

NEET ELECTROCHEMISTRY — KOHLRAUSCH'S LAW — PYQS

Max. Marks: 44

Questions: 11

Section A (MCQ) — 11 questions

Q.1 For a salt XY, which is a strong electrolyte, the plot of Λ_m versus $\sqrt{c}$ has a slope of $-90.0 \text{ S cm}^2 \text{ mol}^{-3/2} \text{ L}^{1/2}$ at 298 K. At 0.01 M concentration of XY, the value of Λ_m is $145.0 \text{ S cm}^2 \text{ mol}^{-1}$. The limiting molar conductivity of Y^- ion ($\lambda_{\text{Y}^-}^0$, in $\text{S cm}^2 \text{ mol}^{-1}$) at 298 K will be
(Given : $\lambda_{\text{X}^+}^0 = 74.0 \text{ S cm}^2 \text{ mol}^{-1}$)

[RE-NEET (UG) 2026]

- (1) 76.0 (2) 80.0 (3) 100.0 (4) 90.0

Scan or tap for the full solution



Q.2 If the molar conductivity (Λ_m) of a 0.050 mol L^{-1} solution of a monobasic weak acid is $90 \text{ S cm}^2 \text{ mol}^{-1}$, its extent (degree) of dissociation will be
[Assume $\Lambda_{+}^{\circ} = 349.6 \text{ S cm}^2 \text{ mol}^{-1}$ and $\Lambda_{-}^{\circ} = 50.4 \text{ S cm}^2 \text{ mol}^{-1}$.]
(1) 0.225 (2) 0.215 (3) 0.115 (4) 0.125

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Q.3 The molar conductance of NaCl, HCl and CH_3COONa at infinite dilution are 126.45, 426.16 and $91.0 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. The molar conductance of CH_3COOH at infinite dilution is. Choose the right option for your answer.

[NEET (UG) 2021]

- (1) $540.48 \text{ S cm}^2 \text{ mol}^{-1}$ (2) $201.28 \text{ S cm}^2 \text{ mol}^{-1}$
(3) $390.71 \text{ S cm}^2 \text{ mol}^{-1}$ (4) $698.28 \text{ S cm}^2 \text{ mol}^{-1}$

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Q.4 The molar conductivity of 0.007 M acetic acid is $20 \text{ S cm}^2 \text{ mol}^{-1}$. What is the dissociation constant of acetic acid? Choose the correct option.

[$\Lambda_{\text{H}^+}^{\circ} = 350 \text{ S cm}^2 \text{ mol}^{-1}$
 $\Lambda_{\text{CH}_3\text{COO}^-}^{\circ} = 50 \text{ S cm}^2 \text{ mol}^{-1}$]
[NEET (UG) 2021]

- (1) $2.50 \times 10^{-5} \text{ mol L}^{-1}$ (2) $1.75 \times 10^{-4} \text{ mol L}^{-1}$
(3) $2.50 \times 10^{-4} \text{ mol L}^{-1}$ (4) $1.75 \times 10^{-5} \text{ mol L}^{-1}$

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Q.5 At 25°C molar conductance of 0.1 molar aqueous solution of ammonium hydroxide is $9.54 \text{ ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1}$ and at infinite dilution its molar conductance is $238 \text{ ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1}$. The degree of ionisation of ammonium hydroxide at the same concentration and temperature is [NEET 2013]
(1) 4.008% (2) 40.800%
(3) 2.080% (4) 20.800%

Scan or tap for the full solution



Q.6 Molar conductivities (Λ_m°) at infinite dilution of NaCl, HCl and CH_3COONa are 126.4, 425.9 and $91.0 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. (Λ_m°) for CH_3COOH will be [AIPMT 2012 (Mains)]
(1) $425.5 \text{ S cm}^2 \text{ mol}^{-1}$ (2) $180.5 \text{ S cm}^2 \text{ mol}^{-1}$
(3) $290.8 \text{ S cm}^2 \text{ mol}^{-1}$ (4) $390.5 \text{ S cm}^2 \text{ mol}^{-1}$

Scan or tap for the full solution



Q.7 Limiting molar conductivity of NH_4OH [i.e. $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0$] is equal to [AIPMT 2012 (Prelims)]
(1) $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0 + \Lambda_{\text{m}(\text{NaCl})}^0 - \Lambda_{\text{m}(\text{NaOH})}^0$
(2) $\Lambda_{\text{m}(\text{NaOH})}^0 + \Lambda_{\text{m}(\text{NaCl})}^0 - \Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0$
(3) $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0 + \Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0 - \Lambda_{\text{m}(\text{HCl})}^0$
(4) $\Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0 + \Lambda_{\text{m}(\text{NaOH})}^0 - \Lambda_{\text{m}(\text{NaCl})}^0$

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Q.8 Which of the following expressions correctly represents the equivalent conductance at infinite dilution of $\text{Al}_2(\text{SO}_4)_3$. Given that $\Lambda_{\text{Al}^{3+}}^{\circ}$ and $\Lambda_{\text{SO}_4^{2-}}^{\circ}$ are the equivalent conductances at infinite dilution of the respective ions? [AIPMT 2010 (Mains)]
(1) $2\Lambda_{\text{Al}^{3+}}^{\circ} + 3\Lambda_{\text{SO}_4^{2-}}^{\circ}$
(2) $\Lambda_{\text{Al}^{3+}}^{\circ} + \Lambda_{\text{SO}_4^{2-}}^{\circ}$
(3) $(\Lambda_{\text{Al}^{3+}}^{\circ} + \Lambda_{\text{SO}_4^{2-}}^{\circ}) \times 6$
(4) $\frac{1}{3}\Lambda_{\text{Al}^{3+}}^{\circ} + \frac{1}{2}\Lambda_{\text{SO}_4^{2-}}^{\circ}$

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Q.9 The equivalent conductance of M/32 solution of a weak monobasic acid is 8.0 mho cm^2 and at infinite dilution is 400 mho cm^2 . The dissociation constant of this acid is [AIPMT 2009]

- (1) 1.25×10^{-6} (2) 6.25×10^{-4}
 (3) 1.25×10^{-4} (4) 1.25×10^{-5}

Scan or tap for the full solution



Q.10 Kohlrausch's law states that at [AIPMT 2008]

- (1) Infinite dilution, each ion makes definite contribution to conductance of an electrolyte whatever be the nature of the other ion of the electrolyte
 (2) Infinite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte
 (3) Finite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte
 (4) Infinite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte depending on the nature of the other ion of the electrolyte.

Scan or tap for the full solution



Q.11 Ionic conductances of Ba^{2+} and Cl^- ions at infinite dilution are 127 and $76 \text{ ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1}$ respectively. Equivalent conductance of BaCl_2 at infinite dilution is [AIPMT 2000]

- (1) 139.5 (2) 101.5 (3) 203 (4) 279

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	1	3	4	1	4	4	2	4	1	1