

AS Level Physics A
H156/02 Depth in physics

Question Set 12

1

Fig. 6.1 shows the I - V characteristics for two electrical components X and Y.

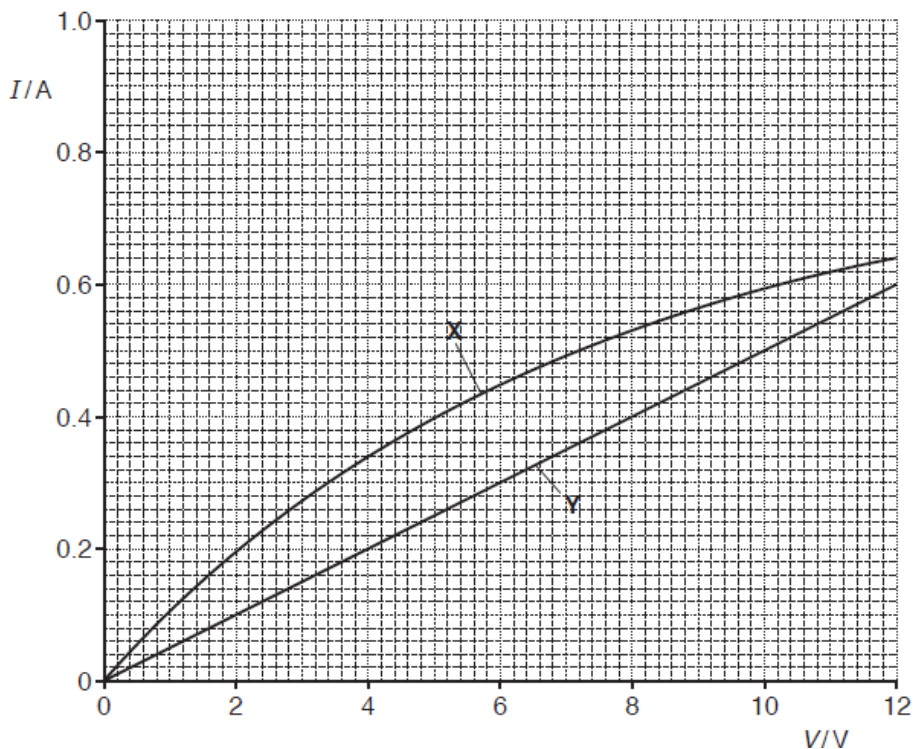


Fig. 6.1

(a) Suggest the two components X and Y that were used.

Name of component X

Name of component Y

[1]

(b) Fig. 6.2 shows components X and Y connected in parallel to a battery of e.m.f. 9.6V and internal resistance r .

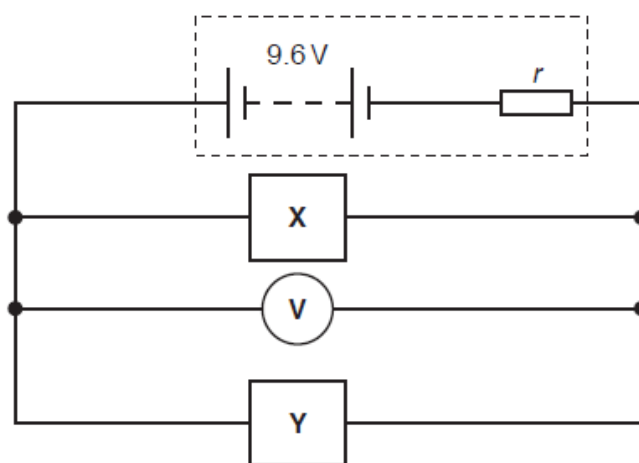


Fig. 6.2

The voltmeter reading is 7.2V. Determine r .

$r =$

Ω [3]

- (c) A cable consists of 17 tightly packed copper wires, see Fig. 6.3.

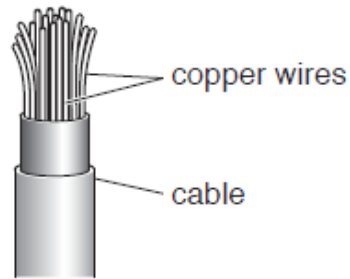


Fig. 6.3 (not to scale)

The student measures the diameter d of one of the copper wires as 0.12 ± 0.01 mm.

- (i) Explain how the student should measure precisely the diameter of the wire.

[2]

The student measures the resistance R of the whole **cable** as $1.86 \pm 0.02 \Omega$.
The length L of the cable is 21.0 ± 0.1 m.

- (ii) Determine the resistivity ρ of copper.

$$\rho = \quad \quad \quad \Omega \text{ m}$$

[3]

Determine the percentage uncertainty in ρ .

$$\text{percentage uncertainty} = \quad \quad \quad \%$$

[2]

Total Marks for Question Set 12: 11

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