CHEMISTRY

BOOKS - JMD CHEMISTRY (PUNJABI ENGLISH)

ELECTRO CHEMISTRY

Example

1. The unit of specific conductance is: ohm, $ohm^{-1}cm^{-1}$ $ohm^{-1}cm$ ohm^{2}

A. ohm

B. $ohm^{-1}cm^{-1}$

C. $ohm^{-1}cm$

D. ohm^2

Answer: B

2. The standard EMF of Daniel cell is 1.10V. The maximum electrical work obtained from the cell is $[Ifn = 2]$:

A. 175.4kj

B. 212.3kj

C. 106.15kj

D. 53.07kj

Answer: B

Watch Video Solution

3. The conductivity of metals increases with:

A. Increase in temperature

B. decrease in temperature

C. No change ovserved

D. Increase then decrease

Answer: B

Watch Video Solution

4. The electrode potential of SHE is fixed as

A. 0.34V

B. $-0.44V$

C. Zero

D. $-0.76V$

Answer: C

Watch Video Solution

5. Unit of equivalent conductance is:

A. $ohm^{-1}cm^{-1}$

B. $ohm^{-1}cm^{-1}$

C. $ohm^{-1}cm^{2}$

D. $ohm^{-1}cm^{2}$(g.eq.)^-1`

Answer: D

Watch Video Solution

6. In a galvanic cell,

A. Potential energy decreases

B. Kinetic energy decreases

C. potential energy changes into electrical energy

D. Chemical energy changes into electrical energy

Answer: D

Watch Video Solution

7. For a redox reaction to proceed in a cell, the e.m.f. must be:

A. Positive

B. Negative

C. Fixed

D. Zero

Answer: A

Watch Video Solution

8. The amount of silver (at. mass=108) deposited from a solution of silver nitrate, when a current of 9650 coulombs was passed is:

A. 10.8gm

B. 0.108gm

C. 1.08gm

D. 1.08times10^3

Answer: A

Watch Video Solution

9. Numbers of coulombs required to deposit 90 gm of aluminium, when the electrode fraction is,

$Al^3 + 3e^- \rightarrow Al$..... 9.65×10^4, 8.68×10^5, 9.65×10^5, 6.95.

A. 9.65×10^4

B. 8.68×10^5

C. 9.65×10^5

D. 6.95

Answer: C

Watch Video Solution

10. The units of cell constant are: $ohm^{-1}cm^{-1}$, cm, $ohm^{-1}cm, cm^{-1}$

A. $ohm^{-1}cm^{-1}$

B. cm

C. $ohm^{-1}cm$

D. cm^{-1}

Answer: D

Watch Video Solution

11. The units of conductivity are

A. ohm^{-1}

B. $ohm^{-1}cm^{-1}$

C. $ohm^{-2}cm^{-2} \equiv^{-1}$

D. $ohm^{-1}cm^{2}$

Answer: B

Watch Video Solution

12. In a dry cell the depolarizer is :

A. MnO_2

B. Zn

C. Charcoal powder

D. NH_4Cl

Answer: A

Watch Video Solution

13. For one mole of electrolyte which of the following increases with dilution?

A. Resistance

B. Specofic conductance

C. Molar conductance

D. None of these

Answer: C

Watch Video Solution

14. For a redox reaction to proceed in a cell, the e.m.f. must be:

A. Positive

B. Negative

C. Fixed

D. Zero

Answer: A

Watch Video Solution

15. Galvanised iron sheets are coated with: C, Cu, Zn, Ni

.

A. C

B. Cu

C. Zn

D. Ni

Answer: A

Watch Video Solution

16. Name the metal used in galvanisation of iron?

A. Zinc

B. Magnesium

C. Copper

D. Aluminum

Answer: A

Watch Video Solution

17. Copper sulphate solution cannot be stored in a vessel made up of: Zinc, Glass, Copper, Plastic.

A. Zinc

B. Glass

C. Copper

D. Plastic

Answer: A

Watch Video Solution

18. Which of the following statements is false?

A. Oxidation and reduction half- reactions occur at electrodes in electrochemical cells

B. All voltaic (galvanic) cells imvolve the use of electricity to initiate non-spontaneous chemical reactions

C. Reduction occur at the cathode

D. Oxidation occurs at the anode.

Answer: B

Watch Video Solution

19. for the electrorode reaction,

$M^{n+}(aq) + ne^- \rightarrow M(s)$

Nernst equation is: $E = E^o + \frac{RT}{nF}\ln\frac{1}{[M^{n+}]}$,

$E = E^o + RT\ln[M^{n+}]$, $E = E^o + \frac{RT}{nF}ln[M^{n+}]$,

$\frac{E}{E^o} = \frac{RT}{nF}ln[M^{n+}]..$

A. $E = E^o + \frac{RT}{nF}\log\frac{1}{[M^{n+}]}$

B. $E = E^o + RTIn[M^{n+}]$

C. $E = E^o + \frac{RT}{nF} In\left[M^{n+}\right]$

D. $\frac{E}{E^o} = \frac{RT}{nF} In\left[M^{n+}\right].$

Answer: C

Watch Video Solution

20. The tendencies of the electrodes made up of Cu,Zn and Ag to release electrons, when dipped in their respective salt solutions decreases in the order: $Zn > Ag > Cu$, $Cu > Zn > Ag$, $Zn > Cu > Ag$, $Ag > Cu > Zn$.

A. $Zn > Ag > Cu$

B. $Cu > Zn > Ag$

C. $Zn > Cu > Ag$

D. $Ag > Cu > Zn$

Answer: C

Watch Video Solution

21. Consider the following reactions:

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

With reference to the above reaction which one of the following is correct statement:

A. Zn is reduce to Zn^{2+}

B. Zn is oxidised to Zn^{2+} ions

C. Zn^{2+} ions are oxidised to Zn

D. Cu^{2+} ions are oxidised to cu

Answer: B

Watch Video Solution

22. In a galvanic cell, which one of the following statements is not correct?

A. Anode is negatively charged

B. Cathode is positively charged

C. Reduction takes place at anode

D. Reduction takes place at cathode.

Answer: C

Watch Video Solution

23. E_{cell} and $\triangle G^o$ are related as: $\triangle G^o = nFE^o$, $\triangle G^o = -nFE^o$, $\triangle G^o = -nFE^o_{cell}$, $\triangle G^o = nFE^o_{cell} = 0$.

A. $\triangle G^o = nFE^o$

B. $\triangle G^o = -nFE^o$

C. $\triangle G^o = -nFE^o_{cell}$

D. $\triangle G^o = nFE^o_{cell} = 0$

Answer: C

Watch Video Solution

24. The S.I. units of molar conductivity are: Sm^2mol^{-2}, $Smmol^{-1}$, Sm^2mol^{-1}, Sm^3mol^{-1}

A. Sm^2mol^{-2}

B. $Smmol^{-1}$

C. Sm^2mol

D. Sm^3mol^{-1}

Answer: A

Watch Video Solution

25. The electrode potential of SHE is fixed as

A. $0.34V$

B. $-0.44V$

C. $0V$

D. $-0.76V$

Answer: C

Watch Video Solution

26. In galvanisation, metal plating on iron to protect against corrosion is:

A. Nickel plating

B. Copper plating

C. Tin plating

D. Zinc plating

Answer: D

Watch Video Solution

27. Which of the following statements is regarding rusting/corrosion?

A. Iron rust faster in saline water than in pure water

B. Less active metals are readily corroded

C. Air and moisture decreases corrosion

D. Corrosion occurs slowly at bends, scratches or cuts in metals

Answer: A

Watch Video Solution

28. Rust is mixture of:

A. FeO and $Fe(OH)_3$

B. FeO and $Fe(OH)_2$

C. Fe_2O_3 and $Fe(OH)_3$

D. Fe_2O_4 and $Fe(OH)_3$

Answer: C

Watch Video Solution

29. In a galvanic cell cathode is positive electrode and anode is negative electrode.

View Text Solution

30. Why does the conductivity of a solution decrease with dilution?

Watch Video Solution

31. What is dilution?

Watch Video Solution

32. Describe $Ni - Cd$ storage cell.

Watch Video Solution

33. Define Specific conductance.

Watch Video Solution

34. During electrolysis of $NaCl(aq)$ using inert electrodes, the product at anode is oxygen

Watch Video Solution

35. Kohlrausch law can be used to find the molar conductivity of a weak electrolyte at `infinite dilution.

Watch Video Solution

36. Electrical conductance of metals decreases with increase in temperature.

Watch Video Solution

37. Larger the size of an ion, more is its ionic conductance

Watch Video Solution

38. What are electrochemical cells? Name the two types of electrochemical cells.

Watch Video Solution

39. Write four differences between galvanic (or electrochemical) cell and electrolytic cell.

Watch Video Solution

40. What do you understand by standard reduction potential of electrode?

Watch Video Solution

41. What do you understand by normal hydrogen reduction potential of electrode? give it structure and working.

Watch Video Solution

42. What is salt bridge? give its functions.

Watch Video Solution

43. Can a Galvanic cell work without a salt bridge?

Watch Video Solution

44. Why does the e.m.f. of a galvanic cell decrease on drawing current from it? When does it fall to zero

Watch Video Solution

45. Distinguish between emf and potential difference.

Watch Video Solution

46. What do you understand by electrode potential?

Watch Video Solution

47. Name the factors on which electrode potential depends?

Watch Video Solution

48. Why is it not possible to measure the single electrode potential?

Watch Video Solution

49. Explain the construction and working of a Galvanic cell.

Watch Video Solution

50. Can we store copper sulphate solution in iron vessel?

Give suitable explanation in support of your answer

$\left[E^{\circ}\left(Cu^{2+}/Cu\right) = +0.34V, E^{\circ}\left(Fe^{2+}/Fe\right) = -0.44V\right]$

Watch Video Solution

51. Can we store copper sulphate solution in iron vessel?

Give suitable explanation in support of your answer

$\left[E^{\circ}\left(Cu^{2+}/Cu\right) = +0.34V, E^{\circ}\left(Fe^{2+}/Fe\right) = -0.44V\right]$

Watch Video Solution

52. Can we store copper sulphate solution in iron vessel?

Give suitable explanation in support of your answer

$[E^{\circ}(Cu^{2+}/Cu) = +0.34V, E^{\circ}(Fe^{2+}/Fe) = -0.44V]$

Watch Video Solution

53. What is electrochemical series? How it used to determine the e.m.f. of the cell?

Watch Video Solution

54. State and explain Nernst equation.

Watch Video Solution

55. Derive equilibrium constant from Nernst equation.

Watch Video Solution

56. How is standard Gibbs energy of a reaction related to its equilibrium constant?

Watch Video Solution

57. Define conductivity and molar conductivity for the solution of an electrolyte. Discuss their variation with concentration.

Watch Video Solution

58. Write four differences between metallic conductors and electrolytic conductor.

Watch Video Solution

59. State and explain Kohlrausch's law. How would you determine the molar conductance of a weak electrolyte at infinite dilution?

Watch Video Solution

60. What is cell constant? Give its units..

Watch Video Solution

61. How is molar conductivity related to conductivity of a solution? Derive the units of molar conductivity.

Watch Video Solution

62. What is electrolysis? State and explain Faraday's two laws of electrolysis.

Watch Video Solution

63. Write short note on dry cell.

Watch Video Solution

64. Give the cathode, anode, electrolyte and electrode reactions of mercury cell.

Watch Video Solution

65. What are primary and secondary cell? How do they differ from each other?

Watch Video Solution

66. Write short note on lead storage battery.

Watch Video Solution

67. Describe $Ni - Cd$ storage cell.

Watch Video Solution

68. What are fuel cells? Discuss $H_2 - O_2$ fuel cell. List some advantages of fuel cells over other cells.

Watch Video Solution

69. What is corrosion?

Watch Video Solution

70. Discuss the electrochemical theory of corrosion.

Watch Video Solution

71. What is galvanisation?

Watch Video Solution

72. Give two methods to protect iron from rusting.

Watch Video Solution

73. Discuss the factors responsible for rusting of iron.

Watch Video Solution

74. The conductivity of $0.20MKCl$solution at 298 K is $0.0248Scm^{-1}$. Calculate its molar conductivity.

Watch Video Solution

75. The resistance of $0.25M$ solution of an electrolyte was found to be 75Ω. Calculate molar conductivity of the solution, if the electrodes in the cell are 1.8 cm apart and have an area of cross section $3.6cm^2$.

Watch Video Solution

76. Calculate the molar conductance of a solution of $MgCl_2$ at infinite dilution, gievn that the molar ionic conductance of $\lambda^o\left(Mg^{2+}\right) = 126.1 Scm^2 mol^{-1}$ and $\lambda^o\left(Cl^-\right) = 56.3 Scm^2 mol^{-1}$.

Watch Video Solution

77. Calculate the molar conductance at infinite dilution $(\lambda^o m)$ of $CaCl_2$,given that molar ionic conductance for $\lambda^o m\left(Ca^{2+}\right) 119.5$ and $Cl - (76.3) Scm^2 mol^{-1}$

Watch Video Solution

78. The molar conductivities at infinite dilution for sodium acetate, _hydrochloric acid and sodium cholride are 92.5,426.9 and 120.4 Scm^2mol^{-1} respectively at 298 K. Calculate the molar conductivity of acetic acid at infinite dilution.

Watch Video Solution

79. Represent the cell in which the following reaction takes place

$$Mg(s) + 2Ag^+(0.0001M) \rightarrow Mg^{2+}(0.130M) + 2Ag(s)$$

Calculate its E_{cell} if E_{cell} = 3.17 V.

Watch Video Solution

80. calculate the e.m.f of the cell in which the following reaction takes place:

$$Ni(s) + 2Ag^{+}(0.002M) \rightarrow Ni^{2+}(0.160M) + 2Ag(s)$$

Given that $E^{o}_{cell} = 1.05V$

Watch Video Solution

81. Write Nernst equation and calculate e.m.f. of the cell at 298 k.

$$Mg(s)\left|Mg^{2+}(0.001M)\right|\left|Cu^{2+}(0.0001M)\right|Cu(s)$$

Watch Video Solution

82. The cell in which the following reaction occurs:

$2Fe^{3+}(aq) + 2I^{-}(aq) \rightarrow 2Fe^{2+}(aq) + I_2(s)$ has $E^o_{cell} = 0.236V$ at 298 K. Calculate the standard Gibbs energy and the equilibrium constant of the cell reaction.

Watch Video Solution

83. the E_{cell} and $\triangle G$ for the galvanic cell $Cu(s)\,/Cu^{2+}(0.130M)\;||\;\left|Ag^{+}\left(1.00\times10^{-4}M\right)\right|Ag(s)$ given that $E^{\circ}\left(Cu^{2+}/Cu\right) = 0.34V$ and $E^{\circ}\left(Ag^{+}/Ag\right) = 0.80V$

Watch Video Solution

84. Calculate the cell e.m.f. and $\triangle G$ for the cell at 298 k.

$Al / Al^{3+}(0.01M) \mid \mid Fe^{2+}(0.02M)Fe$

Given $E^{\circ}\left(Al^{3+} / Al\right) = -1.66V$ and $E^{\circ}\left(Fe^{2+} / Fe\right) = -0.44V.$

Watch Video Solution

85. Calculate the cell e.m.f. $\triangle G$ for the cell reaction at 25^oC.

$Zn(s)\left|Zn^{2+}(0.0004M)\right|\left|Cd^{2+}\right|0.2M) \mid Cd(s)$

E^{o} values at 25^o , $Zn^{2+} / Zn = -0.763v$ and Cd^(2+)//Cd=-0.403 V`

Watch Video Solution

86. Write Nernst equation and calculate e.m.f. of the following cell at 298 k.

$$Mg(s)\left|Mg^{2+}(0.130M)\right|\left|Ag^{+}(0.0001M)\right|Ag(s)$$

Given $E^{o}\left(Mg^{2+}/Mg\right) = -2.37V$

E^o(Ag^(+)//Ag)=0.80 V(log 1.3=0.1130)`

Watch Video Solution

87. How much electricity in terms of faraday is required to produce?

20.0 g of Ca from molten $CaCl_2$

Watch Video Solution

88. How much electricity in terms of faraday is required to produce?

40.0 g of Al from molten Al_2O_3

Watch Video Solution

89. A solution of $Ni(NO3)_2$ is electrolyzed between platinum electrodes using a current of 5.0 amperes for 20 minutes. What weight of Ni will be produced at cathode ? The atomic mass of Ni = 58.7 $a.m.u$?

Watch Video Solution

90. What mass of zinc can be produced by the electrolysis of zinc sulphate solution when a current of 1.5 amperes is passed for 15 mnutes ? Atomic mass of zinc =65.4 $a.\,m.\,u.$

Watch Video Solution

91. A solution of copper sulphate is electrolysed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at cathode ? The atomic mass of copper = 63.5 $a.\,m.\,u.$

Watch Video Solution