

JEE MAIN ELECTROCHEMISTRY — KOHLRAUSCH'S LAW — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ) — 3 questions

Q.1 Consider the following data.

Electrolyte Λ_m° ($\text{S cm}^2 \text{mol}^{-1}$)

BaCl_2 x_1

H_2SO_4 x_2

HCl x_3

BaSO_4 is sparingly soluble in water. If the conductivity of the saturated BaSO_4 solution is $x \text{ S cm}^{-1}$ then the solubility product of BaSO_4 can be given as (Here $\Lambda_m = \Lambda_m^\circ$)

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) $\frac{10^6 x^2}{\alpha^2(x_1 + x_2 - 2x_3)^2}$ (2) $\frac{x^2}{(x_1 + x_2 - 2x_3)^2}$
- (3) $\frac{\alpha^2(x_1 + x_2 - 2x_3)^2}{10^6 x^2}$ (4) $\frac{x^2}{(x_1 + x_2 + 2x_3)^2}$

Scan or tap for the full solution



Q.2 Given below are two statements :

Statement-I: Mohr's salt is composed of only three types of ions – ferrous, ammonium and sulfate.

Statement-II: If the molar conductances at infinite dilution for ferrous, ammonium and sulfate ions are x_1 , x_2 and $x_3 \text{ S cm}^2 \text{mol}^{-1}$, respectively then the molar conductance for Mohr's salt solution at infinite dilution would be given by $x_1 + x_2 + 2x_3$

In the light of the given statements, choose the correct answer from the options given below :

[JEE Main 2025 (Online) 7th April Morning Shift]

- (1) Both Statement-I and Statement-II are true
- (2) Statement-I is true but Statement-II is false
- (3) Both Statement-I and Statement-II are false
- (4) Statement-I is false but Statement-II is true

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Q.3 Correct order of limiting molar conductivity for cations in water at 298 K is :

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

- (1) $\text{H}^+ > \text{Na}^+ > \text{K}^+ > \text{Ca}^{2+} > \text{Mg}^{2+}$
- (2) $\text{H}^+ > \text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+ > \text{Na}^+$
- (3) $\text{Mg}^{2+} > \text{H}^+ > \text{Ca}^{2+} > \text{K}^+ > \text{Na}^+$
- (4) $\text{H}^+ > \text{Na}^+ > \text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+$

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Section B (Numerical) — 3 questions

Q.4 Molar conductivity of a weak acid HQ of concentration 0.18 M was found to be $\frac{1}{30}$ of the molar conductivity of another weak acid HZ with concentration of 0.02 M. If λ_{Q^-} happened to be equal to λ_{Z^-} , then the difference of the pK_a values of the two weak acids ($\text{pK}_a(\text{HQ}) - \text{pK}_a(\text{HZ})$) is ____ (Nearest integer).

[Given: degree of dissociation (α) $\ll 1$ for both weak acids, λ° : limiting molar conductivity of ions]

[JEE Main 2026 (Online) 24th January Evening Shift]

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Q.5 The pH and conductance of a weak acid (HX) were found to be 5 and $4 \times 10^{-5} \text{ S}$, respectively. The conductance was measured under standard condition using a cell where the electrode plates having a surface area of 1 cm^2 were at a distance of 15 cm apart. The value of the limiting molar conductivity is ____ $\text{S m}^2 \text{mol}^{-1}$. (nearest integer) (Given : degree of dissociation of the weak acid (α) $\ll 1$)

[JEE Main 2026 (Online) 21st January Morning Shift]

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Q.6 The molar conductance of an infinitely dilute solution of ammonium chloride was found to be $185 \text{ S cm}^2 \text{mol}^{-1}$ and the ionic conductances of hydroxide and chloride ions are 170 and $70 \text{ S cm}^2 \text{mol}^{-1}$, respectively. If molar conductance of 0.02 M solution of ammonium hydroxide is $85.5 \text{ S cm}^2 \text{mol}^{-1}$, its degree of dissociation is given by $x \times 10^{-1}$. The value of x is _____. (Nearest integer) [JEE Main 2025 (Online) 4th April Evening Shift]

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ANSWER KEY**Section A (MCQ) — 3 questions**

Ques.	1	2	3									
Ans.	1	2	2									

Section B (Numerical) — 3 questions

Ques.	4	5	6									
Ans.	2	6	3									