ELECTROLYTIC CONDUCTANCE

1. Strong electrolytes are those which :
(1) dissolve readily in water
(2) conduct electricity
(3) dissociate into ions even at high concentration
(4) dissociate into ions at high dilution.

2. Molten sodium chloride conducts electricity due to the presence of :
(1) free electrons (2) free ions
(3) free molecules (4) free atoms of Na and Cl

3. Electrolytic conduction is due to the movement of :
(1) molecules (2) atoms (3) ions (4) electrons

4. Which of the following solutions of KCl has the lowest value of equivalent conductance ?
(1) 1 M (2) 0.1 M (3) .01 M (4) .001 M

5. In the equation Λ = sp. cond. x V, If V is the volume in cc. containing 1 equivalent of the electrolyte then V for a $\frac{N}{10}$ solution will be:
(1) 10 c.c. (2) 100 c.c. (3) 1000 c.c. (4) 10,000 c.c.

6. If the specific resistance of a solution of concentration C g eq L^{-1} is R, then its equivalent conductance is :
(1) $\frac{100R}{C}$ (2) $\frac{RC}{1000}$
(3) $\frac{1000}{RC}$ (4) $\frac{C}{1000R}$

7. The specific conductances in ohm^{-1} cm^{-1} of four electrolytes P, Q, R and S are given in brackets:
P (5.0×10^{-5}) Q (7.0×10^{-8})
R (1.0×10^{-10}) S(9.2×10^{-3})
The one that offers highest resistance to the passage of electric current is
(1) P (2) s (3) R (4) Q

8. The specific conductance· of a salt of 0. 01 M concentration is 1.061×10^{-4} S cm^{-1}. Molar conductance of the same solution will be :
(1) 1.061×10^{-4} (2) 1.061 (3) 10.61 (4) 106.1

9. Which of the following solutions of NaCl will have the highest specific condutance ?
(1) 0.001 N (2) 0.1 N (3) 0.01 N (4) 1.0 N

10. The value of molar conductivity of HCl is greater than that of NaCl at a particular temperature because:
(1) Molecular mass of HCl is less than that of NaCl.

(2) Velocity of H^+ ions is more than that of Na^+ ions
(3) HCl is strongly acidic
(4) Ionisation of HCl is larger than that of NaCl

11. Which statement is not correct :-
(1) Conductance of an electrolytic solution increases with dilution
(2) Conductante of an electrolytic solution decreases with dilution
(3) Specific conductance of an electrolytic solution decreases with dilution
(4) Equivalent conductance of an electrolytic solution increases with dilution.

12. The resistance of 0.01 N solution of an electrolyte was found to be 210 ohm at 298 K using a conductivity cell of cell constant 0.66 cm^{-1}. The equivalent conductance of solution is :-
(1) 314.28 mho cm^2 eq^{-1} (2) 3.14 mho cm^2 eq^{-1}
(3) 314.28 mho^{-1} cm^2 eq^{-1} (4) 3.14 mho^{-1} cm^2 eq^{-1}

13. Electrolytic conduction differs from metallic conduction from the fact that in the former
(1) The resistance increases with increasing temperature
(2) The resistance decreases with increasing temperature
(3) The resistance remains constant with increasing temperature
(4) The resistance is independent of the length of the conductor

14. The specific conductance of a 0.01 M solution of KCl is 0.0014 ohm^{-1} cm^{-1} at 25°C. Its equivalent conductance (cm^2 ohm^{-1} eq^{-1}) is :-
(1) 140 (2) 14 (3) 1.4 (4) 0.14

15. Which one of the following is wrong :-
(1) Specific conductance increases on dilution.
(2) Specific conductance decreases on dilution.
(3) Equivalent conductance increases on dilution.
(4) Molar conductance increases on dilution.

KOHLRAUSCH LAW

16. At infinite dilution, the equivalent conductances of CH_3COONa, HCl and CH_3COOH are 91, 426 and 391 mho cm^2 eq^{-1} respectively at 25°C. The equation conductance of NaCl at infinite dilution will be :
(1) 126 (2) 209 (3) 391 (4) 908

17. The equivalent conductivity of 0.1 N CH_3COOH at 25°C is 80 and at infinite dilution it is 400. The degree of dissociation of CH_3COOH is:
(1) 1 (2) 0.2 (3) 0.1 (4) 0.5

18. The limiting molar conductivities N for NaCl, KBr and KCl are 126, 152 and 150 S cm^2 mol^{-1} respectively. The Λ^0 for NaBr is :
(1) 278 S cm^2 mol^{-1} (2) 176 S cm^2 mol^{-1} (3) 128 S cm^2 mol^{-1} (4) 302 S cm^2 mol^{-1}

19. For HCl solution at 25°C, equivalent conductance at infinite dilution, is 425 ohm^{-1} cm^2 eq^{-1}. The specific conductance of a solution of HCl is 3.825 ohm^{-1} cm^{-1}. If the degree of dissociation is 90%. The normality of the solution is :-
(1) 0.90 N (2) 1.0 N (3) 10 N (4) 1.2 N

20. The molar conductivities Λ^0_{NaOAc} and Λ^0_{HCl} at infinite dilution in water at 25°C are 91.0 and 426.2 S cm^2 mol^{-1} respectively. To calculate Λ^0_{HOAc} the additional value required is :

(1) Λ^0_{NaCl} (2) $\Lambda^0_{H_2O}$ (3) Λ^0_{KCl} (4) Λ^0_{NaOH}

21. The molar conductance at infinite dilution of $AgNO_3$, AgCl and NaCl are 116:5, 121.6 and 110.3 S cm^2 mol^{-1} respectively. The molar conductance of $NaNO_3$ is :

(1) 111.4 S cm^2 mol^{-1} (2) 105.2 S cm^2 mol^{-1}
(3) 130.6 S cm^2 mol^{-1} (4) 150.2 S cm^2 mol^{-1}

22. The conductivity of a saturated solution of $BaSO_4$ is 3.06×10^{-6} ohm^{-1} cm^{-1} and its molar conductance is 1.53 ohm^{-1} cm^{-1} mol^{-1}. The K_{sp} of $BaSO_4$ will be

(1) 4×10^{-12} (2) 2.5×10^{-9} (3) 2.5×10^{-13} (4) 4×10^{-6}

GALVANIC CELL

23. In the galvanic cell Cu(s) | Cu^{2+} (1M) || Ag^+ (1 M) | Ag(s) the electrons will travel in the external circuit :

(1) from Ag to Cu
(2) from Cu to Ag
(3) electrons do not travel in the external circuit
(4) in any direction

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

(1) from Cu to Zn in the cell (2) from Cu to Zn out side the cell
(3) from Zn to Cu outside the cell (4) in any direction in the cell

25. The equation representing the process by which standard reduction potential of zinc can be defined is

(1) Zn^{2+} (s) + $2e^-$ $\longrightarrow$ Zn (s) (2) Zn (g) $\longrightarrow$ Zn^{2+} (g) + $2e^-$
(3) Zn^{2+} (g) + $2e^-$ $\longrightarrow$ Zn (s) (4) Zn^{2+} (aq.) + $2e^-$ $\longrightarrow$ Zn (s)

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

(1) Hydrogen is easiest to oxidize.
(2) This electrode potential is assumed to be zero.
(3) Hydrogen atom has only one electron.
(4) Hydrogen is the lightest element.

27. Which is not true for a standard hydrogen electrode ?

(1) The hydrogen ion concentration is 1M.
(2) Temperature is 25°C.
(3) Pressure of hydrogen is 1 bar.
(4) It contains metallic conductor which does not adsorb hydrogen.

28. E° for the half cell
Zn^{2+} | Zn is –0.76 V. E.m.f. of the cell
Zn | Zn^{2+} (1M) | | $2H^+$ (1M) | H_2 (1 atm) is :

(1) –0.76 V (2) +0.76 V (3) –0.38 V (4) + 0.38 V

29. The chemical reaction,
$2AgCl(s) + H_2(g) \longrightarrow 2HCl(aq) + 2Ag(s)$
taking place in a galvanic cell is represented by the notation.
(1) Pt(s) | H_2(g). 1bar | 1MKCl(aq) |AgCl(s) | Ag(s).
(2) Pt(s) | H_2(g). 1bar | 1MHCl(aq) | 1M Ag(aq) | Ag(s).
(3) Pt(s) | H_2 (g).1bar | 1M HCl(aq) | AgCl(s) | Ag(s).
(4) Pt(s) | H_2 (g).1bar | 1MHCl (aq) | Ag(s) | AgCl(s).

30. $Cu(s) \mid Cu^{+2}(1\ M) \mid\mid Zn^{+2}(1\ M) \mid Zn(s)$
A cell represented above should have emf.
(1) Positive (2) Negative (3) Zero (4) Cannot be predicted

31. Given electrode potentials :
$Fe^{3+} + e^- \longrightarrow Fe^{2+}$; E° = 0.771 V
$I_2 + 2e^- \longrightarrow 2I^-$; E° = 0.536 V
E° cell for the cell reaction
$2Fe^{3+} + 2I^- \longrightarrow 2Fe^{2+} + I_2$ is -
(1) (2× 0.771 – 0.536) = 1.006 V (2) (0. 771 – 0.5×0.536) = 0.503 V
(3) 0.771 – 0.536 = 0.235 V (4) 0.536 – 0. 771 = –0.235 V

32. Which of the following is not an anodic reaction
(1) $Ag^+ \longrightarrow Ag - e^-$
(2) $Cu \longrightarrow Cu^{2+} + 2e^-$
(3) $Fe^{2+} \longrightarrow Fe^{3+} + e^-$
(4) $4OH^- \longrightarrow 2H_2O + O_2 + 4e^-$

33. Which of the following statements is correct :-
(1) Oxidation occur at anode in both galvanic and electrolytic cell.
(2) Reduction occurs at anode in both galvanic and electrolytic cell,
(3) Reduction occur at anode in electrolytic cell where as oxidation occur at cathode in galvanic cell,
(4) Oxidation occur at anode in electrolytic cell where as reduction occur at anode in a galvanic cell,

34. Other things being equal, the life of a Daniell cell may be increased by :-
(1) Keeping low temperature
(2) Using large copper electrode
(3) Decreasing concentration of coppei ions
(4) Using large zinc electrodes

ELECTROCHEMICAL SERIES

35. Zn can not displace following ions from their aqueous solution :
(1) Ag^+ (2) Cu^{2+} (3) Fe^{2+} (4) Na^+

36. The standard reduction potentials at 25°C for the following half reactions are given against each :

Zn^{2+} (aq) + 2e– ‡ ˆ† Zn(s), –0.762V

Cr^{3+} (aq) + $3e^-$ ‡ ˆ† Cr(s), –0.740 V

$2H^+ + 2e^-$ ‡ ˆ† H_2(g), 0.00 V

$Fe^{3+} + 2e^-$ ‡ ˆ† Fe^{2+}, 0. 77V

Which is the strongest reducing agent ?
(1) Zn (2) Cr (3) H_2(g) (4) Fe^{2+} (aq)

37. Red hot carbon will remove oxygen from the oxide XO and YO but not from ZO. Y will remove oxygen from XO. Use this evidence to deduce the order of activity of the three metals X, Y and Z putting the most active first.
(1) XYZ (2) ZYX (3) YXZ (4) ZXY

38. Adding powdered Pb and Fe to a solution containing 1.0 Min each of Pb^{+2} and Fe^{+2} ions, would result into the formation of :-
(1) More of Fe and Pb^{2+} ions (2) More of Fe^{+2} and Pb^{2+} ions
(3) More of Pb and Fe^{+2} ions (4) More of Fe and Pb

39. If a spoon of copper metal is placed in a solution of ferrous sulphate :
(1) Cu will precipitate out (2) Iron will precipitate
(3) Cu and Fe will precipitate (4) No reaction will take place

40. Which one will liberate Br_2 from KBr?
(1) HI (2) I_2
(3) Cl_2 (4) SO_2

41. Using the standard electrode potential values given below, decide which of the statements, I, II, III and IV are correct. Choose the right answer from (1), (2), (3) and (4).

$Fe^{2+} + 2e–$ ‡ ˆ† Fe ; E° = –0.44 V

$Cu^{2+} + 2e^-$ ‡ ˆ† Cu ; E° = +0.34 V

$Ag^+ + e^-$ ‡ ˆ† Ag ; E° = +0.80 V

I. Copper can displace iron from $FeSO_4$ solution.
II. Iron can displace copper from $CuSO_4$ solution.
III. Silver can displace copper from $CuSO_4$ solution.
IV. Iron can displace silver from $AgNO_3$ solution.
(1) I and II (2) II and III
(3) II and IV (4) I and IV

42. The standard electrode potential value of the elements A, B and Care 0.68, –2.50 and 0.50 V respectively. The order of their reducing power is:
(1) A > B > C (2) A > C > B (3) C >B > A (4) B > C > A

43. The oxidation potential of Zn, Cu, Ag, H_2 and Ni are 0.76 V, –0.34 V, –0.80 V, 0 V, 0.55 V respectively. Which of the following reaction will provide maximum voltage ?
(1) $Zn + Cu^{2+} \longrightarrow Cu + Zn^{2+}$ (2) $Zn + 2Ag^+ \longrightarrow 2Ag + Zn^{2+}$

(3) $H_2 + Cu^{2+} \longrightarrow 2H^+ + Cu$ (4) $H_2 + Ni^{2+} \longrightarrow 2H^+ + Ni$

44. The following facts are available :-
$2X^- + Y^2 \longrightarrow 2Y^- + X^2$
$2W^- + Y^2 \longrightarrow$ no reaction
$2Z^- + X^2 \longrightarrow 2X^- + Z^2$
Which of the following statements is correct :-
(1) $E^o_{W^-/W_2} > E^o_{Y^-/Y_2} > E^o_{X^-/X_2} > E^o_{Z^-/Z_2}$ (2) $E^o_{W^-/W_2} < E^o_{Y^-/Y_2} < E^o_{X^-/X_2} < E^o_{Z^-/Z_2}$
(3) $E^o_{W^-/W_2} < E^o_{Y^-/Y_2} > E^o_{X^-/X_2} > E^o_{Z^-/Z_2}$ (4) $E^o_{W^-/W_2} > E^o_{Y^-/Y_2} < E^o_{X^-/X_2} < E^o_{Z^-/Z_2}$

45. The standard reduction potential at 25°C of Li^+/Li, Ba^{2+}/ Ba, Na^+/Na and Mg^{2+}/ Mg are –3.05 V, –2.73 V, –2.71 V, and –2.37 V respectively. Which one of the following is the strongest oxidising agent ?
(1) Na^+ (2) Li^+ (3) Ba^{2+} (4) Mg^{2+}

46. A gas X at 1 atm is bubbled. through a solution containing a mixture of 1 M Y^- and 1 M Z^- at 25°C. If the reduction potential of Z > Y > X then :
(l) Y will oxidise X and not Z (2) Y will oxidise Z and not X
(3) Y will oxidise both X and Z (4) Y will reduce both X and Z

47. The standard electrode potential of Zn, Ag and Cu are –0.76 V, 0.80 V and 0.34 V respectively, then :
(1) Ag can oxidise Zn and Cu (2) Ag can reduce Zn^{2+} and Cu^{2+}
(3) Zn can reduce Ag^+ and Cu^{2+} (4) Cu can oxidise Zn and Ag

48. 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) $\longrightarrow$ y (or z) + salt of x
Which one of the following observation is incorrect?
(1) y + salt of x $\longrightarrow$ no action observed (2) y + salt of z $\longrightarrow$ z + salt of y
(3) z + salt of x $\longrightarrow$ x + salt of z (4) z + salt of y $\longrightarrow$ no action observed

49. A standard reduction electrode potentials of four elements are
A=- 0.250 V, B = –0.140 V
C = –0.126 V, D = –0.402 V
The element that displaces A from its compounds aqueous solution is :-
(1) B (2) C (3) D (4) None of the above

50. The following four colourless salt solutions are placed in separate test tubes and a strip of Cu is placed in each solution which finally turns blue :-
(1) $Zn(NO_3)_2$ (2) $Mg(NO_3)_2$
(3) KNO_3 (4) $AgNO_3$

51. Which of the following displacement does not occur
(1) $Zn + 2H^+ \rightarrow Zn^{2+} + H_2\uparrow$ (2) $Fe + 2Ag^+ \rightarrow Fe^{2+} + Ag^-\downarrow$
(3) $Cu + Fe^{2+} \rightarrow Cu^{2+} + Fe^-\downarrow$ (4) $Zn + Pb^{2+} \rightarrow Zn^{2+} + Pb^-\downarrow$

NERNST EQUATION

52. $E°(Ni^{2+}/Ni) = -0.25$ V
$E°\ (Au^{3+}/Au) = 1.\ 50$ V
The emf of the voltaic cell.
Ni/NF^{2+} (1.0 M) | | Au^{3+} (1.0 M) | Au is:
(1) 1.25 V (2) –1.75 V (3) 1.75 V (4) 4.0 V

53. The emf of the cell in which the following reaction
$Zn(S) + Ni^{2+}$ (a = 0.1) ‡ ˆ† Zn^{2+} (a = 1. 0) + Ni(s)
occurs, is found to be 0.5105 V at 298 K. The standard e.m.f. of the cell is:-
(1) –0.5105 V (2) 0.5400 V (3) 0.4810 V (4) 0.5696 V

54. The emf of the cell
Tl(s) | Tl^{+} (0.0001 M) | | Cu^{2+} (0.01M) | Cu(s) is 0.83V
The emf of this cell will be increased by :-
(1) Increasing the concentration of Cu^{+2} ions
(2) Decreasing the concentration of Tl^{+}
(3) Increasing the concentration of both
(4) (1) & (2) both

55. The potential of hydrogen electrode
(P_{H_2} = 1 atm; C_{H^+} = 0.1 M) at 25°C will be-
(1) 0.00V (2) –0.059 V (3) 0.118 V (4) 0.059 V

56. Which of the following represents the potential of silver wire dipped into 0.1 M $AgNO_3$ solution at 25°C?
(1) E^{o}_{red} (2) (E^{o}_{red} + 0.059)
(3) (E^{o}_{OX} – 0.059) (4) (E^{o}_{red} – 0.059)

57. The potential of a hydrogen electrode at pH = 1 is
(1) 0.059 V (2) 0.00 V (3) –0.059 V (4) 0.59 V

58. Consider the reaction
$Cl_2(g) + 2Br(aq) \longrightarrow 2Cl^{-}(aq) + Br^2$
The emf of the cell when
$[Cl^{-}] = [Br_2] = [Br^{-}] = 0.01$ M and Cl_2 gas at 1 atm pressure will be (E° for the above reaction is = 0.29 V)
(1) 0.54 V (2) 0.35 V (3) 0.24 V (4) –0.29 V

59. The standard emf for the cell reaction
$Zn + Cu^{2+} \longrightarrow Zn^{2+} + Cu$ is 1.10 V at 25°C.
The emf for the cell reaction when 0.1 M Cu^{2+} and 0.1 M Zn^{2+} solution are used at 25°C is:
(1)1.10 V (2) 0.110 V (3) –1.10 V (4) –0.110 V

60. E° for $F_2 + 2e^{-} \rightarrow 2F^{-}$ is 2.8 V, E° for $\frac{1}{2}F_2 + e^{-} \rightarrow F^{-}$ is ?

(1) 2.8 V (2) 1.4 V (3) –2.8 V (4) –1.4 V

61. $\Delta G°$ of the cell reaction
$AgCl(s) + ½H_2(g) \rightarrow Ag(s) + H^+ + Cl^-$ is –21.52 KJ
$\Delta G°$ of $2AgCl(s) + H_2(g) \rightarrow 2Ag(s) + 2H^+ + 2Cl^-$ is :
(1) –21.52 kJ (2) –10.76 kJ (3) –43.04 kJ (4) 43.04 kJ

62. How much will the potential of Zn/Zn^{2+} change if the solution of Zn^{2+} is diluted 10 times
(1) increases by 0.03 V (2) decreases by 0.03 V
(3) increases by 0.059 V (4) decreases by 0.059 V

63. How much will the potential of a hydrogen electrode change when its solution initially at pH = 0 is neutralised to pH = 7 ?
(1) increases by 0.059 V (2) decreases by 0. 059 V
(3) increases by 0.41 V (4) decreases by 0.41 V

64. Which of the following will increase the voltage of the cell with following cell reaction
$Sn(s) + 2Ag^+(aq) \rightarrow Sn^{+2}(aq) + 2Ag(s)$
(1) Increase in the size of silver rod
(2) Increase in the concentration of Sn^{+2} ions
(3) Increase in the concentration of Ag^+ ions
(4) Decrease in the concentration of Ag^+ ions .

65. $E°$ for the reaction $Fe + Zn^{2+} \rightarrow Zn + Fe^{2+}$ is –0.35 V. The given cell reaction is:
(1) feasible (2) not feasible
(3) in equilibrium (4) can't say anything

66. For a reaction - $A(s) + 2B^+ \rightarrow A^{2+} + 2B(s)$
K_C has been found to be 10^{12}. The E^o_{Cell} is :
(1) 0.354 V (2) 0. 708 V (3) 0.0098 V (4) 1.36 V

67. The standard electrode potential (E°) for OCl^-/Cl^- and $Cl^-/½Cl_2$ respectively are 0. 94 V and –1.36 V. The P value of $OCl^-/½Cl_2$ will be :
(1) –2.20 V (2) –0.42 V
(3) 0.52 V (4) 1.04 V

68. The standard reduction potentials of Cu^{2+} /Cu and Cu^2/Cu^+ are 0.337 V and 0.153 V respectively. The standard electrode potential of Cu^+/Cu half cell is :
(1) 0.184 V (2) 0.827 V (3) 0.521 V (4) 0.490 V

69. The hydrogen electrode is dipped in a solution of pH = 3 at 25°C. The potential of the cell would be :
(1) 0.177 V (2) –0.177 V (3) 0.087 V (4) 0.059 V

70. What is the potential of the cell containing two hydrogen electrodes as represented below
$Pt; H_2(g) | H^+(10^{-8})M | | H^+(0.001\ M) | H_2(g).Pt$;
(1) –0.295 V (2) –0.0591 V (3) 0.295 V (4) 0.0591 V

71. Consider the cell Cu/Cu^{+2} | | Ag^{+} / Ag. If the concentration of Cu^{+2} and Ag^{+} ions becomes ten times then the emf of the cell will :-
(1) Becomes 10 times (2) Remains same
(3) Increases by 0.0295 V (4) Decreases by 0.0295 V

72. The emf of the cell
Ni | Ni^{+2} (1.0M) | | Au^{+3} (0.1M) | Au
[E° for Ni^{+2}/Ni = –0.25V, E° for Au^{+3}/Au = 1.50 V] is given as :-
(1) 1.25 V (2) –1.75 V (3) 1.75 V (4) 1.73 V

ELECTROLYSIS

73. When an electric current is passed through acidified water, 112 mL of hydrogen gas at STP collects at the cathode in 965 s. The current passed,· in ampere is:
(1) 1.0 (2) 0.5 (3) 0.1 (4) 2.0

74. 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 cells will be :
(1) 3 :1 (2) 2 : 1 (3) 1 : 1 (4) 3 : 2

75. A current of 9. 65 A flowing for 10 minute deposits 3.0 g of a metal. The equivalent weight of the metal is:
(1) 10 (2) 30 (3) 5.0 (4) 96.5

76. The same amount of electricity was passed through two separate electrolytic cells containing solutions of nickel. [$Ni(NO_3)_2$] and chromium nitrate [$Cr(NO_3)_3$] respectively. If 0.3 g of nickel was deposited in the first cell, the amount of chromium deposited in the other cell is :-
(at. wt. of Ni = 59, at. wt. of Cr = 52)
(1) 0.1 g (2) 0.17 g (3) 0.3 g (4) 0.6 g

77. How many coulombs of electricity are required for the oxidation of 1 mol of H_2O to O_2 ?
(1) 9.65×10^4 C (2) 4.825×10^5 C
(3) 1.93×10^5 C (4) 1.93×10^4 C

78. When a quantity of electricity equal to that required to liberate 2.24 L of hydrogen at STP from 0.1 M aqueous H_2SO_4 is passed (At. mass of Cu = 63.5) then the mass of copper that will be deposited at cathode in electrolysis of 0.2 M solution of copper sulphate will be :
(1) 1.59 g (2) 3.18g (3) 6.35 g (4) 12.70 g

79. 10800 C of electricity through the electrolyte deposited 2.977 g of metal with atomic mass 106.4 g mol^{-1}. The charge on the metal cation is-
(1) +4 (2) +3 (3) +2 (4) + 1

80. On passing electricity through dilute H_2SO_4 solution the amount of substance librated at the cathode and anode are in the ratio :
(1) 1 : 8 (2) 8 : 1 (3) 16 : 1 (4) 1 : 16

81. During electrolysis of fused calcium hydride, the hydrogen is produced at :

(1) Cathode
(2) Anode
(3) Hydrogen .is not liberated at all
(4) H_2 produced reacts with oxygen to form water

82. A silver cup is plated with silver by passing 965 A current for one second, the mass of Ag deposited is :- (At. wt. of Ag = 107.87)
(1) 9.89 g. (2) 107.87 g. (3) 1.0787 g. (4) 100.2 g.

83. Whim electricity is passed through a solution of $AlCl_3$, 13.5 g Al is deposited. The number of Faradays must be :-
(1) 5.0 (2) 1.0 (3) 1.5 (4) 3.0

84. A solution of sodium sulphate in water is electrolysed using inert electrodes. The product at the cathode and anode are respectively :-
(1) H_2, SO_2 (2) O_2, H_2 (3) O_2, Na (4) H_2,O_2

85. One Faraday of electricity will liberate one mole of the metal from the solution of
(1) Auric chloride (2) Silver nitrate
(3) Calcium chloride (4) Copper sulphate

86. When 96500 C of electricity are passed through barium chloride solution, the amount of barium deposited will be :-
(1) 0.5 mol (2) 1.0 mol (3) 1.5 mol (4) 2.0 mol

87. A factory produces 40 kg of calcium in two hours by elelctrolysis. How much aluminium can be produced by the same current in two hours :-
(At wt. of Ca = 401 At = 27)
(1) 22 kg (2) 18 kg (3) 9 kg (4) 27 kg

88. What would be the ratio of moles each of Ag^+, Cu^{+2}, Fe^{+3} ions would be deposited by passage of same quantity of electricity through solutions of their salts :-
(1) 1 : 1 : 1 (2) $1:\frac{1}{2}:\frac{1}{3}$
(3) $\frac{1}{3}:\frac{1}{2}:1$ (4) 1 : 2 : 3

89. Electrolysis of aq. $CuSO_4$ causes:
(1) An increase in pH (2) A decrease in pH
(3) Either decrease or increase (4) None

90. The passage of current liberates H_2 at cathode and Cl_2 at anode the solution is :-
(1) $CuSO_4$ (aq) (2) $CuCl_2$ (aq) (3) NaCl (aq) (4) Water

COMMERCIAL CELLS

91. When lead accumulator is charged it is:

(1) an electrolytic cell (2) a galvanic cell
(3) a Daniel cell (4) none of the above

92. When a lead storage battery is charged :
(1) PbO_2 dissolves
(2) The lead electrode becomes coated with lead sulphate
(3) Sulphuric acid is regenerated
(4) The amount of acid decreases

ANSWER KEY

EXERCISE-I (Conceptual Questions)

1.	(3)	**2.**	(2)	**3.**	(3)	**4.**	(1)	**5.**	(4)	**6.**	(3)	**7.**	(3)
8.	(3)	**9.**	(4)	**10.**	(2)	**11.**	(2)	**12.**	(1)	**13.**	(2)	**14.**	(1)
15.	(1)	**16.**	(1)	**17.**	(2)	**18.**	(3)	**19.**	(3)	**20.**	(1)	**21.**	(2)
22.	(4)	**23.**	(2)	**24.**	(2)	**25.**	(4)	**26.**	(2)	**27.**	(4)	**28.**	(2)
29.	(3)	**30.**	(2)	**31.**	(3)	**32.**	(1)	**33.**	(1)	**34.**	(4)	**35.**	(4)
36.	(1)	**37.**	(2)	**38.**	(3)	**39.**	(4)	**40.**	(3)	**41.**	(3)	**42.**	(4)
43.	(2)	**44.**	(2)	**45.**	(4)	**46.**	(1)	**47.**	(3)	**48.**	(3)	**49.**	(3)
50.	(4)	**51.**	(3)	**52.**	(3)	**53.**	(2)	**54.**	(4)	**55.**	(2)	**56.**	(4)
57.	(3)	**58.**	(2)	**59.**	(1)	**60.**	(1)	**61.**	(3)	**62.**	(1)	**63.**	(4)
64.	(3)	**65.**	(2)	**66.**	(1)	**67.**	(3)	**68.**	(3)	**69.**	(2)	**70.**	(3)
71.	(3)	**72.**	(4)	**73.**	(1)	**74.**	(4)	**75.**	(3)	**76.**	(2)	**77.**	(3)
78.	(3)	**79.**	(1)	**80.**	(1)	**81.**	(2)	**82.**	(3)	**83.**	(3)	**84.**	(4)
85.	(2)	**86.**	(1)	**87.**	(2)	**88.**	(2)	**89.**	(2)	**90.**	(3)	**91.**	(1)
92.	(3)												