

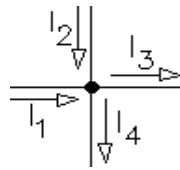
ECE 2210 / 00

Exam 2 - Fall 2014

Useful Information

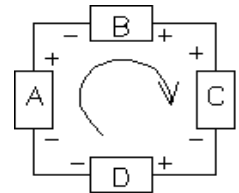
KCL, Kirchhoff's Current Law

$I_{in} = I_{out}$ of any point, part, or section



KVL, Kirchhoff's Voltage Law

$V_{gains} = V_{drops}$ around any loop



Node = all points connected by wire, all at same voltage (potential)

Ohm's law (resistors)

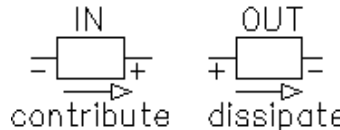
$$V = I \cdot R$$



$$I = \frac{V}{R}$$

$$R = \frac{V}{I}$$

Power $P_{IN} = P_{OUT}$ for resistor circuits

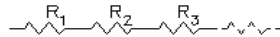


$P = V \cdot I$ for everything

$$= I^2 \cdot R = \frac{V^2}{R} \text{ for resistors}$$

Maximum power transfer: $R_L = R_{Th}$ Load = Thevenin's

Resistors



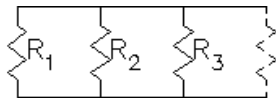
series: $R_{eq} = R_1 + R_2 + R_3 + \dots$

Exactly the **same current** through each resistor

Voltage divider:

$$V_{Rn} = V_{total} \cdot \frac{R_n}{R_1 + R_2 + R_3 + \dots}$$

parallel: $R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots}$



Exactly the **same voltage** across each resistor

current divider:

$$I_{Rn} = I_{total} \cdot \frac{\frac{1}{R_n}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots}$$

Superposition and Thevenin

To zero out a source: Voltage source => short Current source => open

September 25 2014

Closed Book, Closed notes, Calculators OK

Show all work to receive credit

Circle answers, show units, and round off reasonably