- f) effective resistance of circuit = $\frac{GS}{G+S}$
- g) If the range of galvanometer is increased to n times, $1/n^{th}$ of main current passes through galvanometer. Hence sensitiveness decrease by n times.

48. Ammeter :

- a) It is a device used to measure current in electrical circuits.
- b) Galvanometer can be converted in to Ammeter by connecting low resistance parallel to it.
- c) To increase the range by 'n' times or to decrease the Sensitiveness by 'n' times , shunt to be connected across Galvanometer.

$$S = \frac{ig(G)}{i - ig} = \frac{G}{(n - 1)}$$

Here $n = \frac{i}{i_g} = \frac{new \ range}{old \ range} = \frac{old \ dividisions / A}{new \ divisions / A}$

d) Resistance of Ammeter = $\frac{GS}{G+S}$

- e) Resistance of ideal Ammeter is zero and its conductivity is infinity
- f) Ammeter must be always connected in series to the conductor.
- g) Among low range and high range Ammeter, low range Ammeter has more resistance.
- h) As shunt value decreases sensitivity decreases, accuracy increases.

49. Voltmeter :

- a) Voltmeter is a device used to measure P.D. across the conductor includer circuits.
- b) Galvanometer is converted into voltmeter by connecting and the sistance in series to it.
- c) Voltmeter is always connected in parallel to the conductor [P.D. across which is to be measured]
- d) Resistance of voltmeter = G + P
- e) Here 'V' is range of other (e) resize of ideal voltmeter is infinity and conductivity is zero resize of ideal voltmeter is infinity and conductivity is
- f) Among low range and high range voltmeters, high range voltmeter has more resistance.
- g) P.D. across the ends of voltmeter is, $V = i_g + (G+R)$
- h) Resistance to be connected in series to galvanometer to convert into voltmeter is $R = \frac{V}{i} G$.
- i) To increase the range by n times,

$$\begin{split} n &= \frac{new \ rangeV_2}{old \ rangeV_1} \\ &= \frac{i_g(G+R)}{i_g(G)} \\ &= 1 + \frac{R}{G} \end{split}$$

Hence resistance to be connected in series to galvanometer is R = G(n-1).

j) As series resister value increases sensitivity decreases, accuracy increases