EET103 Formula Sheet

1. Ohm's Law

$V = I \times R$

Rearranged Forms:

$I = V / R$ $R = V / I$

Where:
- V = voltage (volts, V)
- I = current (amperes, A)
- R = resistance (ohms, Ω)

2. Power Formulas

$P = V \times I$

Where:
- P = power (watts, W)

Algebraic Variations:

$P = I^2 \times R$ $P = V^2 / R$

Rearranged Forms:

$I = P / V$ $V = P / I$ $R = V^2 / P$

3. Kirchhoff's Voltage Law (KVL)

The sum of voltages around any closed loop equals zero.

$\Sigma V = 0$

Example:
$V_S - V_1 - V_2 - V_3 = 0$
Or equivalently: $V_S = V_1 + V_2 + V_3$

4. Kirchhoff's Current Law (KCL)

The sum of currents entering a node equals the sum of currents leaving the node.

$\Sigma I_{in} = \Sigma I_{out}$

Example: $I_T = I_1 + I_2 + I_3$

5. Metric Prefixes and Conversions

Prefix	Symbol	Multiplier	Power of 10
Mega	M	1,000,000	10^6
Kilo	k	1,000	10^3
Base Unit	-	1	10^0
Milli	m	0.001	10^{-3}
Micro	μ	0.000001	10^{-6}

Conversions:

1 kΩ = 1,000 Ω 1 mA = 0.001 A 1 μA = 0.000001 A