BROAD ROOT SCHOLARS ACADEMY

Formulae On Electricity

Quantity	Formulas	Unit
Charge, Q	$Q = ne$	Coulomb (C)
Work Done, W	$W = Q \times V$ or $W = VIt$ or $W = \frac{V^2 t}{R}$	Joule (J)
Current, I	$I = \frac{Q}{t}$	Amperes (A)
Voltage (P.D.), V	$V = \frac{E}{Q}$ or $V = \frac{W}{Q}$	Volts (V)
Resistance, R	$R = \frac{\rho l}{A}$ or $R = \frac{V}{I}$ $[Ohm\ Law]$	Ohm (Ω)
Total Resistance (In Series)	$R = R_1 + R_2 + R_3 + \cdots \ldots \ldots \ldots \ldots + R_n$	
Total Resistance (In Parallel)	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots \ldots \ldots \ldots \ldots + \frac{1}{R_n}$	
Power, P	$P = VI$ or $P = I^2R$ or $P = V^2R$	Watts (W)
Total Power (In Series)	$\frac{1}{P} = \frac{1}{P_1} + \frac{1}{P_2} + \frac{1}{P_3} + \cdots \ldots \ldots \ldots \ldots + \frac{1}{P_n}$	
Total Power (In Parallel)	$P = P_1 + P_2 + P_3 + \cdots \ldots \ldots \ldots \ldots + P_n$	
Conductivity, σ	$\sigma = \frac{1}{\rho}$	Siemens per meter (S/m)
Electrical Energy (E)	$E = P \times t$ or $E = VIt$ or $E = I^2Rt$	Kilowatt-hour (kWh)

$n = any\ integer$

$e = 1.602 \times 10^{-19}\ C$

$Q = Charge$

$V = Voltage\ (potential\ difference)$

$I = Current$

$t = time$

$R = Resistance$

$W = Work\ done$

$E = Energy$

ρ = Resistivity

l = Length

A = Area

$P = Power$