GCSE Physics Quiz
Electricity - The National Grid

The National Grid is an electricity transmission network which spans the whole of the United Kingdom. It provides power to most homes and businesses in the UK. There are also undersea interconnections to northern France, Northern Ireland, the Isle of Man and the Netherlands.

Test your knowledge of the National Grid in this quiz.

1. What is transferred through the National Grid?

[ ] Coal

[ ] Petrol

[ ] Gas

[ ] Electricity

2. What voltage is used to transfer electricity through the National Grid?

[ ] Up to 300,000V

[ ] Up to 400,000V

[ ] Up to 500,000V

[ ] Up to 600,000V

3. How is such a high voltage produced?

[ ] By using step-up transformers

[ ] By using step-down transformers

[ ] By using a Darlington pair

[ ] None of the above

4. Why is a high voltage used?

[ ] It increases the amount of energy wasted in cables

[ ] It reduces the amount of energy wasted in cables

[ ] The cables cannot transfer low voltage electricity

[ ] So they can transfer the electricity at a high current

5. What is the mains voltage in homes in the UK?

[ ] 120V

[ ] 170V

[ ] 230V

[ ] 270V

6. How is voltage from the National Grid changed into 230V for home use?

[ ] Step-up transformer

[ ] A thin cable

[ ] A thick cable

[ ] Step-down transformer

7. Electricity is sent through the National Grid using which type of electrical current?

[ ] Alternating current

[ ] Direct current

[ ] Alternating and direct current

[ ] Neither alternating nor direct current

8. What voltage is produced in power stations?

[ ] 15,000V

[ ] 20,000V

[ ] 25,000V

[ ] 30,000V

9. Why don't birds get electrocuted when they stand on pylon wires?

[ ] As they are not connected to any grounded point, the electricity will not flow through the bird and will continue through the cables

[ ] They do get electrocuted

[ ] Birds do not conduct electricity

[ ] None of the above

10. Why does reducing the current and increasing the voltage mean less energy is lost?

[ ] A high voltage means they can transfer the electricity at a high current, transferring it at a high current means less electrons travelling through the cables which reduces the amount of collisions between electrons and the cables, thus wasting less energy as heat

[ ] A high voltage means they can transfer the electricity at a low current, transferring it at a low current means less electrons travelling through the cables which reduces the amount of collisions between electrons and the cables, thus wasting less energy as heat

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Answers

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[x] Electricity

2. What voltage is used to transfer electricity through the National Grid?

[ ] Up to 300,000V

[x] Up to 400,000V

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There are 132 kV, 275 kV and 400 kV circuits that make up the grid

3. How is such a high voltage produced?

[x] By using step-up transformers

[ ] By using step-down transformers

[ ] By using a Darlington pair

[ ] None of the above

Step-up transformers can be used to increase voltage whilst decreasing current, conserving the total amount of energy

4. Why is a high voltage used?

[ ] It increases the amount of energy wasted in cables

[x] It reduces the amount of energy wasted in cables

[ ] The cables cannot transfer low voltage electricity

[ ] So they can transfer the electricity at a high current

5. What is the mains voltage in homes in the UK?

[ ] 120V

[ ] 170V

[x] 230V

[ ] 270V

Whilst in the UK the voltage is 230V, in other countries this can vary

6. How is voltage from the National Grid changed into 230V for home use?

[ ] Step-up transformer

[ ] A thin cable

[ ] A thick cable

[x] Step-down transformer

7. Electricity is sent through the National Grid using which type of electrical current?

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Electricity will always try to make its way back to the earth finding the most efficient path. Travelling through the air uses huge amounts of energy and as such electricity doesn't like to travel through it

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