

Magnets and Magnetic Fields (F)

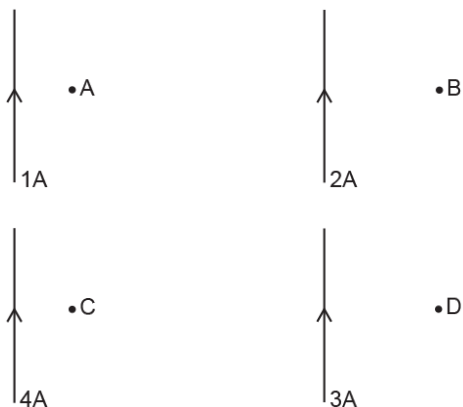
1. Which action **increases** the strength of an electromagnet?

- A Decreasing the current
- B Decreasing the number of turns of wire
- C Increasing the number of turns of wire
- D Using a copper core

Your answer

[1]

2. The different currents in four wires are shown below. The magnetic field is measured at positions **A**, **B**, **C** and **D**.



Which position will experience the strongest magnetic field?

Your answer

[1]

3 (a). A student investigates solenoids and writes the following:

Solenoids

Solenoids are coils of wire.

When a voltage flows through them a magnetic field is created.

The magnetic field can be increased by decreasing the number of turns or by increasing the current.

The student makes **two** mistakes.

Put a **ring** around the **two** mistakes in the above box.

[2]

(b). Draw the magnetic field pattern between the North and South poles of the magnets.

Include arrows on your field lines.



[3]

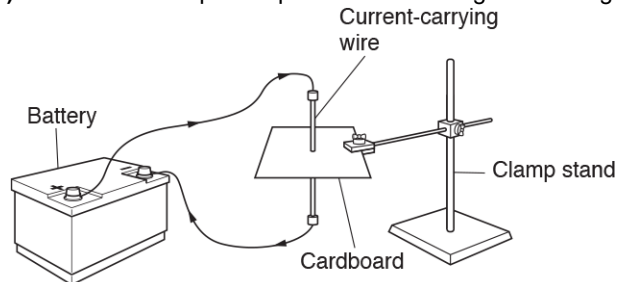
(c). Describe **one difference** between a permanent magnet and an induced magnet.

[1]

4 (a). The behaviour of a magnetic compass is evidence that the core of the Earth is magnetic. Explain why.

[2]

(b). A student sets up an experiment to investigate the magnetic field around a current-carrying wire.



i. Describe how the student could use this experiment and a compass to investigate the magnetic field produced by the wire.

[3]

ii. Draw the shape of the field which would be found around **this** wire.

[2]

5(a). Two students, **A** and **B**, use different methods to see magnetic field patterns.

i. Describe how student **A** can use a compass to plot a magnetic field pattern.

You may draw a diagram to help you answer this question.

[3]

ii. Student **B** uses iron filings to show a magnetic field pattern.

Describe how student **B** uses iron filings to show a magnetic field pattern.

You may draw a diagram to help you answer this question.

[2]

(b). Their teacher prefers students to use the method proposed by student **A**.

Suggest **one** reason why.

[1]

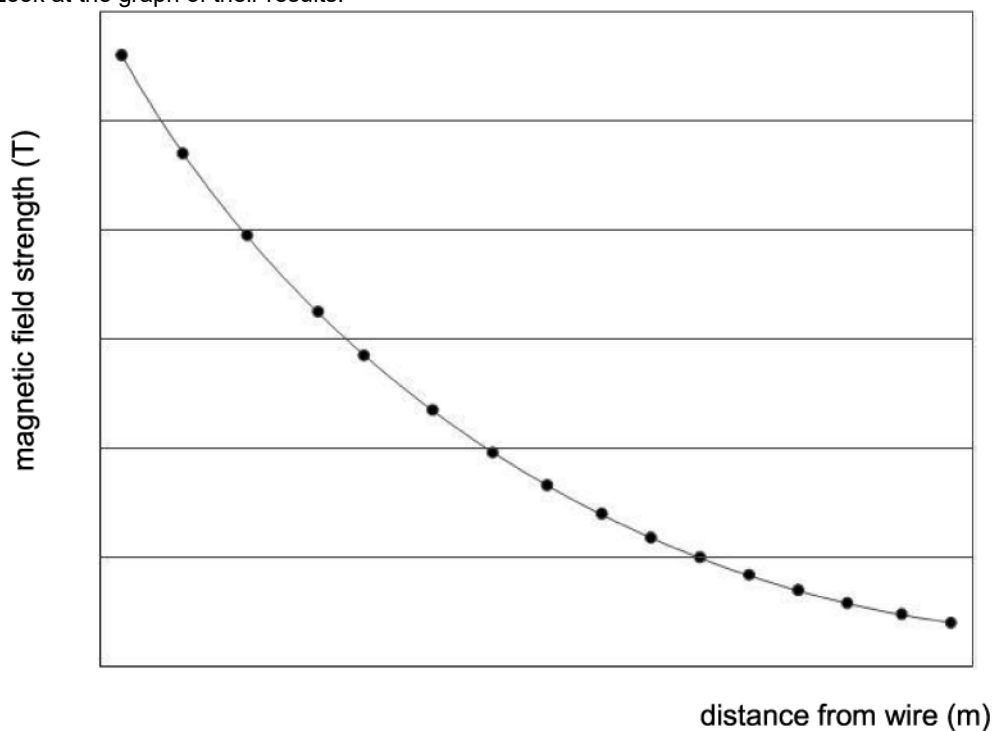
(c). Sketch the field pattern the students found around a bar magnet.



[2]

(d). The two students decide to investigate the magnetic effect of a current-carrying wire.

Look at the graph of their results.



What trend does the graph show?

[2]

6. The strength of the magnetic effect of a solenoid can be changed.

Which of the following rows correctly describes what happens to the strength when the current and number of turns are increased?

	Increased current	Increased number of turns
A	increases	decreases
B	increases	increases
C	decreases	increases
D	decreases	decreases

Your answer

[1]



7. Why is an unmagnetised iron object attracted to a magnet?



- A. The iron has magnetism induced by the magnet.
- B. The iron has charged particles which attract the protons in the magnet.
- C. The iron has charged particles which attract the electrons in the magnet.
- D. The iron is attracted by the Earth's magnetic field.



Your answer



[1]

8. Which of these pairs of objects will attract each other?

A   copper bar

B  

C  

D   aluminium bar

Your answer

[1]

END OF QUESTION PAPER