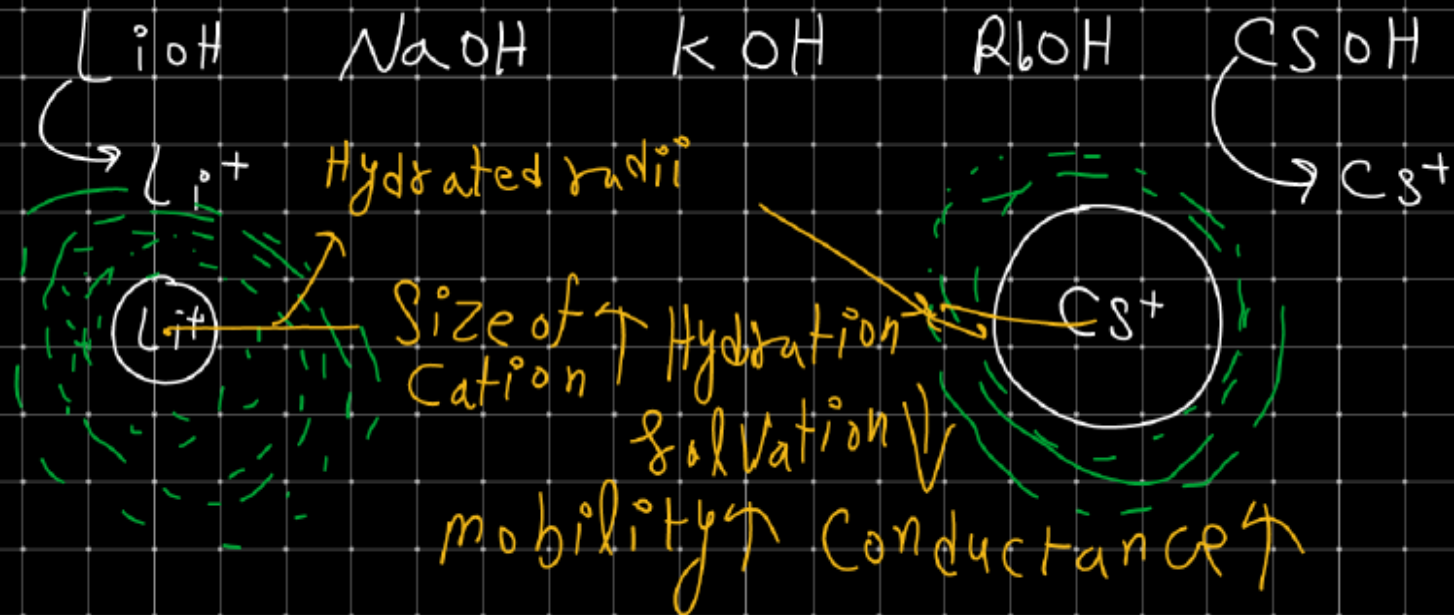


Factors affecting Conductance

(5) Solvation/Hydration



(6) Dilution

(i) Dilution effect on Conductance ($\alpha \ll 1$)

For Strong electrolyte
($\alpha = 1$)

on dilution = $\frac{1}{\sqrt{V}}$

1ltr Solⁿ \rightarrow 100 ions
2ltr Solⁿ \rightarrow 100 ions

Dilution \uparrow I.F. All \downarrow mobility of ions \uparrow Conductance \uparrow

For Weak electrolyte

$\alpha \propto \sqrt{V}$ A/c to Ostwald

1ltr Solⁿ \rightarrow 4 ions ($\alpha = 15\%$)
2ltr \rightarrow 6 ions

Dilution \uparrow no. of ions \uparrow Conductance \uparrow

For Conductance \div

On dilution (\uparrow) Conductance increased (\uparrow)

(ii) Dilution effect on Conductivity (κ) \div

For $1\text{cm}^3/1\text{ml}$ Solⁿ

$$\kappa = G$$

For Strong electrolyte

For Weak electrolyte

For Strong electrolyte

1ltr soln \rightarrow 50,000 ions.
1000ml \rightarrow 50,000 ions.
1ml \rightarrow 50 ions.

on dilution.

2ltr \rightarrow 50,000 ions

2000ml \rightarrow 50,000 ions.

1ml \rightarrow 25 ions.

on dilution (↑) no. of ions / ml ↓ Conductivity ↓

For weak electrolyte

1ltr soln \rightarrow 40,000 ions
1ml soln \rightarrow 40 ions

on dilution

2ltr soln \rightarrow 60,000 ions

2000ml \rightarrow 60000

1ml \rightarrow 30 ions

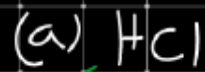
On dilution (\uparrow) Conductivity (\downarrow)

(3) Dilution effect on molar conductance (Λ_m) & Equivalent conductance (Λ_{eq})

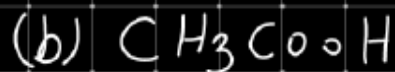
$$\Lambda_m / \Lambda_{eq} = \nu / K \quad \underline{V(m)} \quad \uparrow \uparrow$$

Conductance \propto no. of ions \propto mobility of ions

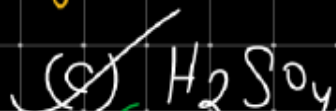
Q.1. Which of the following max. Conductance.



→ 2 ions



Weak

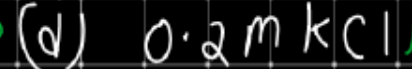
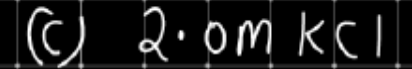
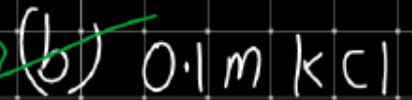
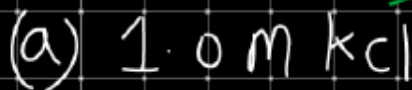


→ 3 ions



Weak

Q.2. WDTF has min. specific conductance (K)



v.f = 1

$C_{min} \quad V_{max} \quad K_{min}$

$\kappa_{eq} = \frac{\kappa \cdot 1000}{N \rightarrow max}$

$C_{min} = \frac{n}{V_{max}}$

$N = m \cdot v.f.$

Q.3. In above Q. have min. equivalent Conductance

option (C)

Q.4. Arrange the following compound in aq. soln
#_{imp.} in increasing order of Conductance

HCl, NaCl, KCl, LiCl $\xrightarrow{H^+}$ Very small
**

sol. $LiCl < NaCl < KCl < HCl$

