

Electricity – AS Physics P1

1. No.06

0 6

A battery has an emf of 5.30 V and negligible internal resistance.

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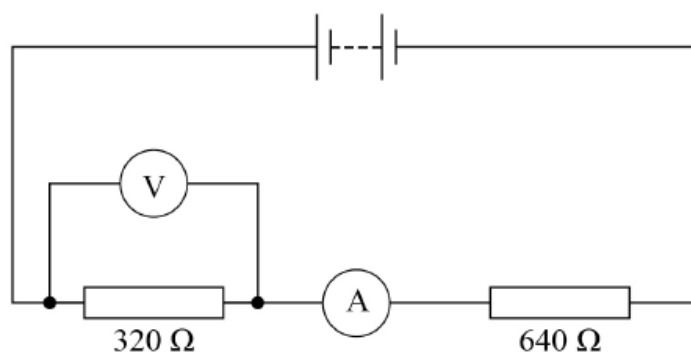
State what is meant by an emf of 5.30 V for this battery.

[2 marks]

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. 2

Figure 13 shows the battery connected into a circuit.

Figure 13

The ammeter is ideal.

The voltmeter is non-ideal and has a resistance R .The reading on the voltmeter is 1.05 V when it is connected across the $320\ \Omega$ resistor.

Show that the reading on the ammeter is approximately 7 mA.

[2 marks]

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Show that the resistance R of the voltmeter is approximately $300\ \Omega$.

[3 marks]

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The voltmeter is now connected across the battery terminals.

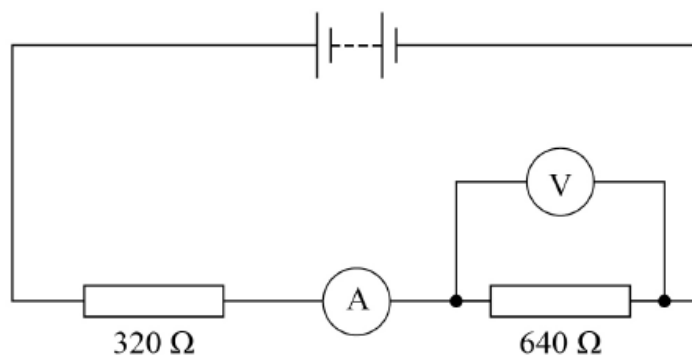
Calculate the power dissipated in the voltmeter.

[2 marks]

power = _____ W

0 6 . 5 The voltmeter is now connected across the $640\ \Omega$ resistor as shown in **Figure 14**.

Figure 14



The reading on the voltmeter is $2.10\ \text{V}$.

When the voltmeter was connected across the $320\ \Omega$ resistor, as shown in **Figure 13**, the reading on the voltmeter was $1.05\ \text{V}$.

Explain why the sum of these voltmeter readings does not equal the emf of the battery.

[2 marks]
