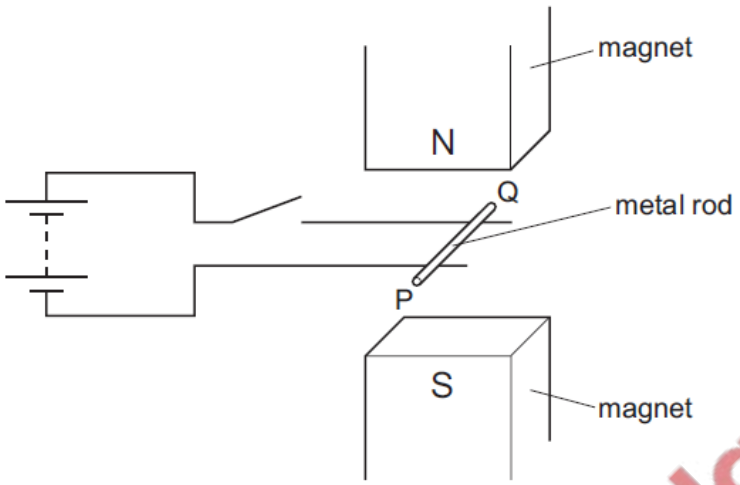
Electromagnetism – 2023 IGCSE Physics 0625

1. Nov/2023/Paper_ 0625/11/No.32

A metal rod PQ rests on two horizontal metal wires that are attached to a battery. The rod lies between the poles of a magnet.



When the switch is closed, the rod moves to the right.

What could be changed so that the rod moves to the left?

A Open the switch.

B Reverse the battery terminals and exchange the poles of the magnet.

C Reverse the battery terminals but without exchanging the poles of the magnet.

D Turn the metal rod around (P and Q exchanged).

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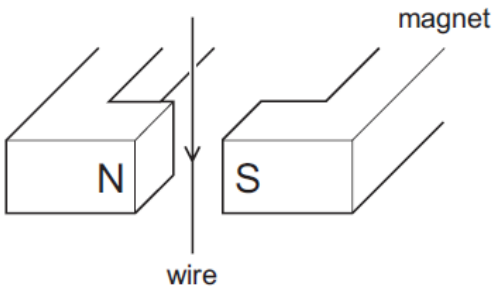
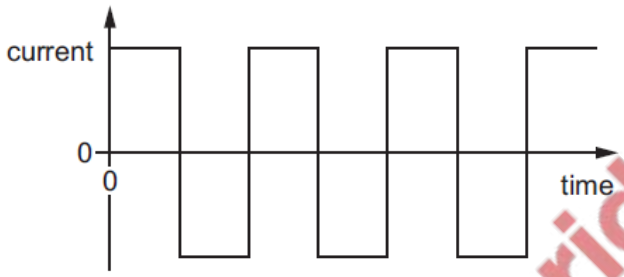
2. Nov/2023/Paper_ 0625/12/No.32

The diagram shows a wire in the magnetic field between two poles of a magnet.



The current in the wire repeatedly changes between a constant value in one direction and a constant value in the opposite direction, as shown in the graph.



What is the effect on the wire?

A The force on the wire alternates between one direction and the opposite direction.

B The force on the wire is constant in size and direction.

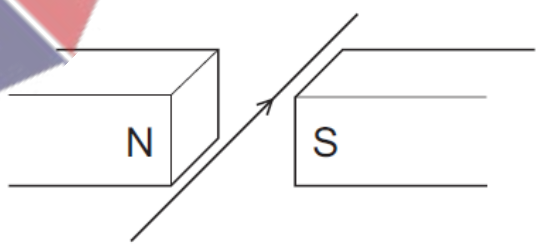
C There is no force acting on the wire at any time.

D There is only a force on the wire when the current reverses.

3. Nov/2023/Paper_ 0625/13/No.32

A current passes along a wire placed between the poles of a permanent magnet.

The wire experiences a force due to the magnetic field.



What will change the direction of this force?

A increasing the current

B reversing the current

C increasing the strength of the magnetic field

D using an electromagnet with the same polarity as the permanent magnet

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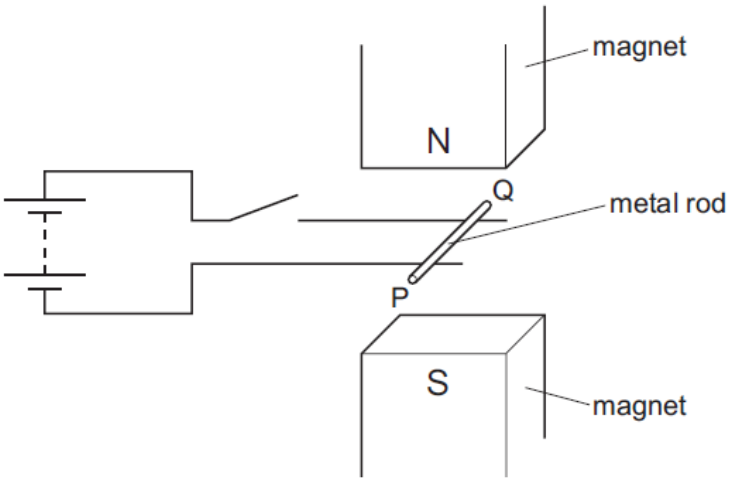
4. Nov/2023/Paper_ 0625/21/No.32

A metal rod PQ rests on two horizontal metal wires that are attached to a battery. The rod lies between the poles of a magnet.



When the switch is closed, the rod moves to the right.

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A Open the switch.

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D Turn the metal rod around (P and Q exchanged).

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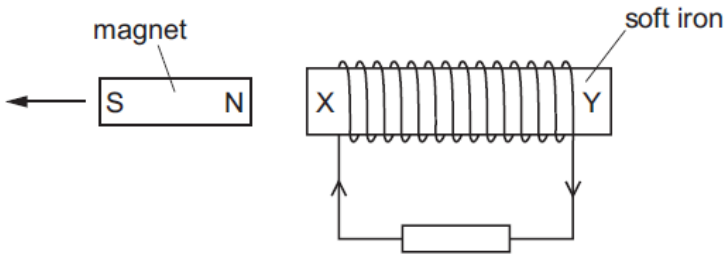
5. Nov/2023/Paper_ 0625/22/No.31

A piece of soft iron XY has a coil of wire wound round it.



The N pole of a bar magnet is pulled away from end X which causes an induced current in the coil.

The magnet is now turned round so that the N pole is on the left. It is taken to the other end of the soft iron and the N pole is pushed towards end Y. A new current is induced in the coil.

Which statement is correct?

A The new induced current is in the opposite direction and causes the soft iron to attract the N pole.

B The new induced current is in the opposite direction and causes the soft iron to repel the N pole.

C The new induced current is in the same direction and causes the soft iron to attract the N pole.

D The new induced current is in the same direction and causes the soft iron to repel the N pole.

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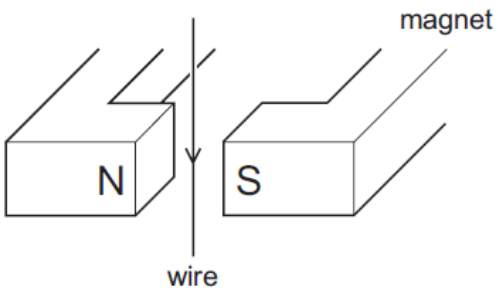
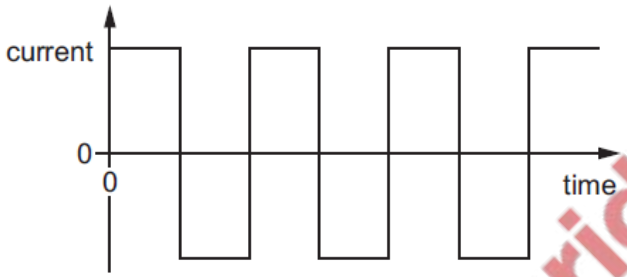
6. Nov/2023/Paper_ 0625/22/No.32

The diagram shows a wire in the magnetic field between two poles of a magnet.



The current in the wire repeatedly changes between a constant value in one direction and a constant value in the opposite direction, as shown in the graph.



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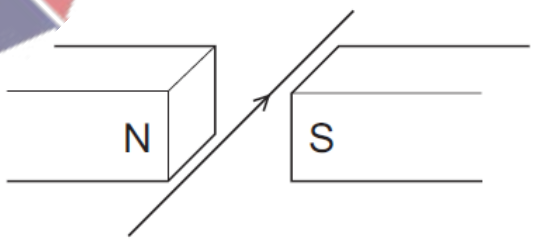
7. Nov/2023/Paper_ 0625/23/No.32

A current passes along a wire placed between the poles of a permanent magnet.

The wire experiences a force due to the magnetic field.



What will change the direction of this force?

A increasing the current

B reversing the current

C increasing the strength of the magnetic field

D using an electromagnet with the same polarity as the permanent magnet

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8. Nov/2023/Paper_ 0625/32/No.10

(a) Different materials have differing magnetic properties.

(i) State the name of a material that is suitable for a **temporary** magnet.

..... [1]

(ii) State the name of a material that is suitable for a **permanent** magnet.

..... [1]

(iii) State how a magnet can show that a material is non-magnetic.

..... [1]

(b) A teacher uses the arrangement in Fig. 10.1 to demonstrate an electric bell. When the switch is closed, the hammer repeatedly hits the metal gong.

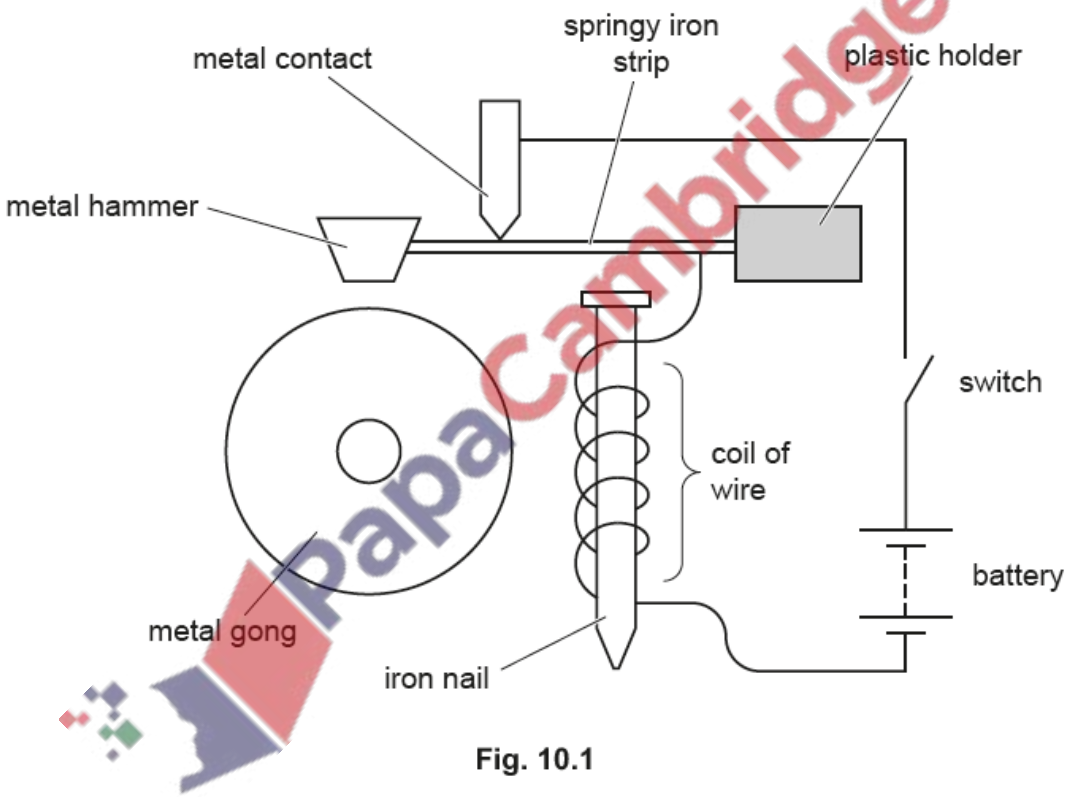

Fig. 10.1

Using the information in Fig. 10.1, explain why the hammer repeatedly hits the metal gong when the switch is closed.

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.....

.....

.....

..... [4]

[Total: 7]

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9. Nov/2023/Paper_ 0625/33/No.9

(a) Describe what is meant by alternating current (a.c.).

..... [1]

(b) A teacher demonstrates how a loudspeaker works by using the equipment shown in Fig. 9.1.

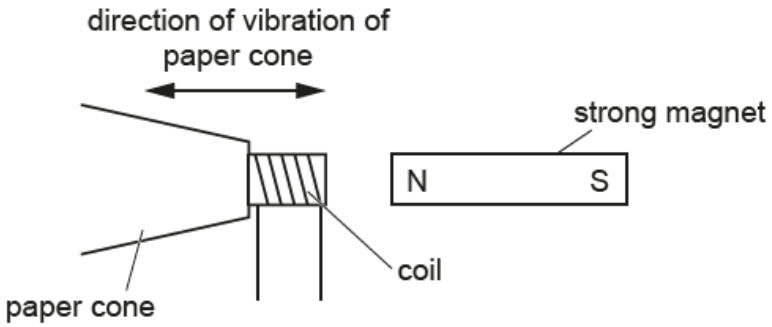

Fig. 9.1

There is an alternating current in the coil. The paper cone and coil vibrate as shown in Fig. 9.1.

(i) Explain why the paper cone vibrates. Use your ideas about magnetism.

.....

.....

.....

..... [3]

(ii) When the paper cone vibrates, the teacher hears a sound.

Suggest a value for the frequency of the alternating current. Include the unit.

frequency = ...

unit .....

[2]

[Total: 6]

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10. Nov/2023/Paper_ 0625/43/No.8(a)

(a) Fig. 8.1 shows the single turn coil of a simple direct current (d.c.) motor.

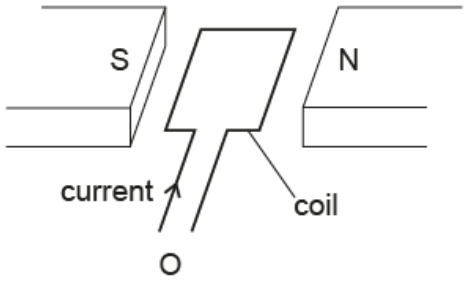

Fig. 8.1

(i) Explain the direction of the turning effect as seen by an observer at O.

.....

.....

..... [2]

(ii) The coil is replaced by an otherwise identical new coil with three turns and the same current in the coil.

State how the turning effect compares with the turning effect in **(i)**.

..... [1]

(iii) A third coil is identical to the coil in **(i)** except that its resistance is three times greater. The potential difference (p.d.) across the coil is the same as the p.d. in **(i)**.

State how the turning effect compares with the turning effect in **(i)**.

..... [1]

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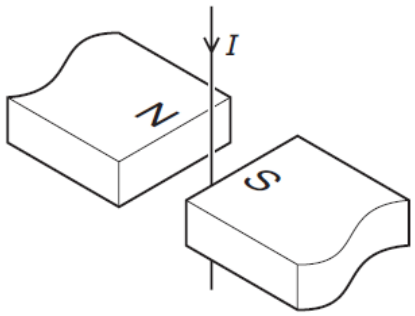
11. June/2023/Paper_0625/11/No.32

The diagram shows a vertical wire carrying a current I placed between the poles of a magnet.



What is the direction of the force on the wire exerted by the magnetic field?

A from N to S

B from S to N

C horizontal and at right angles to the direction from N to S

D parallel to the wire

12. June/2023/Paper_0625/12/No.32

In which device is the magnetic effect of a current **not** used?

A electromagnet

B loudspeaker

C potential divider

D relay

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13. June/2023/Paper_0625/13/No.30

Which electrical device uses the turning effect produced by a current-carrying coil in a magnetic field?

A a.c. generator

B d.c. motor

C relay

D transformer

14. June/2023/Paper_0625/13/No.31

Four appliances all use an electric current to operate.

Which appliance uses the magnetic effect of the current?

A a heater

B a light bulb

C a relay

D a remote controller

15. June/2023/Paper_0625/21/No.31

An electron moves into a uniform magnetic field.

The arrow shows the initial direction of motion of the electron.

The direction of the magnetic field is into the plane of the page.

In which direction does a force act on the electron when it enters the magnetic field?

A into the page

B out of the page

C towards the bottom of the page

D towards the top of the page

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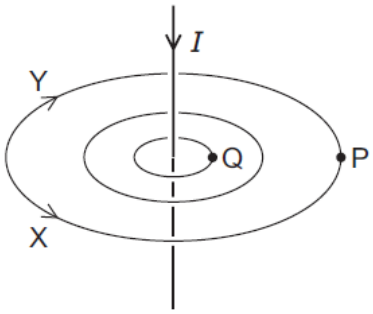
16. June/2023/Paper_0625/22/No.31

The diagram shows the pattern of the magnetic field due to the current I in a straight wire.



Which row is correct?

	direction of field	relative strength of field
A	X	greater at P than Q
B	Y	greater at P than Q
C	X	greater at Q than P
D	Y	greater at Q than P

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17. June/2023/Paper_0625/22/No.32

In which device is the magnetic effect of a current **not** used?

A electromagnet

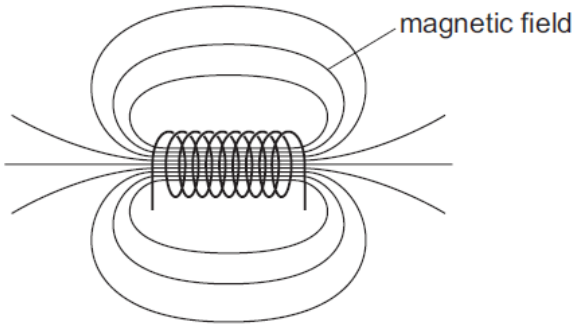
B loudspeaker

C potential divider

D relay

18. June/2023/Paper_0625/23/No.29

The diagram shows the magnetic field around a solenoid carrying an electric current.



What happens to the strength of the magnetic field and the distance between the field lines when the current is increased?

	strength of magnetic field	distance between field lines
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

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