CLASS XII
CHAPTER- ELECTROCHEMISTRY

ONE MARK QUESTIONS

1. What is meant by limiting molar conductivity? (2010)

2. The E° values of Cu and Zn are 0.34V and –0.76V respectively. Which of the two is a stronger reducing agent?

3. How many faradays are required to produce 2.4g of Mg?

4. How much charge is needed to oxidize one mole of FeO to Fe_2O_3?

TWO MARK QUESTIONS

1. Define and express the relationship between conductivity and molar conductivity for the solution of an electrolyte. (2011)
2. Electrolytic specific conductance of 0.25M solution of KCl at 25^0C is 2.56 x 10^{-2}S/cm, calculate the molar conductance.
3. Describe the reactions which occur at the electrodes in a fuel cell that causes H_2 and O_2 to produce electricity.
4. How many hours does it take to reduce 3 moles of Fe^{3+} to Fe^{2+} with a current of 2amps?
5. Account for the following:
   a) Alkaline medium inhibits the rusting of iron.
   b) Iron does not rust even if the zinc coating is broken in a galvanized iron pipe.
6. Calculate the time to deposit 1.5 g of silver at cathode when a current of 1.5 A was passed through the solution of $AgNO_3$. (Molar mass of Ag = 108 g mol^{-1}, 1 F = 96500 C mol^{-1}) (2015)

THREE MARK QUESTIONS

1. Three electrolytic cells A, B, C containing solutions of $ZnSO_4$, $AgNO_3$ and $CuSO_4$, respectively are connected in series. A steady current of 1.5 amperes was passed through them until 1.45 g of silver deposited at the cathode of cell B. How long did the current flow? What mass of copper and zinc were deposited? (2008)

2. Conductivity of 0.00241 M acetic acid is 7.896×10^{-5} S cm^{-1}. Calculate its molar conductivity and if λ^0_m for acetic acid is 390.5Scm^2 mol^{-1}, what is its dissociation constant? (2008)
3. Calculate the equilibrium constant and ΔG^0 for the following reaction at 25^0C.
   $Ni(s) + 2Ag^+(aq) \rightarrow Ni^{2+}(aq) + 2Ag(s)$,
   Given that the cell potential at 25^0C is 1.05V. (1F = 96500 C mol^{-1}) (2011)
4. What type of a battery is the lead storage battery? Write the anode and cathode reactions and the overall reaction occurring in a lead storage battery when the cell is in use. (2011)
5. A conductivity cell with cell constant 3cm^{-1} is filled with 0.1M acetic acid solution. The resistance is found to be 4000 ohms. Find a] molar conductance of 0.1M acetic acid
   b] Degree of dissociation of acetic acid given that Λ^0 (CH_3COOH) = 400 S cm^2 mol^{-1}.

FIVE MARK QUESTIONS

1. a) State Kohlrausch law of independent migration of ions. Write an expression for the molar conductivity of acetic acid at infinite dilution according to Kohlrausch law.
   b) Calculate λ^0_m for acetic acid.
   Given that λ^0_m (HCl) = 426 Scm^{2}mol^{-1} and
   λ^0_m (CH_3COONa) = 91 Scm^{2}mol^{-1} (2010)

VALUE BASED QUESTION

1. Ram lives at the second floor. He is painting the iron stair ways of his house to preventing it from corrosion.

   a) What do you mean by corrosion?
   b) How can you prevent corrosion?
   c) What values are displayed by Ram?
   d) Write the reaction occurring during corrosion.

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