Basic Electrical Engineering.

100101 || 100201

Credit-5

(1) Objective → Our main is to transfer energy from one pt. to another. For this we will required interconnection b/w electrical element. This interconnection of electrical element is called electric ckt.

(2) Modern Electron theory → Every matter Consists of very small divisible particles called molecule.

(Small divisible particle are molecules)

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Further, Minute particle called atom

Nucleus — Extra-nucleus

(i) Every matter is electrical in nature, Since they Contain charged particle like electron and proton

* electrical netural = Body Contain Same no. of proton and electron.

* If some electron are removed from the body there will be deficit of e^-. body attain +ve charge.

* excess of e^-, -ve charge

(ii) They differ from each other, since they have different atomic no. and structure.

(3) Charge → Electrical property of atomic particle, of which matter Consist of.

Basic quantity in electric ckt → 'Charge'

Largest unit of electrical charge → Coloumb

or

Pratically unit

Charge of $1e^- = 1.6 \times 10^{-19} C$

or

1 coloumb of Charge $= 6.24 \times 10^{18}$ electron

Note:→ Free electron → Those e^- are very loosely attached to nucleus of an atom and can be easily detached called free e^-.

(4) Electric potential. → When a body is charged, e^- are supplied to it or they are removed from it. Thus work is done.

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It is stored in the body in the form of electric potential.

Electric potential $= \frac{\text{Work done}}{\text{Charge}} = \frac{W}{Q} \Rightarrow \frac{\text{Joule}}{\text{Coulomb}}$ | Volt.

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Capacity of Charged body to do work is called electric potential.

$W = 1$ Joule, $Q = 1$ Coulomb

Unit → J

(5) Difference in electric potential of two charged body is called ~~Volt~~, potential difference.

(6) The Rate of change of Charge w.r.t to time is called Current.

Unit Ampere

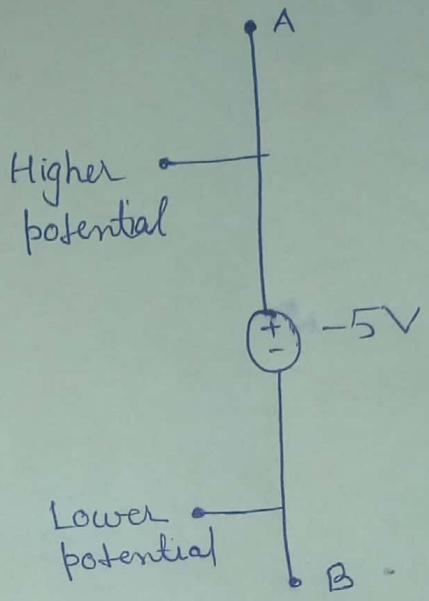
$i = \frac{dq}{dt}$ $\frac{C}{S}$ or A

Note:→ Matter ~~flow~~ flows from higher potential to lower potential (i.e positive terminal to negative terminal of cell through external ckt).

(a) $V_A > V_B$

(b) $V_A < V_B$

(c) $V_A = V_B$



$V_A - V_B = -5$

$V_A = V_B - 5$

(7) Resistance → It is the element which offer opposition to the flow of Current (electron). Thus heat will produced due to collision of moving electron with other atom and molecules. Thus it will Convert electrical into heat energy.

How to identify → Voltage across the element is linearly prop. to Current, then element is resistor.