Cathode means (Keta = downwards, hodes - way)
Anode means (Ana = upwards, hodes : way)

Conductance :- The term conductance means the ease with which a current flows through the conductor, $c = \frac{1}{R}$.
Conductance is reciprocal of resistance.
It's unit is ohms and unit of c is mhos or ohm^{-1}.

Metallic conductors as well as electrolytes obey ohms law. "The strength of current (I) flowing through a conductor is directly proportional to the potential difference (E), applied across the conductor and inversely proportional to the resistance (R) of the conductor

$$I = \frac{E}{R}$$

Specific conductance and resistance

The resistance of a conductor is directly proportional to its length (l) and inversely proportional to its cross section (a)

i.e. $R \propto \frac{l}{a}$

or $R = \rho \frac{l}{a}$

where ρ is known as specific resistance. The ~~recip~~ reciprocal of ρ is known as specific conductance (κ)

i.e. $K = \frac{1}{\rho}$

The conductivity offered by a solution of c or conductor of length 1 cm and area of unit cross section is known as specific conductance.

l/a is known as cell constant

$$K = \frac{1}{\rho} = \frac{l}{aR}$$

It's unit is $\frac{cm}{cm^2 ohm} = cm^{-1} ohm^{-1} = cm^{-1} mho$

Equivalent conductance : It is defined as the conducting power of all the ions produced by 1g eq of an electrolyte in a given solution, when placed between two sufficiently large electrodes which are 1 cm apart. It is denoted by π

π = specific conductance $\times V$

$= KV$

where V is the volume in cc containing 1g eq of electrolyte dissolved in it

It's unit is $cm^{-1} mho\ cm^3/g\,eq = mho\ cm^2/g.eq$

Molar conductance : It is defined as the conducting power of all ions in a solution containing 1g mole of an electrolyte, when placed between two sufficiently large electrodes which are 1 cm apart. It is denoted by μ.

$\mu = KV$

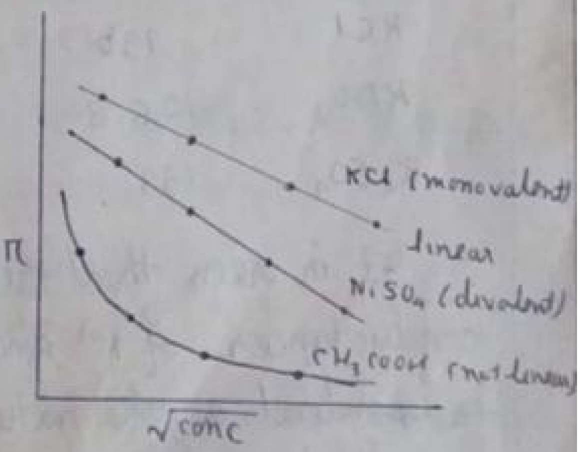
where V is volume in c.c containing 1 g mole of the electrolyte

Unit is $mho\ cm^2\ mole^{-1}$

Variation of conductance

The conductance of a solution is due to the presence of ions in solution. Strong electrolytes possess high values of equivalent conductance even at high temperature. Weak electrolytes posses low value of equivalent conductance

Equivalent conductance of an electrolyte increases on dilution because the no of ions furnished by an electrolyte increases on dilution. In case of strong electrolytes, increase of equivalent conductance with dilution is not so large as in the case of weak electrolytes. In case of strong electrolytes, there is a tendency for equivalent conductance to approach a certain limiting value when ~~conductance~~ concentration approaches to zero. The limiting value is known as equivalent conductance at zero concentration or at infinite dilution (Π_0). The Π_0 value in case of strong electrolyte is obtained by extrapolating the eq conductance graph to zero concentration. As the valency of the ions increases, the falling of equivalent conductance with increase in concentration is more ~~marke~~ marked. (shown for KCl and $NiSO_4$)



In case of weak electrolytes, such as CH_3COOH, there is no indication that the limiting value can be attained even when concentration approaches to zero. The Π_0 can not be obtained by extrapolating the graph for weak electrolyte. However it may be obtained indirectly by ~~empl~~ employing Kohlrausch's law

i.e decrease of dilution

The degree of dissociation for an electrolyte

$$\alpha = \frac{\Pi_c}{\Pi_0} = \frac{\text{Eq. conductance at conc } c}{\text{Eq. conductance at infinite dilution}}$$

The specific conductance depends upon the no. of ions present per unit volume of the solution since on dilution the degree of dissociation increases but the no. of ions per unit volume decreases. It is therefore expected that the specific conductance of a solution decreases on dilution.

The molar conductance increases on dilution in the similar way as eq. conductance.

The conductance of a solution varies with temperature. It increases about 2% per degree rise in temperature