OCR (A) Physics A-level

PAG 04.1 - Investigating Electrical Circuits

Practical Flashcards

How can you calculate the total resistance of a combination of resistors in series?

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The total resistance equals the sum of the individual resistances.

$$R = R_1 + R_2 ... + R_{\square}$$

How can you calculate the total resistance of a parallel combination of resistors?

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The total resistance equals the inverse of the sum of the inverses of the individual resistances.

$$1/R = 1/R_1 + 1/R_2 ... + 1/R_{\square}$$

What device can be used to check the resistance of a component?

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An Ohmmeter or multimeter can be used to measure the resistance of a component.

How can the percentage of the total voltage across a component be obtained?

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A voltmeter can be used to measure the potential difference across the component. This can then be divided by the total voltage in the circuit and multiplied by 100%.

How should the total potential difference be shared across resistors in series?

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The potential difference should be shared in the same ratio as the resistances of the resistors.

Why should the power-supply voltage be kept relatively low in this experiment?

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The voltage should be kept low to reduce the heating effect of the components and to reduce the risk of electrocution.

Why should the voltmeters be calibrated before carrying out this experiment?

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Calibrating the voltmeters reduces the risk of a systematic error in your data.

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$$1/R = 1/9 + 1/6 + 1/3$$

$$1/R = 11/18$$

$$R = 18/11\Omega$$