Electromagnetic Induction

Question Paper

Level	GCSE
Subject	Physics
Exam Board	Edexcel IGCSE
Module	Double Award (Paper 1P)
Topic	Magnetism & Electromagnetism
Sub-Topic	Electromagnetic Induction
Booklet	Question Paper

Time Allowed: **16 minutes**

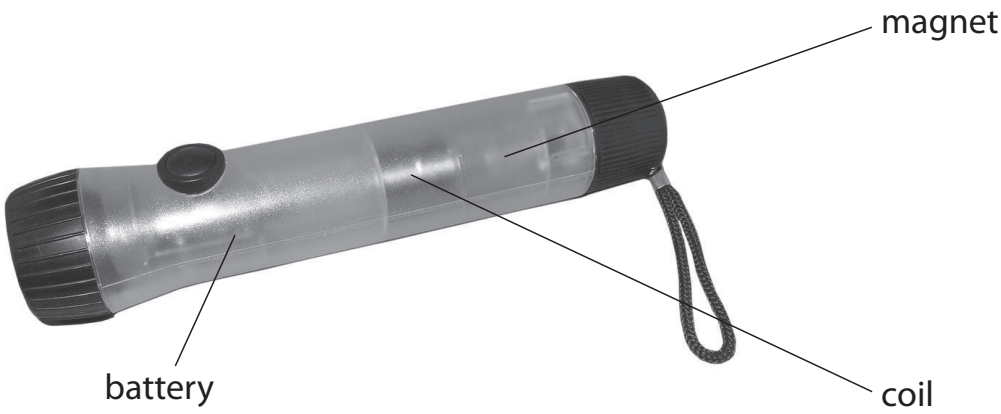
Score: **/13**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

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

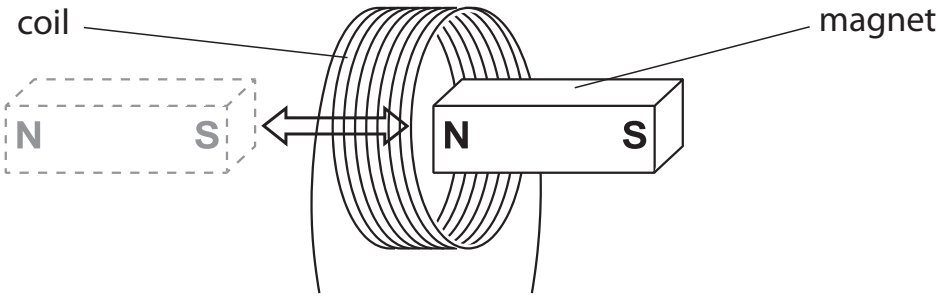


Photograph **E**

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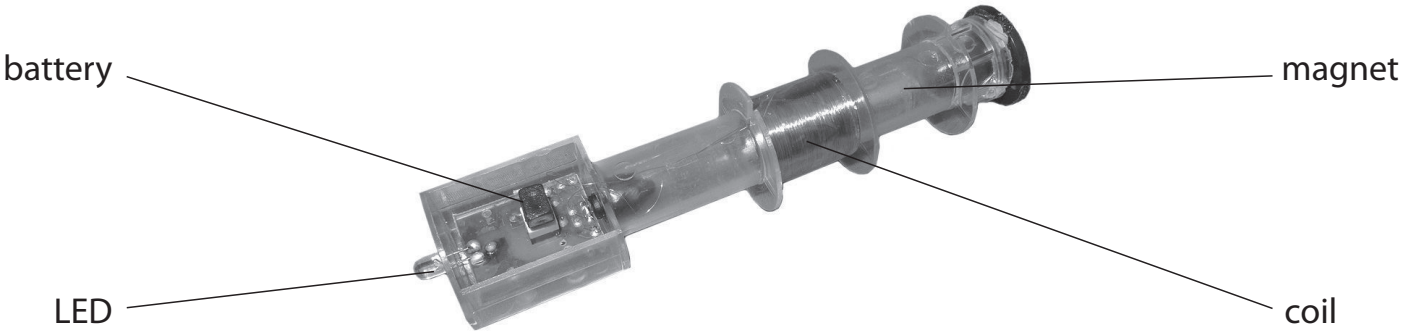
(b) Photograph **F** shows the components inside the torch.



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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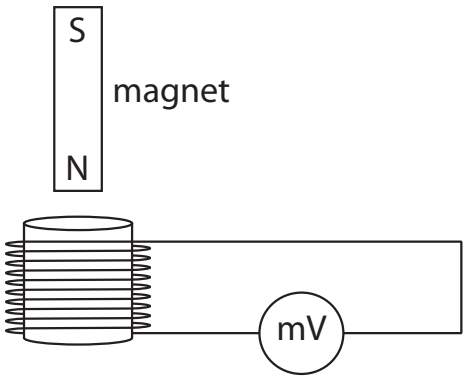
(Total for Question 1 = 6 marks)

2. The diagram shows a magnet held above a coil. The coil is connected to a voltmeter.



(a) The magnet is released and falls into the coil.

(i) Explain why the voltmeter shows a reading.

(2)

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(ii) The magnet is released from a greater height.

How does this affect the voltmeter?

Explain your answer.

(2)

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(b) State how the voltmeter reading changes when the same magnet

(i) moves more slowly into the coil

(1)

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(ii) moves into a coil with more turns

(1)

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(iii) is reversed so that the S-pole enters the coil first.

(1)

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(Total for Question 2 = 7 marks)