**Physics Revision: Mains Electricity**

Mastery Matrix Points

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| Describe the properties of mains electricity in the UK (A.C., Frequency and Voltage) |
| Explain the difference between direct and alternating potential difference |
| Describe the three core cables and the wires that they are made up of and the dangers of these |
| Describe the components of the national grid |
| Explain the role of step up and step down transformers in the national grid and use this to explain why it is an efficient system for transferring energy |

Key Knowledge

Mains electricity

* ac or dc?
* Frequency:
* Potential difference:

Three wires in mains plug:

|  |  |
| --- | --- |
| *Wire* | *Colour* |
|  |  |
|  |  |
|  |  |

Potential difference between live wire and earth wire = V

Potential difference of neutral wire = V

Potential difference of earth wire

= V, unless…

National grid definition:

Step up transformers:

Step down transformers:

**and the National Grid**

Understanding and Explaining

1. **Explain the difference between direct current and alternating current.**
2. **Describe the roles of the live wire, neutral wire and earth wire in a 3 pin UK plug.**
3. **Describe the dangers of i) the live wire, even if the device is off ii) the live wire and earth wire touching.**
4. **Explain how step up transformers increase the efficiency at which electricity is transmitted from the national grid.**
5. **Describe and explain the role of step down transformers in the national grid.**