

IGCSE Physics (9-1) Specification 6(d)

(d) Electromagnetic induction

Students should:

- 6.15** know that a voltage is induced in a conductor or a coil when it moves through a magnetic field or when a magnetic field changes through it and describe the factors that affect the size of the induced voltage
- 6.16** describe the generation of electricity by the rotation of a magnet within a coil of wire and of a coil of wire within a magnetic field, and describe the factors that affect the size of the induced voltage
- 6.17P** describe the structure of a transformer, and understand that a transformer changes the size of an alternating voltage by having different numbers of turns on the input and output sides
- 6.18P** explain the use of step-up and step-down transformers in the large-scale generation and transmission of electrical energy
- 6.19P** know and use the relationship between input (primary) and output (secondary) voltages and the turns ratio for a transformer:

$$\frac{\text{input (primary) voltage}}{\text{output (secondary) voltage}} = \frac{\text{primary turns}}{\text{secondary turns}}$$

6.20P know and use the relationship:

input power = output power

$$V_p I_p = V_s I_s$$

for 100% efficiency