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 x 10^{-19} coulombs.) 2cm

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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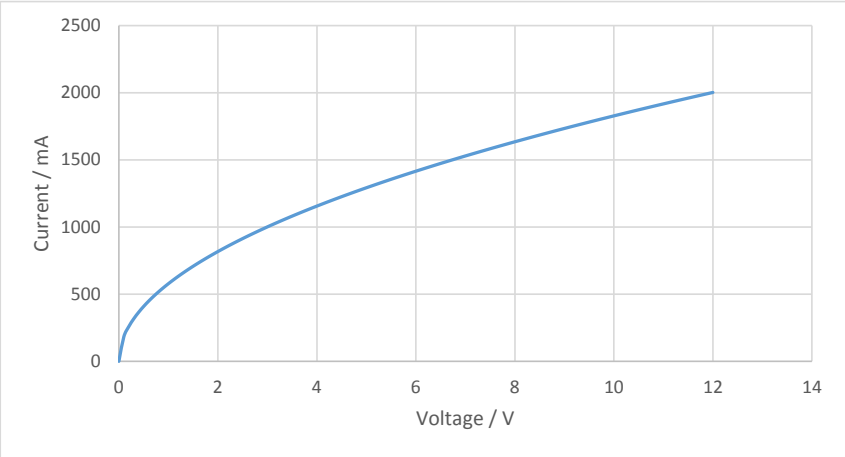
(2)

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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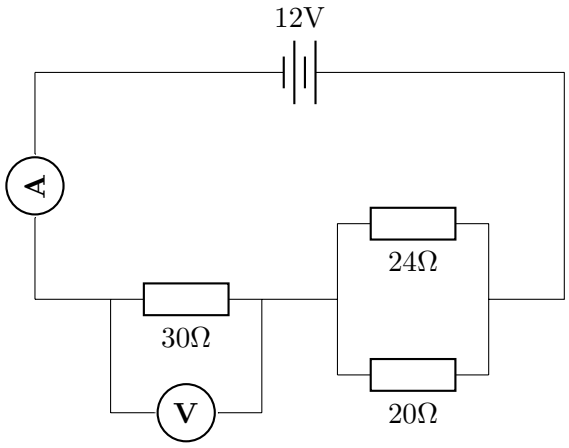
(2)

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