PYQSide PYQSide.com — free PYQs with solutions Powered by PrepBlink

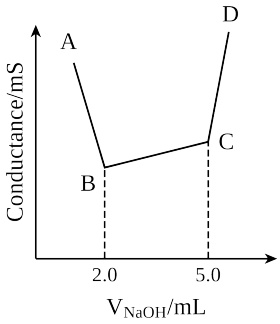
JEE MAIN ELECTROCHEMISTRY — ELECTROLYTIC CONDUCTANCE — PYQS

Max. Marks: 24 **Questions:** 6

Section A (MCQ) — 2 questions

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) — 4 questions

Q.3 At 298 K, the molar conductivity of x% (w/w) MX solution (aqueous) is 123.5 S cm^2 mol^{-1}. The conductance of same solution is 1.9×10^{-3} S. The value of x is _____ $\times 10^{-2}$.
(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
$\Lambda_m = \Lambda_m^\circ - Ac^{1/2}$
Molar conductivity values of the solutions of strong electrolyte AB at 18°C are given below :

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

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

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

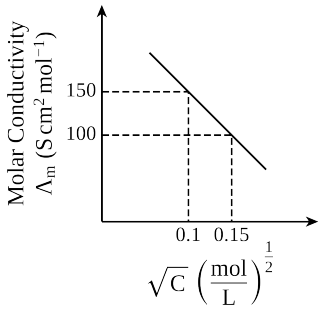
Scan or tap for the full solution

Q.5 0.2% (w/v) solution of NaOH is measured to have resistivity 870.0 mΩ m. The molar conductivity of the solution will be _____ $\times 10^2$ mS dm^2 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 Ω, 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) — 2 questions

Ques.	1	2									
Ans.	**2**	**2**									

Section B (Numerical) — 4 questions

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