2}$

Answer: B

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941. Given that $E_{Fe^{3+}|Fe}$ and $E^{\circ}_{Fe^{2}|Fe}$ are $-0.36V$ and$-0.439V$, respectively.The value of $E^{\circ}_{Fe^{3+} fe^{2+}}$ would be:

A. $(-36-0.439)V$

B. $[3(-0.36)+2(-0.439)]V$

C. $(-0.36 + 0.439)V$

D. $[3(-0.36) - 2(-0.439)]V$

Answer: D

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942. The standard oxidation potentials of the electrodes $Ag|Ag^{+}, Sn|Sn^{2+}, Ca|Ca^{2+}, Pb|Pb^{2+}$ are $-0.8, 0.136, 2.866$and $0.126V$ respectively. The most powerful oxidising agent among these metal ions is :

A. Pb^{2+}

B. Ca^{2+}

C. Sn^{2+}

D. Ag^{+}

Answer: D

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943. A current is passed through two valtameters connected in series. The first voltameter contains XSO_4(aq) while the second voltameter contains $Y_2SO_4(aq)$.The relative masses of X and Y are in the ratio of 2:1.The ratio of the mass of X liberated to the mass of Y liberated is :

A. $1:1$

B. $1:2$

C. $2:1$

D. None of these

Answer: A

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944. The time required to coat a metal surface of $80cm^2$ with 5×10^{-3} cm thick layer of silver (density $10.5gcm^{-3}$ with th passage of 3A current through a silver nitrate solution is :

A. 115 sec

B. 125 sec

C. 135 sec

D. 145 sec

Answer: B

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945. A hydrogen electrode placed in a buffer solution of CH_3COONa and acetic acid in the ratio.s$x : y$ and $y : x$ has electrode potential values E_1 volt and E_2 volt respetively at $25^\circ C$ the pKa values of acetic acid is (E_1 and _2 are oxidation potential):

A. $(E_1 + E_2) / (0.118)$

B. $\frac{E_2 + E_1}{0.118}0$

C. $-(E_1 + E_2) / (0.118)$

D. $(E_1 + E_2) / (0.118)0$

Answer: A

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946. The amount of energy expanded during the passage of one ampere current for 100 second under a potential of 115 V is:

A. $20kJ$

B. $11.5kJ$

C. $115kJ$

D. $0.115kJ$

Answer: B

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947. The cell reaction for the given cell is :

$Pt(H_2)|pH = 2||pH = 3|Pt(H_2)$

$$Pt(H_2)\,|\,pH=2\,||\,pH=3\,|\,Pt(H_2)$$

$P_1 = 1$ atm $\qquad\qquad\qquad\qquad$ $P_2 = 1$ atm

A. Spontaneous

B. Non-spontaneous

C. In equilibrium

D. Either of these

Answer: B

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948. The cell reaction for the given cell is spontaneous if :

$Pt(H_2)|H^{=}(1M)||H^{+}(1M)|Pt(H_2)$

$$Pt(H_2) \mid H^+(1M) \parallel H^+(1M) \mid Pt(H_2)$$

P_1 P_2

A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_1 = 1atm$

Answer: A

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949. The cell reaction for the given cell is spontaneous if :

$Pt|Cl_2|CI^-(1M)||CI^-(1M)|Cl_2|Pt$

$$PtCl_2 \mid Cl^-(1M) \parallel Cl^-(1M) \mid PtCl_2$$

P_1 P_2

A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_2 = 1$ atm

Answer: B

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950. Passage of threee faraday of charge through aqueous solution of $AgNO_3, CuSO_4, Al(NO_3)_3$ and $NaCl$ will deposit metals at the cathode in the molar ratio of :

A. $1:2:3:1$

B. $6:3:2:6$

C. $6:3:0:0$

D. $3:2:1:0$

Answer: C

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951. The approximate emf of a dry cell is :

A. $2.0V$

B. $1.2V$

C. 6V

D. 1.5V

Answer: D

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952. Which gains electrons more easily :

A. H^{+}

B. Na^{+}

C. K^{+}

D. Mg^{2+}

Answer: A

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953. Which will increase the voltage of the cell

$Sn(s) + 2Ag^{+}(aq) \rightarrow Sn^{2+}(aq) + 2Ag(s)$:

A. Increase in size of the silver rod

B. Increase in the concentration of Sn^{2+} ions

C. Increase in the concentration of Ag^{+} ions

D. None

Answer: C

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954. During electrolysis of fused CaH_2, H_2 is liberated at :

A. Anode

B. Cathode

C. Either electrode

D. Not at all

Answer: A

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955. Which defines the standard reduction electrode potential of Zn^{2+} ions :

A. $Zn^{2+}(aq) + 2e \rightarrow Zn(s), \left[Zn^{2+}\right] = 1M$

B. $Zn(g) \rightarrow Zn^{2+} + 2e, \left[Zn^{2+}\right] = 1M$

C. $Zn6(2+)(aq) \rightarrow Zn(s) + 2e, \left[Zn^{2+}\right] = 1M$

D. $Zn^{2+}(g) \rightarrow Zn(s) - 2e, \left[ZN^{2+}\right] = 1M$

Answer: A

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956. In which cell, electrical energy is converted into chemical energy:

A. Water voltameter

B. Silver voltameter

C. Coulmeter

D. Either of these

Answer: D

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957. E° for $Fe^{2+}+2e\rightarrow Fe$ is -0.44 volt and E° for $Zn^{2+}+2e\rightarrow Zn$ is -0.76 volt thus:

A. Zn is more electropositive than Fe

B. Fe is more electropositive than Zn

C. Zn is more electronegative

D. None

Answer: A

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958. In a galvanic cell, which is wrong :

A. Anode has negative polarity

B. Cathode has positive polarity

C. Reduction takes place at anode

D. Reduction takes place at cathode

Answer: C

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959. Using same quantity of current , which among `Na, Mg and Al is deposited more during electrolysis of their molten salt :

A. Na

B. Mg

C. Al

D. All in same amount

Answer: A

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960. A metal having negative reduciton potential when dipped in the solution of its ow ions, has a tendency:

A. To pass into the solution

B. To be deposited from the solution

C. To become electrically positive

D. To remain neutral

Answer: A

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961. In electrochemical corrosion of metals, the metal undergoing corrosion:

A. Acts as anode

B. Acts as cathode

C. Undergoes reduction

D. None

Answer: A

Watch Video Solution

962. The metal which cannot liberate H_2 from hydrochloric acid is :

A. Zn

B. Cu

C. Mg

D. Al

Answer: B

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963. $KCl(aq)$ cannot be used as a salt bridge for the cell $Cu(s)|CuSO_4(aq)||AgNO_3(aq)|Ag(s)$ because :

A. $CuCI_2$ is precipitated

B. CI_2 gas is given out

C. $AgCI$ is precipitated

D. All

Answer: C

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964. The calomel electrode is reversible with respect to:

A. Hg_2^{2+}

B. H^+

C. Hg^{2+}

D. CI^-

Answer: A

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965. Standard reduction potential of an element is equal to:

A. $+1 \times$ its reduction potential

B. $-1XX$ its standard oxidation potential

C. $0.00V$

D. $+1 \times$ its standard oxidation potential

Answer: B

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966. Beryllium is placed above magnesium in the II group. Beryllium dust, therefore, therefore, when added to $MgCI_2$ solution will:

A. Have no effect

B. Precipitate Mg metal

C. Precipitate MgO

D. Lead to dissolution of Be metal

Answer: A

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967. For the cell $Zn|Zn^{2+}||Cu^{2+}|Cu$ if the concentration of Zn^{2+} and Cu^{2+} ions is doubled, the emf of the cell:

A. Doubles

B. Reduces of half

C. Remains same

D. Becomes zero

Answer: C

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968. Copper can be deposited from acidified copper sulphate and alkaline cuprous cyanide. If the same current is passed for a definite time:

A. The amount of copper deposited from acidic copper sulphate will be higher

B. The amount of copper deposited from alkaline cuprous cyanide will be higher

C. The same amount of copper will be deposited

D. None

Answer: B

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969. A cell necessarily does not contain:

A. An anode

B. A cathode

C. An electolyte or a fuel

D. A porous diaphagm

Answer: D

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970. Lithium is generally used as an electrode in high energy density batteries. This is because:

A. Lithium is the lightest element

B. Lithium has quite highnegative reduction potential

C. Lithium is quite reactive

D. Lithium does not corrode easily

Answer: B

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971. Cu (II) sulphate solution is treated separately with KCl and KI In which case, Cu^{2+} be reduced to Cu^{+}:

A. With KCl

B. With KI

C. With both (a) and (b)

D. None

Answer: B

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972. Which process occurs in the electrolysis of aqueous solution of nickel chloride at nickel anode:

A. $Ni^{2+} + 2e \rightarrow Ni$

B. $2H^{+} + 2e \rightarrow H_2$

C. $2CI^{\rightarrow} CI_2 + 2e$

D. $Ni \rightarrow Ni^{2+} + 2e$

Answer: D

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973. In aqueous solution, weak electrolytes dissociates:

A. Completely

B. To a slight extent

C. Almost completely

D. To more the 80%

Answer: B

Watch Video Solution

974. Which reaction does not takes place at cathode ?

A. $CI^{-} \to CI + e$

B. $Ag^{+} + e \to Ag$

C. $Cu^{+2} 2e \to Cu$

D. $H^{+} e \to H$

Answer: A

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975. The electroplating with chromium is undertaken because :

A. Electrolysis of chromium is easier

B. Chromium can from alloys with other metals

C. Chromium gives a protective and decorative coating to the base metal

D. Of high reactivity of chromium metal

Answer: C

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976. For a given cell reaction ,

$Cr + 3H_2O + OCI^{- \rightarrow} Cr^{3+} + 3CI^{-6}OH^{-}$, the species undergoing reduction is :

A. Cr

B. Cr^{6+}

C. OCI^{-}

D. CI^{-}

Answer: C

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977. Molten $NaOH$ conducts electricity , because$NaOH$ is :

A. A non-electrolyte

B. A strong electrolyte

C. A weak electrolyte

D. A non-polar compound

Answer: B

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978. The standard reduction potentials of the metals A,B and C are $0.68, \; -2.50$ and $\; -0.50V$ respectively. The order of their reducing power is :

A. $A > B > C$

B. $A > C > B$

C. $C > B > A$

D. $B > C > A$

Answer: D

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979. If the half cell reaction $A + e \rightarrow A^{-}$ has a large negative reduction potential, it follows that :

A. A is readily reduced

B. A is readily oxidised

C. A^{-} is readily reduced

D. A^{-} is readily oxidised

Answer: D

Watch Video Solution

980. Pure water does not conduct electricity because it is :

A. Neutral liquid

B. Low boiling b. pt. liquid

C. Almost non-ionised

D. None

Answer: C

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981. An aqueous solution of an electrolyte:

A. Conducts electricity without any chemical change

B. Conducts electricity with chemical decomposition

C. Is an ensulator

D. All are correct

Answer: B

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982. Which porcess involves corrosion ?

A. Brown deposits on iron articles

B. Green deposits on battery terminals

C. Black deposits on silver coin

D. All of these

Answer: D

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983. The metal that cannot be obtained by electrolysis of the aqueous of its salts are:

A. Ag

B. Cr^{-}

C. Cu

D. Al

Answer: D

Watch Video Solution

984. Water is a non-electrolyte but conducts electricity on dissolving a small amount of :

A. O_2

B. Sugar

C. Acetone

D. NaCl

Answer: D

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985. Rust is a mixture of :

A. FeO and $Fe(OH)_2$

B. FeO and Fe$(OH)_3$

C. Fe_2O_3 and $Fe(OH)_3$

D. Fe_3O_4 and $Fe(OH)_3$

Answer: C

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986. In a salt bridge,KCI is used because:

A. It is an electrolyte

B. It is good conductor of electricity

C. The transport number of K^{+} and CI^{-} ions are nearly same or both have same ionic mobility

D. Cu, Hg, Ag

Answer: C

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987. A solution containing one mole per litre each of $Cu(NO_3)_2$, $AgNO_3$, $Hg_2(NO_3)_2$ and $Mg(NO_3)_2$ is being electrolysed by using inert electrodes. The values of standard electrode potentials in volt (reduction potentials) are,

$Ag|Ag^{+} = 0.80.2Hg|Hg_2^{2+} = 0.79, Cu \mid Cu^{2+} = +0.34$ and $Mg^{2+} = -2.37$

With increasign voltage, the sequence of deposition of metals on the cathode will be :

A. Ag, Hg , Cu,Mg

B. Mg, Cu, Hg, Ag

C. Ag, Hg, Cu

D.

Answer: C

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988. In a galvanic cell energy changes occurs as:

A. Chemical energy $\rightarrow$ Electrical energy

B. Electrical energy $\rightarrow$ Electrical energy

C. Chemical energy $\rightarrow$ Internal energy

D. Internal energy $\rightarrow$ Electric energy

Answer: A

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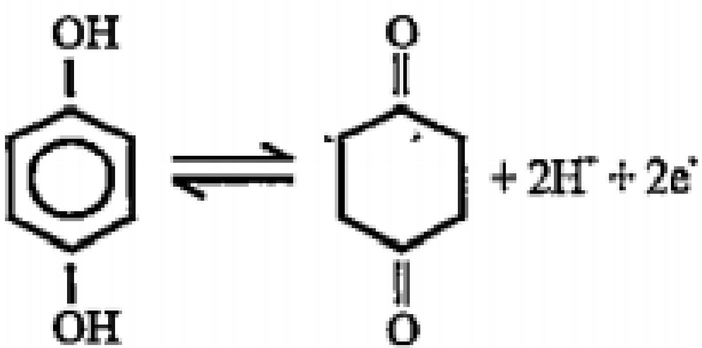
989. $At pH = 2, E^{\circ}_{\text{Quinhydrone}} = 1.30 V, E_{\text{Quinhydrone}}$ will be:



A. 1.36V

B. 1.30V

C. 1.42V

D. 1.20V

Answer: C

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990. The passage of electricity in the Daniell cell when Zn and Cu electrodes are connected :

A. From Cu toZn inside the cell

B. From Cu to Zn outside the cell

C. From Zn to Cu outside the cell

D. None

Answer: B

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991. A correct electrochemical series can be obtained from K,Ca,Na,Al,Mg,Zn,Fe,Pb,H,Cu,Hg,Ag,Au by interchanging:

A. Al and Mg

B. Zn and Fe

C. Zn and Pb

D. Pb and H

Answer: A

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992. Indicator electrode is :

A. SHE

B. Calomel electrode

C. Ag / Ag Cl electrode

D. Quinhydrone electrode

Answer: D

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993. When Zn piece is kept in$CuSO_4$ solution copper gets prectipitated because :

A. Standard reduction potential of zinc is more than copper

B. Standard reduction potential of zinc is less than copper

C. Atomic number of zinc is largest than copper

D. Atomic number of zinc is lower than copper

Answer: B

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994. The standard oxidation potentials of Zn and Ag in water at $25^\circ C$ are.

$Zn(s) \rightarrow Zn^{2+} = 2e, E^\circ = 0.76V$

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

Which reaction actually takes place:

A. $Zn(s) + 2Ag^{+}(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$

B. $Zn^{2+}(aq) + 2Ag(s) \rightarrow 2Ag^{+}(aq) + Zn(s)$

C. $Zn(s) + 2Ag(s) \rightarrow Zn^{2+}(aq) + Ag^{+}(aq)$

D. $Zn^{2+}(aq) + Ag^{+}(aq) \rightarrow Zn(s) + Ag(s)$

Answer: A

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995. The standard reduction potentials of the elemtnts A, B.Care +2.37V,-1.85V and 1.36V respectively. The order of the their reducing power is :

A. $B > C > A$

B. $A > B > C$

C. $C > B > A$

D. $B > A > C$

Answer: A

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996. Is the reaction, $2Al + 3Fe^{2+} \rightarrow 2Al^{3+} + 3Fe$ possible?

A. No , because standard oxidation potential of AlltFe

B. Yes, because standard oxidation potential of AlgtFe

C. Nither (a) nor(b)

D. Data are unpredictable

Answer: B

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997. Whether tin can displace lead from aqueous lead bromide solution:

A. No

B. Yes , because standard redutionpotential of SnltPb

C. Yes, because standard reduction potential of SngtPb-

D. None

Answer: B

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998. Faraday is equal to :

A. $96.5 \text{ coulombequivalent}^{-1}$

B. $96.5 \times 10^3 \text{ coulomb equialent}^{-1}$

C. $96.5 \times 10^{10} \text{ coulomb equivalent}^{-1}$

D. $96.5 \times 10^{23} co\underline{o}mb$mol^(-1)`

Answer: B

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999. More electropositive elements have :

A. Postive reduction potential

B. Tendency to gain electrons

C. Negative reduction potential

D. Negative oxidation potential

Answer: C

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1000. Based on the data given below , the correct order of reducing power is :

$Fe^{3+}(aq) + e \rightarrow Fe^{2+}(aq), E^{\circ} = +0.77V$

$AI^{3+}(aq) + 3e \rightarrow AI(s), E^{\circ} = -1.66V$

$Br_2(aq) + 2e \rightarrow 2Br^{-(aq)}, E^{\circ}$ =+1.08V`

A. $Br^{-} < Fe^{2+} < AI$

B. $Fe^{2+} < AI < Br^{-}$

C. $Al < Br^{-} < Fe^{2+}$

D. $AI < Fe^{2+} < Br^{-}$

Answer: A

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1001. Galvanised iron sheets have coating of :

A. Cu

B. Sn

C. Zn

D. Carbon

Answer: C

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1002. The electrochemical that is easiest to be reduced is :

A. Fe

B. Cu

C. Ag

D. Su

Answer: C

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1003. An electrochemical cell consists of :

A. Cadmium cell

B. Lead accumulator

C. Two half cells

D. None

Answer: C

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1004. The correct order of chemical reactivity with water according to electrochemical series is :

A. $K > Mg > Zn > Cu$

B. $Mg > Zn > Cu > K$

C. $K > Zn > Mg > Cu$

D. $Cu > Zn > Mg > fK$

Answer: A

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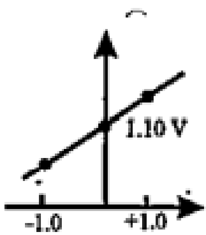
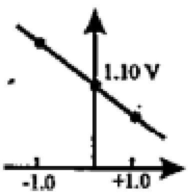
1005. Which graph correctly correlates E_{cell} as a function of concentrations for the cell (for deifferent values of M and M):

$Zn(s) + Cu^{2+}(M) \rightarrow Zn^{2+}(M) + Cu(s)$, $E^{\circ}_{cell} = 1.10V$

$X - a\xi s: \dfrac{\log_{10}\left[Zn^{2+}\right]}{Cu^{2+}}$, $Y - a\xi s: E_{cell}$



A.



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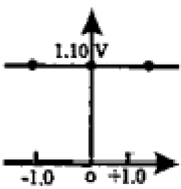
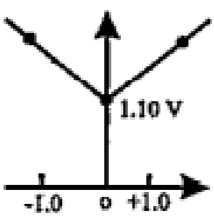


C.



D.

Answer: B

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1006. Faraday.s laws hold good at:

A. All pressures

B. Only at 298 K

C. In different solvents

D. All of these

Answer: A

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1007. The main function of the salt bridge is:

A. To allow ions to go from one cell to another

B. To provide link between two half cells

C. To keep the emf of the cell positive

D. To maintain electrical neutrality of the solution in two half cells

Answer: D

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1008. A substance that will reduce Ag + to Ag but will not reduce Ni^{2+} to Ni is :

A. Zn

B. Pb

C. Mg

D. Al

Answer: B

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1009. A dilute aqueous solution of Li_2SO_4 is electrolysed . The products formed at the anode and cathode, respectively are:

A. S and Li

B. O_2 and Li

C. SO_2 and O_2

D. O_2 and H_2

Answer: D

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1010. Blocks of magnesium metal are often strapped to the steel hulls of ocean going ships in order to :

A. Provide cathodic protection

B. Protect oxidation of steel

C. Both (a) and (b) correct

D. Neither (a) nor (b) is correct

Answer: C

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1011. Which statement is true about spontaneous cell reaction in galvanic cell:

A. $E^{\circ}_{cell} > 0, \Delta G^{\circ} < 0, Quotient Q < K_c$

B. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q < K_c$

C. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q > K_c$

D. $E^{\circ}_{cell} > 0, \Delta G^{\circ} > 0, Q < K_c$

Answer: A

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1012. It is impossible to measure the actual voltage of any half cell by itselft because :

A. Both half cell reactions takes place simultaneously

B. Of resistance of wire

C. A reaction does not take place on its own

D. None

Answer: A

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1013. Which metal will dissolve if the cell works $Cu\left|Cu^{2+}\right|\,|\,Ag^{+}\left|Ag\right.$:

A. Cu

B. Ag

C. Both (a) and (b)

D. None

Answer: A

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1014. In the concentration cells the electrical energy is produced due to :

A. Oxidation of fuel

B. Heat energy

C. Chemical reaction

D. Transfer of a substance from one concentration to other

Answer: D

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1015. The Zn acts as sacrificial or cathodic porection to prevent rusting of iron because :

A. $E^{\circ}_{OP} of_{Zn} < E^{\circ}_{OP} of Fe$

B. $E^{\circ}_{OP} of_{Zn} > E^{\circ}_{OP} of Fe$

C. $E^{\circ}_{OP} of_{Zn} = E^{\circ}_{OP} of Fe$

D. Zn is cheaper than iron

Answer: B

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1016. The number of faraday required to liberate 1 mole of any element indicates :

A. Weight element

B. Conductance of electrolyte

C. Charge on the ion of that element

D. None

Answer: C

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1017. Quantity of electricity is measured in :

A. ampere sec

B. ampere

C. $ampere^{-1}$

D. $ampere^{-1}$ sec

Answer: A

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1018. Which are used as secondary reference electrodes :

A. Calomel electrode

B. $Ag/AgCI$ electrode

C. $H\frac{g}{H}g, CI, -KCI$electrode

D. All of these

Answer: D

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1019. The corrosion of iron object is favoured by:

A. Presence of H^{+} ion

B. Presence of moisture in air

C. Presence of imputities in iron object

D. All of these

Answer: D

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1020. For a redox reaction to proceed spontaneously in a given direction, the emf should:

A. be zero

B. have $+ve$ sign

C. have $-ve$ sign

D. have either $+ve \text{ or } -ve$ sign

Answer: B

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1021. In a cell containing zinc electrode and standard hydrogen electrode(SHE),the zinc electrode acts as :

A. Anode

B. Cathode

C. Nither cathode nor anode

D. Both anode and cathode

Answer: A

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1022. A cell in which electric current is produced by net oxidation and reduction process is called:

A. Voltic cell

B. Electrolytic cell

C. Concentration cell

D. None

Answer: A

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1023. Faraday's first law of electrolysis can be expressed as :

A. $W \propto Q$

B. $W \propto 1/Q$

C. $W \propto Q^2$

D. $W \propto Q^3$

Answer: A

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1024. I faraday of electricity will liberate 1 g atom of the metal from the solution of :

A. $AuCI_3$

B. $AgNO_3$

C. $CaCI_2$

D. $CuSO_4$

Answer: B

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1025. In the electro-deposition of Ag, the silver ions are :

A. Reduced at anode

B. Reduced at cathode

C. Oxidised at anode

D. Oxidised at cathode

Answer: B

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1026. For the cell reaction ,

$Cu^{2+}(aq)(C_2) + Zn(s) \rightarrow Zn^{2+}(aq)(C_1) + Cu(s)$, the change in free energy(ΔG) at a given temperature is a function of :

A. InC_1

B. $1n(C_2 / C_1)$

C. $In(C_1 + C_2)$

D. InC_2

Answer: B

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1027. In an electrochemical cell ,the electrons flow:

A. From cathode to anode

B. From anode to cathode

C. From anode to solution

D. From solution to cathode

Answer: B

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1028. The art of electroplating was given by:

A. Faraday

B. Edison

C. Graham

D. Brugan

Answer: A

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1029. Which of the following is correct ?

A. Zinc acts as cathode inDaniell cell

B. In a Li-Zn couple, zinc acts as anode

C. Copper will displace iron in solution

D. Zinc displaces tin from its solution

Answer: D

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1030. In an electrolytic cell of $Ag|AgNO_3|AgNO_3 \mid Ag$,when current is passed the concetration of $AgNO_3$

A. Increases

B. Decreases by $0.0.30V$

C. Remains same

D. None

Answer: C

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