

Electrochemistry

Assignment No- 9

Space for
Marks

Question
No.

- Q.1** Explain the term
 a) conductivity (K)
 b) molar conductivity (Λ)
Q.2 Write the relation between K and Λ
 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) $C(s) + 3Fe^{3+}_{(aq)} \rightarrow C^{3+}_{(aq)} + 3Fe^{2+}_{(aq)}$
- 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.

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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

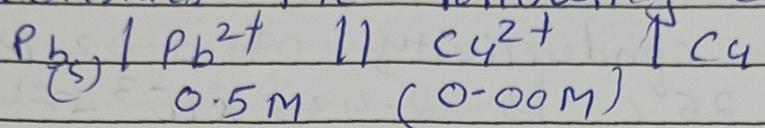
Question No.

1. The conductivity of 0.02 M AgNO_3 at 25°C is $2.428 \times 10^{-3} \text{ S cm}^{-1}$. 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 $126.9 \text{ S cm}^2 \text{ mol}^{-1}$, $133.4 \text{ S cm}^2 \text{ mol}^{-1}$ and $121.5 \text{ S cm}^2 \text{ mol}^{-1}$ 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.

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6. Consider the following cell.



a. write the cell reaction.

b. calculate E_{cell} and E°_{cell} at 25°C .

7. Formulate the cell from the following reaction.

