

Electrochemistry Assignment No-9

Space for Marks	Question No.	
	Q.1	Explain the term
	a	conductivity (κ)
	b	molar conductivity (Λ)
		Write the relation between κ and Λ
Q.2		State Kohlrausch law of independent migration of ions. write application of Kohlrausch law.
Q.3		Explain i) electrolysis of molten NaCl. ii) electrolysis of aqueous NaCl.
4		What is salt bridge. Write the functions of salt bridge.
5.		Write Nernst equation for the following reaction.
a		$\text{Cr(s)} + 3\text{Fe}^{3+}_{(\text{aq})} \longrightarrow \text{Cr}^{3+}_{(\text{aq})} + 3\text{Fe}^{2+}_{(\text{aq})}$
6		Derive the relationship between standard cell potential and equilibrium constant of cell reaction.
7.		What is cell constant.
8.		Explain with diagram construction and working of Standard Hydrogen electrode (SHE)
9.		What are difficulties in setting of SHE.

Space for
MarksQuestion
No.

- 10 Explain with diagram construction and working of i) Dry cell
ii) Lead Storage cell
iii) H_2-O_2 fuel cell.

11 write advantages and application of H_2-O_2 fuel cell.

12 write application of electrochemical Series -

- 13 write the cell reaction for —
i) Nickel - cadmium storage cell
ii) Mercury battery.

Electrochemistry

Numericals

Question No.

1. The conductivity of 0.02 M AgNO_3 at 25°C is $2.428 \times 10^{-3} \Omega^{-1}\text{cm}^{-1}$. find its molar conductivity.
2. what is the molar conductivity of AgI at zero concentration if the Λ_0 values of NaI , AgNO_3 and NaNO_3 are $126.9 \Omega^{-1}\text{cm}^2\text{mol}^{-1}$, $133.4 \Omega^{-1}\text{cm}^2\text{mol}^{-1}$ and $121.5 \Omega^{-1}\text{cm}^2\text{mol}^{-1}$ respectively.
3. A conductivity cell filled with 0.02 M AgNO_3 gives a resistance of 947 ohms at 25°C . if the cell constant is 2.3 cm^{-1} . Calculate molar conductivity of 0.02 M AgNO_3 soln at 25°C .
4. find the mass of Na deposited during the electrolysis of molten NaCl by the passage of 1 ampere current for 25 minutes .
(molar mass of $\text{Na} = 23\text{ g/mol}$)
5. Two electrolytic cell containing AlCl_3 soln and ZnSO_4 are connected in series. calculate the amount of Zn deposited in ZnSO_4 if 1.2 g of Aluminium are deposited in AlCl_3 cell. molar masses of Al and Zn are 27 g/mol and 65.4 g/mol respectively.

Question No.	
6.	Consider the following cell. $\text{Pb(s)} \text{Pb}^{2+} (0.5\text{M}) \text{Cu}^{2+} (0.00\text{M}) \text{Cu(s)}$ a. write the cell reaction. b. calculate E_{cell} and E°_{cell} at 25°C.
7.	Formulate the cell from the following reaction. $\text{Mg(s)} + \text{Sn}^{2+}(\text{aq}) \longrightarrow \text{Mg}^{2+}(\text{aq}) + \text{Sn(s)}$