

11 Photograph E shows a rechargeable torch.

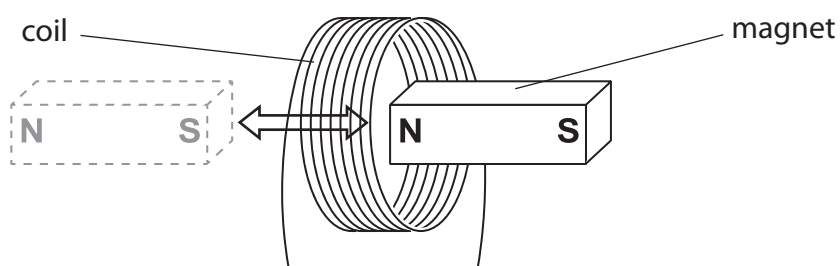


Photograph E

(a) When a student shakes the torch, the magnet moves through the coil and back again.

This induces a voltage across the ends of the coil.

The voltage is used to provide current to recharge the battery.



(i) Explain why a voltage is induced.

(2)

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(ii) State **one** way to increase this voltage.

(1)

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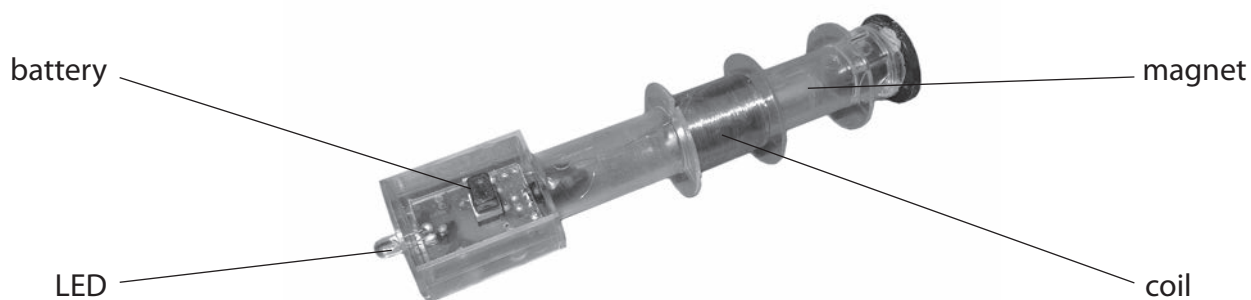
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(b) Photograph **F** shows the components inside the torch.



Photograph **F**

The torch uses a light-emitting diode (LED) to provide light.

(i) When the LED is on, it shows that

(1)

- ☐ **A** the current is alternating
- ☐ **B** the torch is switched off
- ☐ **C** there is a current in the circuit
- ☐ **D** there is a fault in the circuit

(ii) The manufacturer of the torch states, "An LED is a more efficient source of light than a filament lamp."

Explain this statement in terms of energy transfer.

(2)

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(Total for Question 11 = 6 marks)

