

## Lower Shell Electricity Test

Name: \_\_\_\_\_

1. A rechargeable cell draws a current of 0.1A for 10 hours. What is the total charge delivered in that time?

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(3)

2. If a charge of 20 millicoulombs is delivered in 80 microseconds, what is the average current?

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(3)

3. How many electrons would need to flow between two points each second in order to produce a current of 2 amps? (NB: The charge on an electron is  $1.6 \times 10^{-19}$  coulombs.)

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(3)

4. A diode is an electrical component.

(a) Draw the circuit symbol for a diode.

(1)

(b) What function does it perform?

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(1)

5. What is the pd across a resistor if 20J of energy is transferred when 5C of charge passes through it?

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(3)

6. How much energy is transferred when 2.5C of charge passes through a pd of 40V?

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(3)

7. What is the resistance of a component that draws a current of 1.5 A when a voltage of 9V is applied across it?

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(3)

8. (a) A 3k resistor and a 500 resistor are placed in series. What current will flow if they are connected to a 14V power supply?

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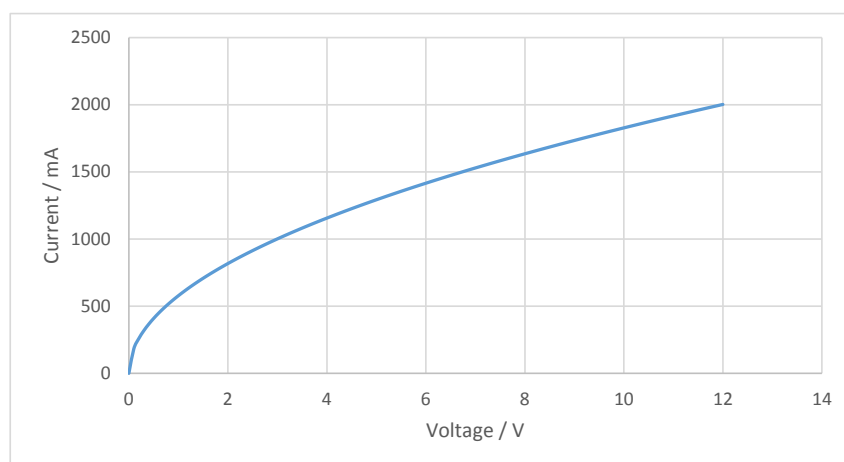
(3)

- (b) What will be the pd across the 500 resistor?

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(2)

9. Below is shown the current-voltage graph for a lightbulb.



Describe and explain the shape of this graph.

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(3)

10. A circuit is made consisting of a 10V battery, a thermistor and a 1 k resistor connected in series.

(a) Draw this circuit.

(3)

- (b) On a cold day the resistance of the thermistor is 700. Calculate the voltage across the RESISTOR.

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(3)

- (c) Would the voltage across the resistor be higher or lower on a warm day? Explain your answer.

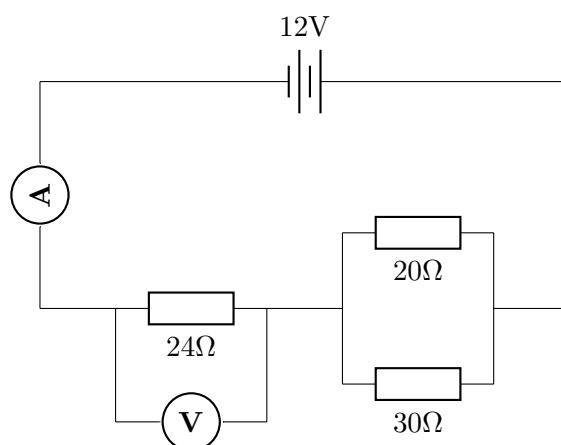
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11. In the following circuit, calculate the current  $I$  through the ammeter and the potential difference  $V$  across the voltmeter.



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(4)

**Total Marks: 40**