OCR
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AS Level Physics A

H156/01 Breadth in Physics

Question Set 14

1 **(a)** A student is investigating an unidentified component found in the laboratory. The table shows the results from the lab book of the student.

V / V	I / mA
– 5.0	– 5.0
+ 5.0	+ 5.0
+ 10.0	+ 30.0

The potential difference across the component is V and the current through it is I.

(i) Calculate the power dissipated by the component when V is +10.0 V.

power = W **[1]**

(ii) Analyse the data in the table and hence identify the component.

[3]

(b) Fig. 24 shows a circuit with a battery and two resistors.

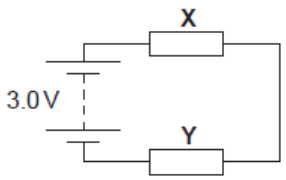

Fig. 24

The resistor **X** has length 8.0×10^{-3} m, cross-sectional area 1.2 mm^2 and is made of a material of resistivity 1.5×10^{-2} Ω m. The battery has e.m.f. 3.0 V and negligible internal resistance. The resistor **Y** has resistance 68 Ω.

Calculate the current I in the circuit.

I = A **[3]**

Total Marks for Question Set 14: 7

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