

PYQSide

JEE MAIN ELECTROCHEMISTRY — ELECTROLYTIC CONDUCTANCE — PYQS

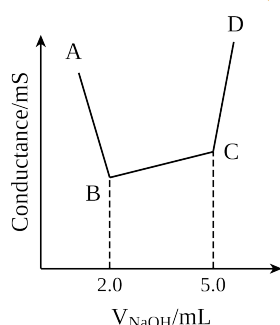
Max. Marks: 24

Questions: 6

Section A (MCQ)

- Q.1** 40 mL of a mixture of CH_3COOH and HCl (aqueous solution) is titrated against 0.1 M NaOH solution conductometrically. Which of the following statement is correct?

[JEE Main 2025 (Online) 3rd April Evening Shift]



- (1) The concentration of CH_3COOH in the original mixture is 0.005 M
- (2) The concentration of HCl in the original mixture is 0.005 M
- (3) CH_3COOH is neutralised first followed by neutralisation of HCl
- (4) Point 'C' indicates the complete neutralisation of HCl

Scan or tap for the full solution



- Q.2** The molar conductivity of a weak electrolyte when plotted against the square root of its concentration, which of the following is expected to be observed?

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) Molar conductivity increases sharply with increase in concentration.
- (2) Molar conductivity decreases sharply with increase in concentration.
- (3) A small increase in molar conductivity is observed at infinite dilution.
- (4) A small decrease in molar conductivity is observed at infinite dilution.

Scan or tap for the full solution



Section B (Numerical)

- Q.3** At 298 K, the molar conductivity of x% (w/w) MX solution (aqueous) is $123.5 \text{ S cm}^2 \text{ mol}^{-1}$. The conductance of same solution is $1.9 \times 10^{-3} \text{ S}$. The value of x is $\text{_____} \times 10^{-2}$.
(Given: cell constant = 1.3 cm^{-1} ; molar mass of MX is 75 g mol^{-1} , density of aqueous solution of MX at 298 K is 1.0 g mL^{-1})

[JEE Main 2026 (Online) 5th April Evening Shift]

Scan or tap for the full solution



- Q.4** For strong electrolyte Λ_m increases slowly with dilution and can be represented by the equation $\Lambda_m = \Lambda_m^\circ - A c^{1/2}$. Molar conductivity values of the solutions of strong electrolyte AB at 18°C are given below :

$c [\text{mol L}^{-1}]$	0.04	0.09	0.16	0.25
$\Lambda_m [\text{S cm}^2 \text{ mol}^{-1}]$	96.1	95.7	95.3	94.9

The value of constant A based on the above data [$\text{in S cm}^2 \text{ mol}^{-1}/(\text{mol/L})^{1/2}$] unit is _____.

[JEE Main 2026 (Online) 28th January Evening Shift]

Scan or tap for the full solution



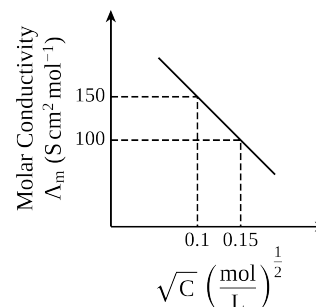
- Q.5** 0.2% (w/v) solution of NaOH is measured to have resistivity $870.0 \text{ m}\Omega \text{ m}$. The molar conductivity of the solution will be $\text{_____} \times 10^2 \text{ mS dm}^2 \text{ mol}^{-1}$. (Nearest integer)

[JEE Main 2025 (Online) 2nd April Evening Shift]

Scan or tap for the full solution



- Q.6** Given below is the plot of the molar conductivity vs $\sqrt{\text{concentration}}$ for KCl in aqueous solution.



If, for the higher concentration of KCl solution, the resistance of the conductivity cell is $100\ \Omega$, then the resistance of the same cell with the dilute solution is 'x' Ω .

The value of x is _____ (Nearest integer)

[JEE Main 2025 (Online) 28th January Morning Shift]

Scan or tap for the
full solution



ANSWER KEY

Section A (MCQ)

Ques.	1	2									
Ans.	2	2									

Section B (Numerical)

Ques.	3	4	5	6			
Ans.	15	4	23	150			