Topic: _____
Class: _____

Name: _____
Date: _____

Magnetism WS

Question 1a

Some students plot the magnetic field lines around a bar magnet. They have the apparatus shown in Fig. 9.1 and a large sheet of paper.

Fig. 9.1

(a)

Describe how the students use the apparatus in Fig. 9.1 to show the pattern of the magnetic feld lines around the bar magnet.

You may draw a diagram to assist with your description.

[3]

[3 marks]

Question 1b

(b)

Draw at least four lines above and below the bar magnet in Fig. 9.2 to show the magnetic field around the bar magnet. Draw an arrow on the field lines to show the direction of the magnetic field.

[3]

Fig. 9.2

[3 marks]

Topic: _____
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Question 2a

(a)

When the poles of two bar magnets are brought close together, the magnets will experience either an attraction or a repulsion.

Complete Table 1.1 by writing either attract or repel in the effect column.

Orientation of bar magnets	Effect
N S S N	
S N S N	
N S N S	
S N N S	

Table 1.1

[4]

[4 marks]

Question 2b

(b)

State which item will experience an attraction or repulsion when

(i)

a magnetic material is brought close to the north pole of a magnet.

[1]

(ii)

a magnetic material is brought close to the south pole of a magnet.

[1]

[2 marks]

Question 2c

(c)

State one use of a permanent magnet.

[1]

[1 mark]

Question 2d

(d)

State four magnetic materials that would be attracted to a magnet.

[4]

[4 marks]

Topic: _____
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Question 3a

(a)

Describe a method for drawing the magnetic field around a bar magnet using iron flings.

[4]

[4 marks]

Question 3b

(b)

Define the term ***magnetic field***.

[1]

[1 mark]

Question 3c

(c)

State the direction of magnetic field lines.

[1]

[1 mark]

Question 3d

Extended

(d)

Sketch the magnetic field lines for the two bar magnets shown in Fig. 1.1.

Fig. 1.1

[3]

[3 marks]

Question 4a

(a)

When a magnetic material is placed in a magnetic field, that material can become a temporary magnet.

Tick one box that correctly names this effect

- ☐ magnetic attraction
- ☐ electromagnetism
- ☐ induced magnetism

[1]

[1 mark]

Question 4b

(b)

Identify the magnetic materials from the list below.

Tick all that apply.

- ☐ iron
- ☐ copper
- ☐ aluminium
- ☐ steel

[1]

[1 mark]

Question 4c

(c)

Fig. 1.1 shows a magnetic material being brought into the magnetic field of a permanent magnet.

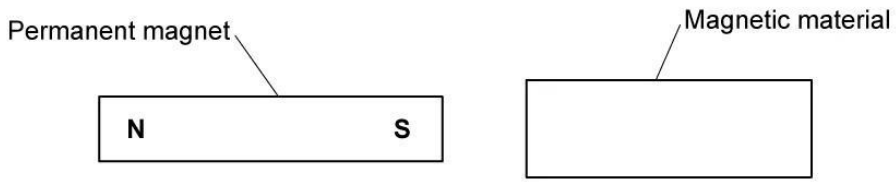

Fig. 1.1

Draw, on Fig. 1.1, the temporary poles that will be induced in the magnetic material.

[1]

[1 mark]

Question 4d

(d)

Fig. 1.2 shows a chain of paperclips being suspended from a magnet.

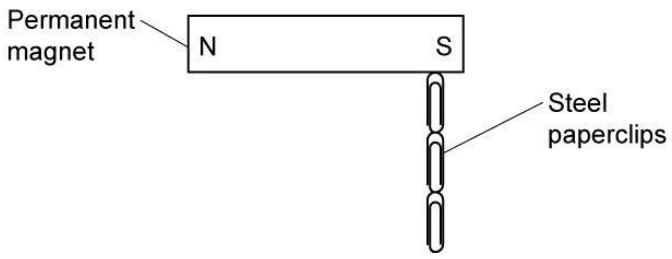

Fig. 1.2

Complete the paragraph explaining how this is possible.

Choose words from the list below.

temporary magnetic permanent poles attracted

magnetised repelled non-magnetic

The paperclips are made of steel which is a ..... material. The paperclips are ..... to the permanent magnet. The magnetic field induces temporary ..... in the paperclips and they become ..... magnets.

[4]

[4 marks]

Question 5a

(a)

Define the term ***uniform*** magnetic field.

[2]

[2 marks]

Question 5b

(b)

Fig. 1.1 shows two opposite poles of two different magnets.

Fig. 1.1

Sketch the uniform field lines between the poles.

[2]

[2 marks]

Question 5c

Extended

(c)

Fig. 1.2 shows two different uniform magnetic fields.

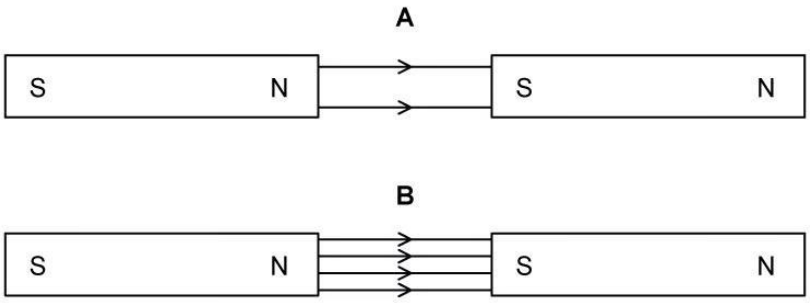

Fig. 1.2

State and explain the relative strengths of magnetic fields A and B.

[2]

[2 marks]