RAVI MATHS TUITION CENTER, NEAR VILLIVAKKAM RLY STATION, CHENNAI – 82.
WHATSAPP - 8056206308

Electro Chemistry

12th Standard

Chemistry

Exam Time : 01:30:00 Hrs | Total Marks : 60

20 x 3 = 60

1) The conductivity of a 0.01M solution of a 1 :1 weak electrolyte at 298K is 1.5×10^{-4} S cm^{-1}.
   i) molar conductivity ozf the solution
   ii) degree of dissociation and the dissociation constant of the weak electrolyte
   Given that
   $\lambda^0_{catlon} = 248.2 \quad S$ cm^2 mol^{-1}
   $\lambda^0_{anlon} = 51.8 \quad S$ cm^2 mol^{-1}
2) Arrange the following solutions in the decreasing order of specific conductance.
   i) 0.01M KCl
   ii) 0.005M KCl
   iii) 0.1M KCl
   iv) 0.25 M KCl
   v) 0.5 M KCl
3) Why is AC current used instead of DC in measuring the electrolytic conductance?
4) 0.1M NaCl solution is placed in two different cells having cell constant 0.5 and 0.25cm^{-1} respectively. Which of the two will have greater value of specific conductance.
5) A current of 1.608A is passed through 250 mL of 0.5M solution of copper sulphate for 50 minutes. Calculate the strength of Cu^{2+} after electrolysis assuming volume to be constant and the current efficiency is 100%.
6) Can Fe^{3+} oxidises Bromide to bromine under standard conditions?
   Given: $E^0_{Fe^{3+}|Fe^{2+}} = 0.771$
   $E_{Br_2|Br^-} = 1.09V$.
7) Is it possible to store copper sulphate in an iron vessel for a long time?
   Given : $E^0_{Cu^{2+}|Cu} = 0.34$ V and $E^0_{Fe^{2+}|Fe} = -0.44$V.
8) Two metals M_1 and M_2 have reduction potential values of -xV and +yV respectively. Which will liberate H_2 and H_2SO_4.
9) Reduction potential of two metals M_1 and M_2 are $E^0_{M_1^{2+}|M_1} = -2.3V$ and $E^0_{M_1^{2+}|M_1} = 0.2V$ Predict which one is better for coating the surface of iron. Given: $E^0_{Fe^{2+}|Fe} = -0.44$V.
10) A solution of silver nitrate is electrolysed for 20 minutes with a current of 2 amperes. Calculate the mass of silver deposited at the cathode.
11) Define molar conductance.
12) 0.1 M solution of two electrolytes P and Q have specific conductance 4 x 10^{-4} S cm^{-1} and 6 x 10^{-6} S cm^{-1} respectively. Which among the following will have greater resistance to the flow of current? Give reason.
13) From the below graph. Explain the variation of molar conductance of a weak electrolyte with decrease in concentration.
14) Give the oxidation and reduction half cell reaction taking place in the Daniel cell.

15) Explain the IUPAC convention of representing a Galvanic cell
16) Write the reactions taking place in anode and cathode of a mercury button cell. Give the over all redox reaction of the cell with the emf generation
17) Explain the process of recharging of lead storage battery.
18) Define Faraday.
19) The standard reduction potential of Fe^{3+}, Fe^{2+} / Pt is +0.771 V. This half cell is connected with another half cell such that emf of the cell is 0.771v What is the other half cell?
20) Write the overall redox reaction for the zinc-copper cell. Show the oxidation and reduction half reaction.

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