

Please write clearly, in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

ELC SCIENCE 5960

Externally-Set Assignment

Component 6 - Physics: Electricity, magnetism and waves

Marks

Date of Exam

Time allowed: 45 minutes

Materials

For this paper you must have:

- a ruler

Instructions

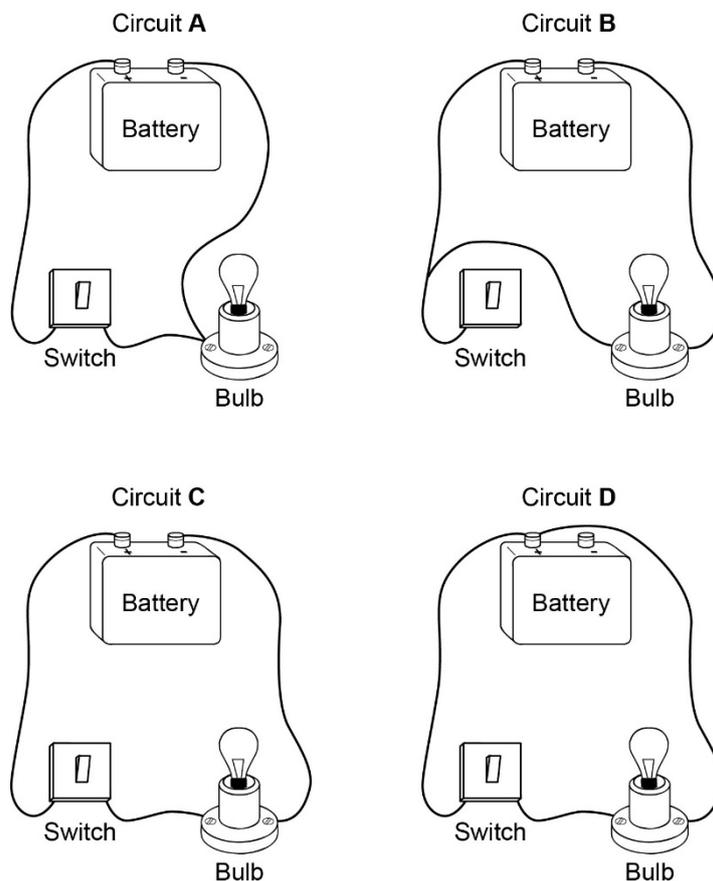
- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the bottom of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- There are 20 marks available on this paper.
- The marks for questions are shown in brackets.

Answer **all** questions in the spaces provided.

1. The diagram shows four electrical circuits.



(a) In which circuit will the bulb light when the switch is turned on?

[1 mark]
Outcome 2

Circuit

(b) What sort of meter could be used to measure the current in this circuit?

Draw a ring around the correct answer.

[1 mark]
Outcome 1

ammeter

ohmmeter

voltmeter

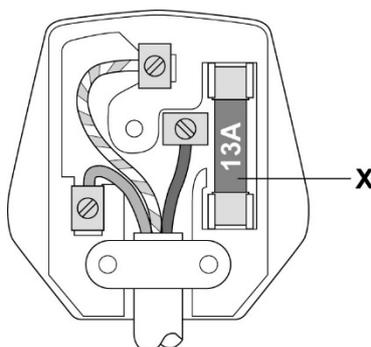
2. The diagram shows a label from the back of a mains television set.

Draw a ring around the part of the label that shows the frequency of the mains supply.

[1 mark]
Outcome 2

230 volts	480 watts
2 amps	50 hertz

3. The diagram shows a three-pin plug with the cover removed.



(a) What colour plastic covers the live wire?

[1 mark]
Outcome 3

.....

(b) Write down the name of the item labelled X.

[1 mark]
Outcome 3

.....

(c) Item X acts as a safety device.

What happens to the wire inside X if the current is too large?

[1 mark]
Outcome 3

.....
.....

Turn over

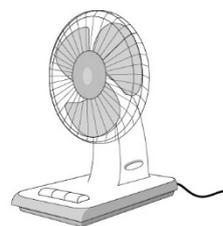
4. The diagram shows three electrical items. The power rating of each item is also shown.



Toaster
2 kW



Iron
1 kW



Fan
0.5 kW

(a) Which item would transfer the most energy if switched on for five minutes?

[1 mark]
Outcome 4

Tick (✓) **one** box.

The toaster

The iron

The fan

(b) Use the equation below to work out how much energy would be transferred if the fan was switched on for 2 hours?

$\text{Energy in kilowatt-hours} = \text{power in kilowatts} \times \text{time in hours}$

[1 mark]
Outcome 4

The fan would transfer kilowatt-hours of energy.

5. The diagram shows two bar magnets.



What will happen when these two magnets are pushed together?

[1 mark]
Outcome 5

Tick (✓) **one** box.

They will attract each other.

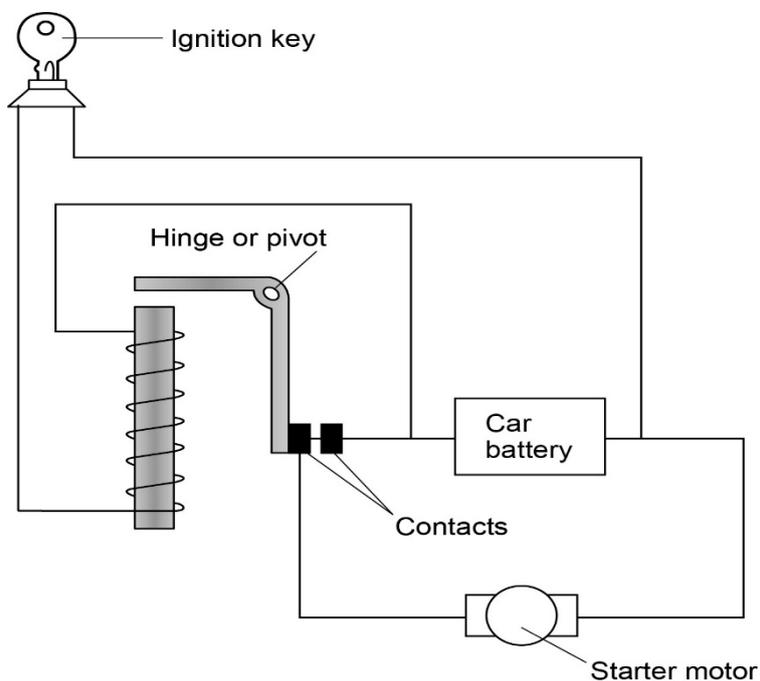
They will repel each other.

They will not affect each other.

Turn over for the next question.

6. A car starter motor circuit uses an electromagnet.

When the key is turned the two contacts close and the starter motor turns.



(a) Write a letter **X** on the part which is an electromagnet.

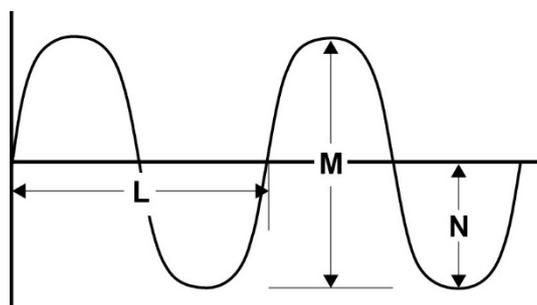
[1 mark]
Outcome 6

(b) Write down the name of **one** other piece of equipment that uses an electromagnet.

[1 mark]
Outcome 6

.....

7. The diagram shows a wave pattern.



(a) What type of wave is shown in the diagram?

[1 mark]
Outcome 7

Draw a ring around the correct answer.

circular wave

longitudinal wave

transverse wave

(b) Write down **one** example of where you might **see** a wave like this.

[1 mark]
Outcome 7

.....

(c) Which letter, **L**, **M** or **N**, shows the amplitude?

[1 mark]
Outcome 8

Letter shows the amplitude.

(d) Which letter, **L**, **M** or **N**, shows the wavelength?

[1 mark]
Outcome 8

Letter shows the wavelength.

Turn over for the next question

8. The diagram shows part of the electromagnetic spectrum.

One part of the electromagnetic spectrum has not been named.

Gamma rays	X-rays	Ultraviolet waves	Infrared waves	Microwaves	Radio waves
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(a) Complete the electromagnetic spectrum by writing in the name of the missing part.

[1 mark]
Outcome 9

(b) Write down the name of **one** part of the electromagnetic spectrum that has a wavelength longer than infrared.

[1 mark]
Outcome 9

.....

9. The column on the left shows some parts of the electromagnetic spectrum.

The column on the right shows some statements about these parts.

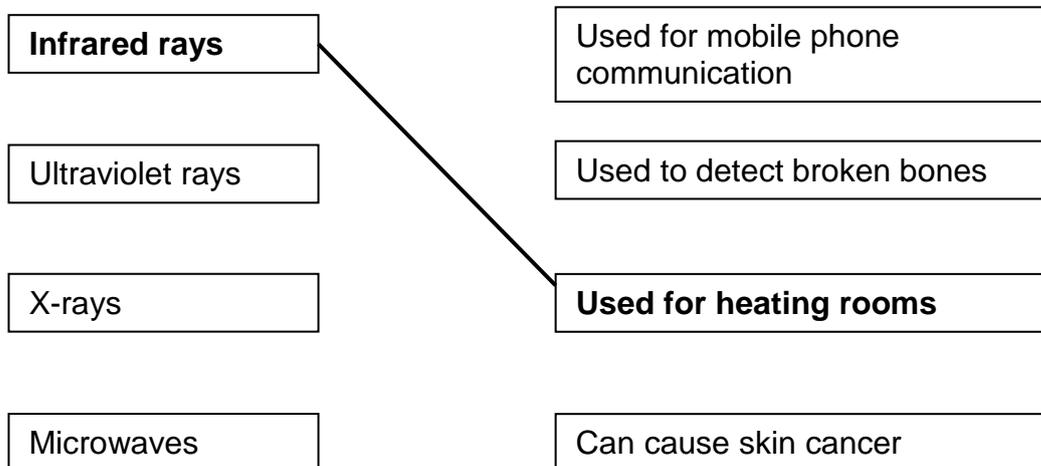
Draw **one** line from each part of the electromagnetic spectrum to the correct statement about these parts.

We have done one to help you.

[3 marks]
Outcome 10

**Part of the
electromagnetic
spectrum**

Statement



END OF QUESTIONS