Questions

Q1.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Which of these is a magnetic material?

(1)

☒ **A** aluminium

☒ **B** carbon

☒ **C** cobalt

☒ **D** copper

(Total for question = 1 mark)

Q2.

Which of these materials would be the most suitable for making a temporary magnet?

(1)

☒ **A** copper

☒ **B** iron

☒ **C** plastic

☒ **D** steel

(Total for question = 1 mark)

Q3.

Describe how you could show that the Earth has a magnetic field.

(2)

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(Total for question = 2 marks)

Q4.

Figure 5 shows a magnet holding some paper clips.

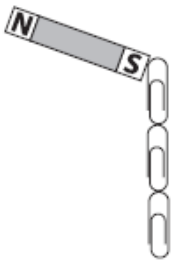

Figure 5

Describe how a student could show that the paper clips are induced magnets.

(2)

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(Total for question = 2 marks)

Q5.

Figure 4 shows the magnetic field produced by a current in a long, straight wire.

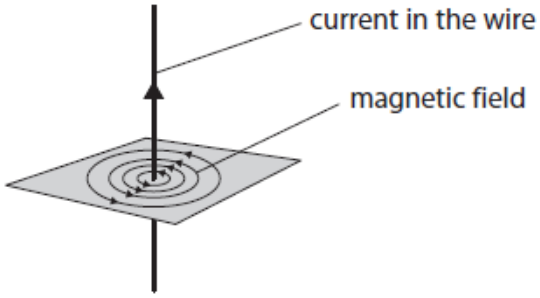

Figure 4

Which row of the table is correct when the strength of the magnetic field is greatest?

(1)

	distance from the wire	current
☒ **A**	small	small
☒ **B**	small	large
☒ **C**	large	small
☒ **D**	large	large

(Total for question = 1 mark)

Q6.

Figure 5 shows two magnetic poles facing each other.

The magnetic field between the poles is uniform.

On Figure 5, draw the magnetic field lines between the two poles and show the direction of this magnetic field.

(3)

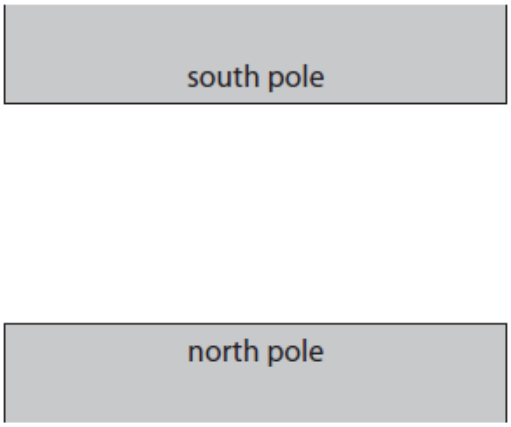

Figure 5

(Total for question = 3 marks)

Q7.

A student has

– a power pack
– a long piece of wire
– a stiff card
– iron filings

Describe how the student could use this equipment to show the shape of the magnetic field produced by a current in the wire.

You may draw a diagram to help with your answer.

(4)

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(Total for question = 4 marks)

Q8.

A student uses a compass to investigate the magnetic field near a bar magnet.

The student places the compass near the bar magnet as shown in Figure 6.

Figure 6

(i) Mark the north pole of the bar magnet with an 'N' in Figure 6.

(1)

(ii) State two ways in which the investigation could be developed to show the shape of the magnetic field around the bar magnet.

You may add to Figure 6 to help with your answer.

(2)

1 .....

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2 .....

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(Total for question = 3 marks)

Q9.

A student has a bar magnet, a piece of iron the same size as the magnet, and some paper clips.

Describe how the student could use these items to demonstrate temporary induced magnetism.

(3)

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(Total for question = 3 marks)

Q10.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

A student uses a plotting compass to investigate the magnetic field around a wire.

Figure 10 shows the wire going straight through a card.

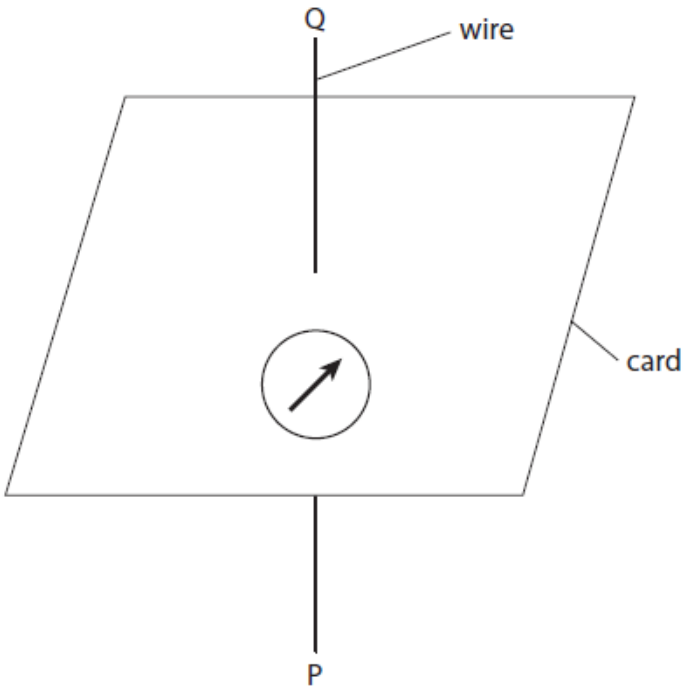

Figure 10

Figure 10 shows the compass needle when there is no current in the wire.

(i) Which of these shows a possible direction of the compass needle when there is a current in the wire going from P to Q?

(1)

☒ **A** ☒ **B** ☒ **C** ☒ **D**

(ii) Describe how the student could develop the investigation to find the shape of the magnetic field produced by the current.

(3)

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(Total for question = 4 marks)

Q11.

A student sets up the apparatus shown in Figure 9.

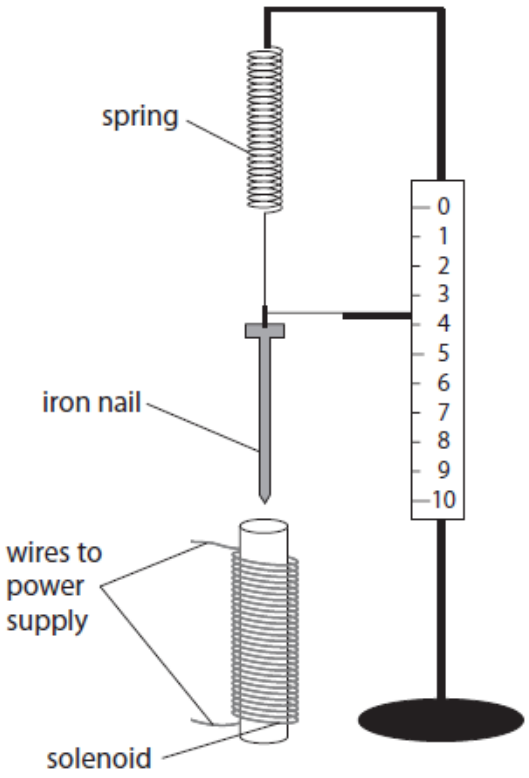

Figure 9

(i) When the current in the solenoid is switched on, the solenoid attracts the iron nail.

Describe how the student could use this apparatus to investigate how the size of the current in the solenoid affects the force of attraction between the solenoid and the iron nail.

(4)

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(ii) The spring constant of a different spring is 24 N/m.

The spring is extended from its unstretched length by 12 cm.

Calculate the energy transferred in extending the spring by 12 cm.

Use an equation selected from the list of equations at the end of this paper.

(2)

energy transferred = ... J

(Total for question = 6 marks)