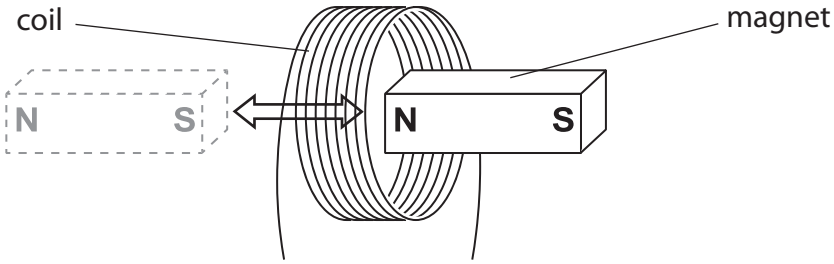
11 Photograph **E** shows a rechargeable torch.

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)

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

(1)

(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)

.....

.....

.....

.....

.....

(Total for Question 11 = 6 marks)