

Name \_\_\_\_\_ Date \_\_\_\_\_

## End-of-chapter 18 test

- 1 Complete these sentences using words from the list. [2]

Each word must be used only once, or not at all.

**protons    electrons    current    voltage    charge    force    power**

When particles called \_\_\_\_\_ flow in a metal wire, that means \_\_\_\_\_ flows in the wire.

These particles have a property called \_\_\_\_\_.

- 2 Figure 18.1 shows part of a circuit that contains a lamp.

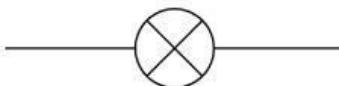


Figure 18.1

- a Add a voltmeter to Figure 18.1 to show how the potential difference (p.d.) across the lamp can be measured. [1]
- b Add an ammeter to Figure 18.1 to show how the current through the lamp can be measured. [1]
- c Another component, which is **not** shown in Figure 18.1, provides the electromotive force (e.m.f.) for the circuit.
- i Suggest **one** component that could provide the e.m.f. for the circuit. [1]

\_\_\_\_\_

- ii When the circuit is switched on, 24 J of energy are supplied to 2 C of charge.

Calculate the e.m.f. provided to the circuit.

[3]

- \_\_\_\_\_
- d The p.d. across the lamp is 6 V.

Explain what that statement means. Use the words work and charge in your answer.

[3]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 3 Nichrome is a metal. A piece of wire made from nichrome has a resistance of 15  $\Omega$ .

- a The p.d. across the wire is 22.5 V.

Calculate the current through the wire.

[3]

\_\_\_\_\_

- b An identical piece of nichrome wire is twisted around the first wire. This has the effect of doubling the cross sectional area of the wire.

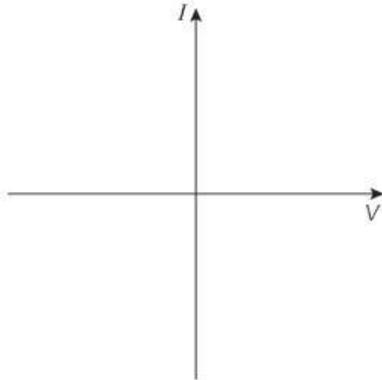
Calculate the combined resistance of the two wires twisted together.

[2]

\_\_\_\_\_

- 4 A charger for a car battery operates from mains electricity.
- a The charger contains a diode that prevents current from flowing in the wrong direction. This protects the charger and the battery if the battery is connected the wrong way.

i Sketch a current–voltage graph for a diode on the axes. [2]



ii Explain how the shape of the graph shows that a diode is suitable to provide this protection. [1]

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b The charger is used for 24 hours and uses 12 kWh.  
kWh is **not** an SI unit. State the SI unit for the same physical quantity as kWh. [1]

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[Total: 20 marks]

END OF TEST