

Generating and distributing electricity

OxfordAQA International GCSE Physics 9203 generating electricity full package

1. Generating and distributing electricity

Generating and distributing electricity

OxfordAQA's sixth topic runs the full chain from the generator effect through the national grid's transformers to the appliances and safety systems of the home

All statements in this topic are Paper-2 (P)

2. Generating electricity (P)

Generating electricity (P)

across a conductor that moves through a magnetic field, or sits in a changing field

Reverse the motion or the polarity and the induced p.d

3. Transmission, transformers and the home (P)

Transmission, transformers and the home (P)

From the station to the socket, every watt travels the same chain of coils and cables

For a given power, high transmission voltage means low current and so little cable heating

4. The motor effect (P)

The motor effect (P)

A current-carrying wire across a magnetic field feels a force (zero if parallel to it)

Force grows with stronger field, bigger current and more wire in the field; reverse either to reverse the force — Fleming's left-hand rule predicts the direction

5. Transferring electrical energy (P)

Transferring electrical energy (P)

$$P = \frac{E}{t} \quad P = I \times V \quad E = V \times Q \quad E(\text{kWh}) = P(\text{kW}) \times t(\text{h})\$$$

Appliance labels give power; compute the current to choose a fuse, and the energy in kilowatt-hours for billing ($E = Pt$; cost = kWh $\times$ price per unit, read from meter readings)

Check yourself

Check yourself

Work each checklist line against the worked examples named in the handout.

Redo any line you cannot close without the handout open.