

Definitions and Concepts for CAIE Physics A-level

Topic 10: DC Circuits

Conservation of Charge: The total charge in a system cannot change.

Conservation of Energy: Energy cannot be created or destroyed - it can only be transferred into different forms.

Electromotive Force: The energy supplied by a source per unit charge passing through the source, measured in volts.

Internal Resistance: The resistance to the flow of charge within a source. Internal resistance results in energy being dissipated within the source.

Kirchoff's First Law: The total current entering a junction is equal to the total current leaving it.

Kirchhoff's Second Law: A consequence of the conservation of energy. The sum of the voltages in any closed loop must equal zero.

Parallel Connection: When two electrical components are on separate loops to one another in a circuit. Potential difference over each loop is the same, current is split between branches.

Potential Divider: A method of splitting a potential difference, by connecting resistors in series. The total potential difference is split in the ratio of their resistances.

Series Connection: When two electrical components are on the same loop to one another in a circuit. Potential difference is split between components depending on their resistance, current is the same across all components.

Variable Resistors: A resistor that can have its resistance changed. Typically, these are used with power supplies to change the voltage of a circuit without using a transformer.

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