Electricity

Physics Paper 1 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 Mateusz connects a filament lamp to a variable power supply. He slowly increases the potential difference across the lamp from 0 V to 12 V and records the current each time.

He finds that when the potential difference doubles, the current goes up by much less than double.

Explain this result. Include what happens inside the filament.

(6 marks)

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2 Amara is making two sets of decorative lights, each with four identical lamps and a 6 V battery. In set A the lamps are connected in series. In set B each lamp is connected in parallel with the battery.

Compare the two sets of lights. Refer to current, potential difference, resistance, brightness and what happens if one lamp breaks.

(6 marks)

3 A metal toaster is connected to the mains using a three-core cable and a plug.

Describe the job of each of the three wires and how the earth wire and fuse together protect someone if the live wire comes loose and touches the metal case.

(6 marks)

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4 Ellie, aged six, slides down a long plastic slide at a soft play centre. At the bottom her hair is standing on end. When she touches a metal hand rail she feels a small shock and hears a crack.

Explain these observations.

Separate science only

(6 marks)

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5 A small solar farm in Cornwall sends 1,000,000 W of electrical power along overhead cables to a nearby town. The cables have a total resistance of 5.0 ohms. Engineers compare sending the power at 25,000 V with sending it at 400,000 V.

Use the data to calculate the current and the power wasted in the cables for each voltage. Use your answers to explain why the National Grid uses step-up and step-down transformers.

(6 marks)

End of questions | Total 30 marks

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