**Assessment schedule for Year 10 Science assessment on Electricity 2014**

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| --- | --- | --- | --- | --- |
|  | **Criteria** | **A** | **M** | **E** |
| **1.(a)** | electrons can be rubbed onto the balloon by friction | electrons/negative charges moveorby rubbing/friction | electrons/negative charges moveandby rubbing/friction |  |
| **(b)** | the balloon is an insulator (so the electrons cannot move)  | correct |  |  |
| **(c)** | + -, attract. + +, repel | all correct |  |  |
| **(d)** | * electrons move from the dome onto the girl, (the charges repel each and spread out all over her)
* the electrons at the ends of her hair repel ech other lifting her hair up (as the electrostatic force is stronger than the weight force of her hair)
* If the girl does not stand on an insulator the electrons will be conducted to the ground (and not enough charges will build up to make the girls hair lift up)
 | one full or two part | two full or three part | complete answertwo full + 1 part? |
| **(e)** | * when the plane is flying friction with the air can cause the plane to become charged
* if the plane is connected to a wire (earthed) the charge can be transferred to/from the ground disapating the charge
* if the charge/electons jumps to/from the plane it will cause a spark,
* which could ignite the fuel.
 | one pointfriction makes plane chargedorto earth the planeora spark could make the fuel catch fire | 2 pointscharge on plane can cause a spark which could make fuel catch fire | 3 points |
| **2.(a)** | batterycelllampfuse | switchammeterresistorvoltmeter | 6/8 |  |  |
| **(b)** | A in seriesV in parallel | correct |  |  |
| **(c)** | V = 6.6V I = 2.7 A | correct |  |  |
| **(d)** | Lamps and Resisters could be considered different as L gives off light & R gives off heatSame because L and R both change electrical energy into another kind of energy (An incandescent light bulb gives of light because the wire heats up)they are energy users and so use up the voltage that is supplied by the battery/supplyas it takes energy to push the current through both the resistor and the light bulb they both slow down/limit/ RESIST the currentso both are resistors | 1 differenceR gives off heatL gives off light (& heat) | 1 difference & 1 similarityorboth E converters, both use Voltageor correct argument for resistors (V&I correct) | difference & similarity (correct argument)must include V & I |
| **3(a)** | 4 x 1.5 = 6V | correct |  |  |
| **(b)** | A2 = 0.4AA3 = 0.4A | both correct |  |  |
| **(c)** | V1 = 3VV2 = 3V |  |  |  |
| **(d)** | another lamp will make each lamp dimmerthe voltage across each lamp would only be 2V (voltage shared in series)it is harder for the current to get through the circuit (resistance higher) as there is another lamp, so the current goes down.(As the total current is less the total brightness is less (P=IV) (brightness is power joules per sec or watts))  | dimmer | dimmer andvoltage(or current) | dimmer+voltage+current |
| **4(a)** | V1 = 4.5VV2 = 4.5V | V1 = V2 (not half of 4.5 or half of 1.5) | correct |  |
| **(b)** | A2 = 0.8AA3 = 1.6A | A2 correct | A3 correct |  |
| **(c)** | brightness of the individual lamps is the same(total brightness will be 3x rather than 2x) | correct |  |  |
| **(d)** | If one lamp fails, the other lamp still works. Because they lamps are on separate loops/pathwaysThis is important for * car headlights so that you can see where you are going /be seen
* household lights (practicality of still being able to see in an otherwise dark room).

accept that the lamps stay at full brightness for parallel (or lamps get dimmer for series)Because they lamps are on separate loops/pathwaysif series then lamps would get dimmer and dimmer the more bulbs you have so you wouldn’t be able to see anything | one still works | one still works anddifferent loopor see where your going | sequential logic3 points |

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|  | **Achievement** | **Merit** | **Excellence** |
| **Opportunities:**  | **17** | **8** | **5** |
| **Sufficiency:** | **9A** | **4M + 6 A** | **2E + 3M + 6 A** |