# End of topic quiz

# Topic P3: Electricity and magnetism

## Learner Activity

**Topic: P3 of J250**

**Total marks: 40**

|  |  |
| --- | --- |
| **1** | Graph showing voltage and currentWhich circuit component has the IV graph shown above? **[1 mark]** |
|  |  |
|  | **A** | Filament bulb |
|  | **B** | Diode |
|  | **C** | Thermistor |
|  | **D** | Resistor |
|  | Your answer  |
|  |  |

|  |  |
| --- | --- |
| **2** | What circuit component is this? **[1 mark]** |
|  |  |
|  | **A** | Light Dependant Resistor |
|  | **B** | Resistor |
|  | **C** | Thermistor |
|  | **D** | Variable Resistor |
|  | Your answer  |
|  |  |

|  |  |
| --- | --- |
| **3** | Which of the following statements about series circuits is true? **[1 mark]**1. The current through the battery is the same throughout the circuit.
2. The current through the battery is shared between each component in the circuit.
3. The potential difference across the battery is shared between the components.
4. The potential difference across each component is the same as across the battery.
 |
|  |  |
|  | **A** | 1 and 3 |
|  | **B** | 1 and 4 |
|  | **C** | 2 and 3 |
|  | **D** | 2 and 4 |
|  | Your answer  |
|  |  |

|  |  |
| --- | --- |
| **4** | A wire is placed between the north and south poles of a permanent magnet and at right angles to the magnetic field. The current in switched on (electric current flowing out of the paper). SNWhich way will the wire move? **[1 mark]** |
|  | **A** | Up |
|  | **B** | Down |
|  | **C** | Left |
|  | **D** | Right |
|  | Your answer  |
|  |  |

|  |  |
| --- | --- |
| **5** | Field lines around a bar magnetAt which of these points is the magnetic field the strongest? **[1 mark]** |
|  | **A** | A |
|  | **B** | B |
|  | **C** | C |
|  | **D** | D |
|  | Your answer  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **6** | The graph below shows an I-V graph for a common circuit component. Graph showing  I-V for a common circuit component.  |  |
|  | **(a)** | **(i)** | What circuit component does this graph represent? **[1 mark]** |
|  |  |  |  |
|  |  | **(ii)** | What is the resistance of the component at 5 V? **[2 marks]** |
|  |  |  |  |
|  | **(b)** | **(i)** | How would you connect a voltmeter to measure the voltage across the component? **[1 mark]** |
|  |  |  |  |
|  |  | **(ii)** | How would you connect an ammeter to measure the current through the component?**[1 mark]** |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **7** | Planes need to be earthed before they are refuelled; otherwise there is a risk of a spark being created which could ignite the fuel vapour.Planes need to be earthed before they are refuelled; otherwise there is a risk of a spark being created which could ignite the fuel vapour. |  |
|  | **(a)** | **(i)** | Write down how planes gain charge during flight. **[2 marks]** |
|  |  |  |  |
|  |  | **(ii)** | Write down how a charged plane coming near a refuelling nozzle could cause a spark. **[3 marks]** |
|  |  |  |  |
|  | **(b)** | **(i)** | Why does Earthing a plane after landing stop this happening? **[2 marks]** |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **8** | Robin wants to carry out an investigation of the resistance of an LDR at different light levels.Light dependant resistor |  |
|  | **(a)** | **(i)** | How could Robin do this? **[5 marks]** |
|  |  |  |  |
|  |  | **(ii)** | How could Robin best shows these results? **[1 mark]** |
|  |  |  |  |
|  | **(b)** | **(i)** | What sort of application might an LDR be used in? **[1 mark]** |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **9** | The image below shows three resistors in series. 3 resistors in series |  |
|  | **(a)** | **(i)** | What is the total resistance of the circuit? **[1 mark]** |
|  |  |  |  |
|  |  | **(ii)** | What is the current flowing through the resistors? **[2 marks]**  |
|  |  |  |  |
|  | **(b)** | **(i)** | Which of the resistors has the biggest potential difference across it? **[1 mark]** |
|  |  |  |  |
|  |  | **(ii)** | What value is this voltage? **[1 mark]** |
|  |  |  |  |
|  |  | **(iii)** | What is the combined voltage across the other two resistors? **[1 mark]** |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **10** | This toaster has a power rating of 1500 W.An electric toaster |  |
|  | **(a)** | **(i)** | What is the definition of power? **[2 marks]** |
|  |  |  |  |
|  |  | **(ii)** | If the toaster is switched on for 10 minutes, how much energy is transferred to the bread?**[3 marks]**  |
|  |  |  |  |
|  | **(b)** | **(i)** | The toaster is using mains electricity at 230 V. What is the current running through the appliance? **[3 marks]** |
|  |  |  |  |
|  |  | **(ii)** | What is the resistance of the heating element in the toaster? **[2 marks]** |
|  |  |  |  |