7.1 Permanent & Induced Magnetism, Magnetic Forces & Fields

Question Paper

Course	AQA GCSE Physics
Section	7. Magnetism & Electromagnetism
Topic	7.1 Permanent & Induced Magnetism, Magnetic Forces & Fields
Difficulty	Medium

Time allowed: 30

Score: /24

Percentage: /100

Question 1a

(a)

State the law regarding the forces between the poles of two magnets.

[2 marks]

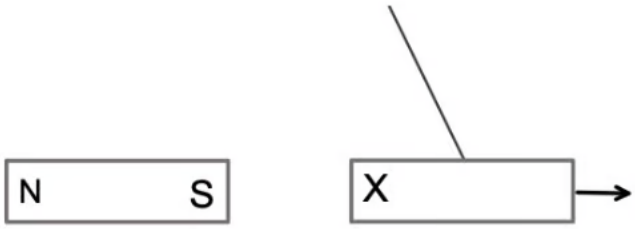
[2 marks]

Question 1b

(b)

Figure 1 below shows a magnet held close to the second magnet which is suspended by a light cotton thread.

Figure 1



State the type of pole found at X?

[1 mark]

[1 mark]

Question 1c

(c)
The suspended magnet is replaced by a different unmagnetised material, as shown in **Figure 2** below.

Figure 2

Suggest two possible materials that the unmagnetised material could be made from.

[2 marks]

[2 marks]

Question 1d

(d)
The unmagnetised material is attracted to the magnet by a process known as magnetic induction.

Explain what is meant by magnetic induction and why the unmagnetised material is attracted to the magnet.

You may draw a diagram to help with your answer.

[3 marks]

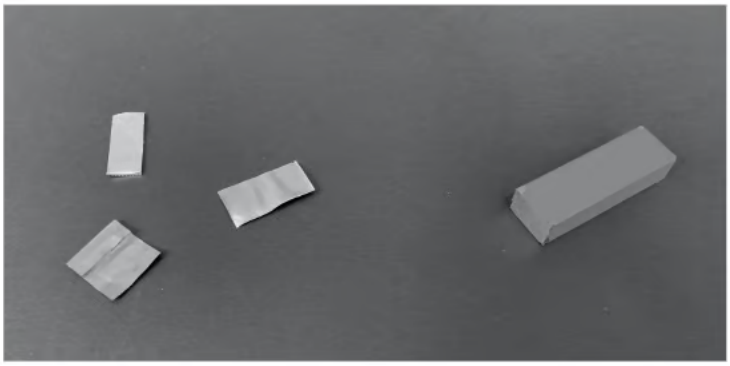
[3 marks]

Question 2

A student is presented with three unlabelled materials.

One of the materials is a magnetic and magnetised, one is magnetic but not magnetised and the final one is non-magnetic.

The student is also provided with a bar magnet.



Describe how the student could use the magnet to determine which material is which.

[3 marks]

[3 marks]

Question 3a

(a)

Explain what is meant by the term *magnetic field*.

[2 marks]

[2 marks]

Question 3b

(b)
Describe how a plotting compass may be used to plot the magnetic field of a bar magnet.

You may draw a diagram if you wish.

[3 marks]

[3 marks]

Question 3c

(c)
Complete the diagram below to show the magnetic field of the bar magnet, indicating its direction.

[3 marks]

[3 marks]

Question 3d

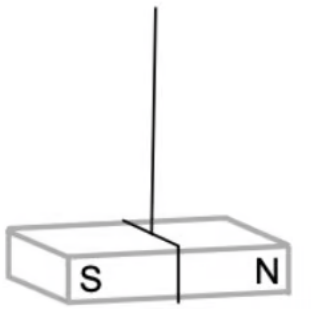
(d)
What feature of your diagram represents the strength of the magnetic field?

[1 mark]

[1 mark]

Question 4

A bar magnet is carefully balanced from a thin piece of cotton thread, far away from any magnetic materials.



The magnet is left to settle. After a short while the following observations are made:

1. The magnet has turned to align itself roughly north to south.
2. The north pole of the magnet is roughly facing north.
3. The pole does not quite point to the north but slightly to one side of north.
4. The north pole also points downwards at an angle.

Explain what can be concluded from each of the above points.

[4 marks]

[4 marks]