

WJEC England GCSE Physics

7.1 - Current, Potential Difference and Resistance

Flashcards

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What is electric current?



What is electric current?

The flow of electrical charge.



State the equation linking charge, current and time. Give the units for the quantities involved.



State the equation linking charge, current and time.
Give the units for the quantities involved.

$$Q = I t$$

Charge (Coulombs), Current (Amperes),
Time (Seconds)



What can be said about the value of current at any point in a single closed loop?



What can be said about the value of current at any point in a single closed loop?

Current is the same at all points in a closed loop.



What two factors does the current in a circuit depend on?



What two factors does the current in a circuit depend on?

1. Potential Difference (V)
2. Resistance (R)



What equation should be used to calculate potential difference if current and resistance are known? State the units for all 3 quantities.



What equation should be used to calculate potential difference if current and resistance are known? State the units for all 3 quantities.

$$V = IR$$

Potential Difference (V), Current (A),
Resistance (Ω)



What is an 'Ohmic Conductor'? State the condition required.



What is an 'Ohmic Conductor'? State the condition required.

- A conductor for which current and potential difference are directly proportional
 - Resistance remains constant
 - Temperature must be constant



List **four** components for which resistance is not constant as current changes.



List **four** components for which resistance is not constant as current changes.

1. Lamps
2. Diodes
3. Thermistors
4. Light Dependant Resistors (LDRs)



What happens to the resistance of a filament lamp as the temperature increases? Why?



What happens to the resistance of a filament lamp as the temperature increases? Why?

- Resistance increases.
- Ions in metal have more energy, so vibrate more, causing more collisions with electrons as they flow through the metal, creating greater resistance to current flow.



What is special about current flow through a diode?



What is special about current flow through a diode?

- The current only flows in one direction.
- Resistance is very high in the other direction, preventing current flow.



State what happens to the resistance of a thermistor as temperature increases.



State what happens to the resistance of a thermistor as temperature increases.

The thermistor's resistance decreases.



Give **two** examples of when a thermistor may be used.



Give **two** examples of when a thermistor may be used.

1. In a thermostat to turn a heater on below a certain temperature.
2. In a freezer to turn on a cooler when the temperature becomes too high.



State what happens to the resistance of a LDR as light intensity decreases.



State what happens to the resistance of a LDR as light intensity decreases.

The LDR's resistance increases.



Give an application for a LDR.



Give an application for a LDR.

- Street lights or night lights.
- When light levels become too low, the light gains sufficient current to turn on.



State two equations for the power of a circuit. Give appropriate units.



State two equations for the power of a circuit. Give appropriate units.

$$P = I V$$

$$P = I^2 R$$

Power (Watts), Current (Amperes)
Potential Difference (Volts), Resistance
(Ohms)



State an equation linking energy transferred, power and time. Give appropriate units.



State an equation linking energy transferred, power and time. Give appropriate units.

$$E = P t$$

Energy (Joules), Power (Watts), Time
(Seconds)



State an equation linking energy transferred, charge flow and potential difference. Give appropriate units.



State an equation linking energy transferred, power and time. Give appropriate units.

$$E = Q V$$

Energy (Joules), Charge (Coulombs),
Potential Difference (Volts)

