ELECTRICITY-1

X th SCIENCE

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GraVity BIOLOGY
PARMARTHAM CLASSES

Electric Circuit

Electric circuit is a closed loop of conductors through which charges can flow.

Electric Current

An electric current is a flow of electric charge.

-Charge is carried by electrons or ions.

-Rate of flow of charge is electric current

I=Q/t (Q =Electric charge ,S.I unit is coulomb (C),charge on one electron=1.6x 10^{-19}C)

-SI unit of electric current is Ampere (A)

-. In an electric circuit the direction of electric current is taken as opposite to the direction of the flow of electrons, which are negative charges

-1 Ampere current = 1C/1s (1 mA(milliampere) = 10^{-3}A) (1 mA = $^{-6}$A)

- An instrument called ammeter measures electric current in a circuit. It is always connected in series in a circuit.

Q = ne or I=ne/t where n is number of electron and e= charge on one electron

Example –A conductor carries a current of 0.2 A. Find the amount of charge that will pass through the cross-section of the conductor in 30s. How many electrons will flow in this interval if the charge on
One electron is 1.6x 10^{-19}C ?
Hint-Q=It ,Q=ne ,n=Q/e

Electric potential difference

-electric potential difference between two points in an electric circuit carrying some current as the work done to move a unit charge from one point to the other is called potential difference
-Electric potential is the lavel like water flow from higher leval to lower leval.
-S.I unit is volt(v)

- Potential difference (*V*) between two points = Work done (*W*) /Charge (*Q*) V= W/Q

-1 volt is said to be when one columb of charge flow through circuit then one joule of energy is needed.

1V = IJ/1C

-It is measured by means of an instrument called the voltmeter. The voltmeter is always connected in parallel

Example- How much work is done in moving a charge of 2 C across two points having a potential difference 12 V?

Hint- v=w/q then w=vq

emf -In an electric circuit, electromotive force is the work done by a source on an electrical circuit