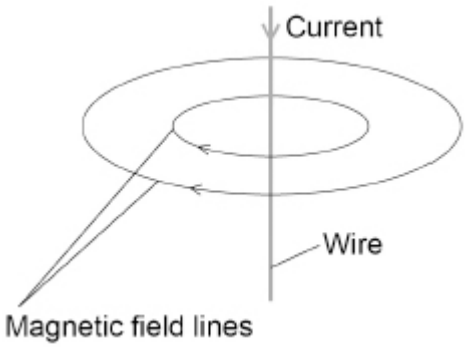
Questions are for both separate science and combined science students unless indicated in the question

Q1.

Figure 1 shows the magnetic field pattern produced when there is a current in a wire.

Figure 1



(a) What do the arrows on the magnetic field lines represent?

_____

_____

(1)

(b) How could the strength of the magnetic field be increased?

Tick (✓) **one** box.

Change the direction of the current in the wire ☐

Increase the current in the wire ☐

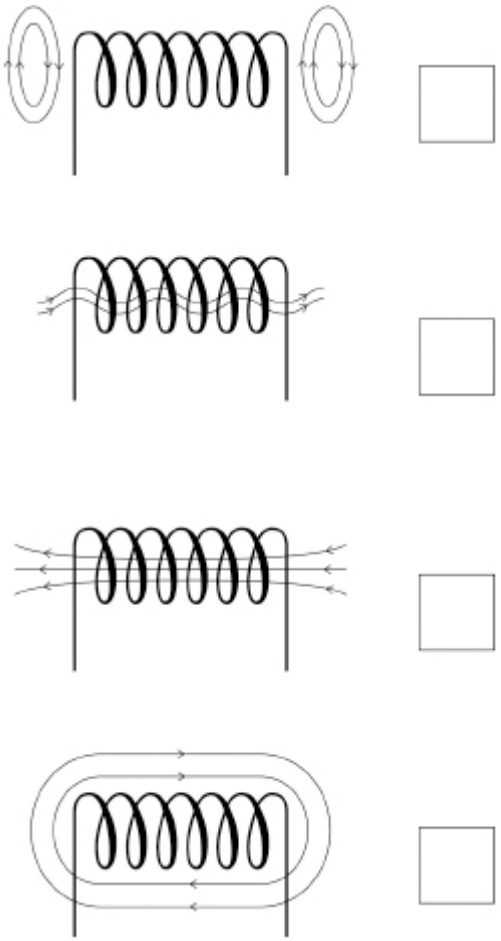
Increase the temperature of the wire ☐

(1)

(c) The wire is coiled to make a solenoid.

Which diagram in **Figure 2** shows the magnetic field pattern produced when there is a current in the solenoid?

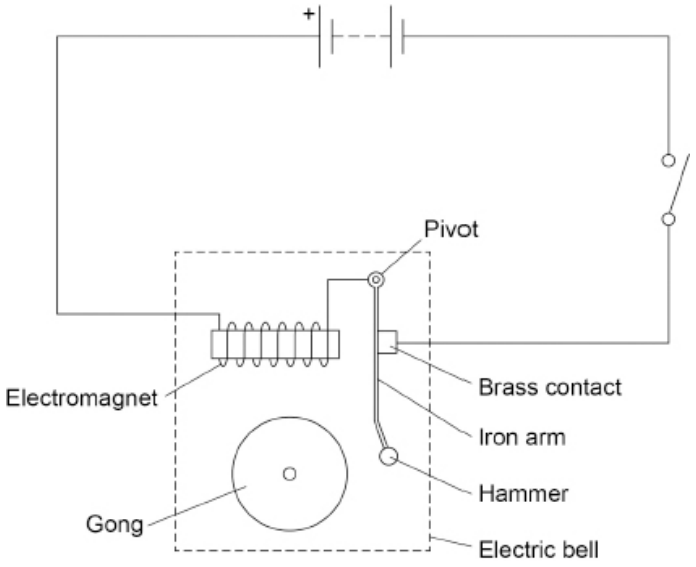
Figure 2



(1)

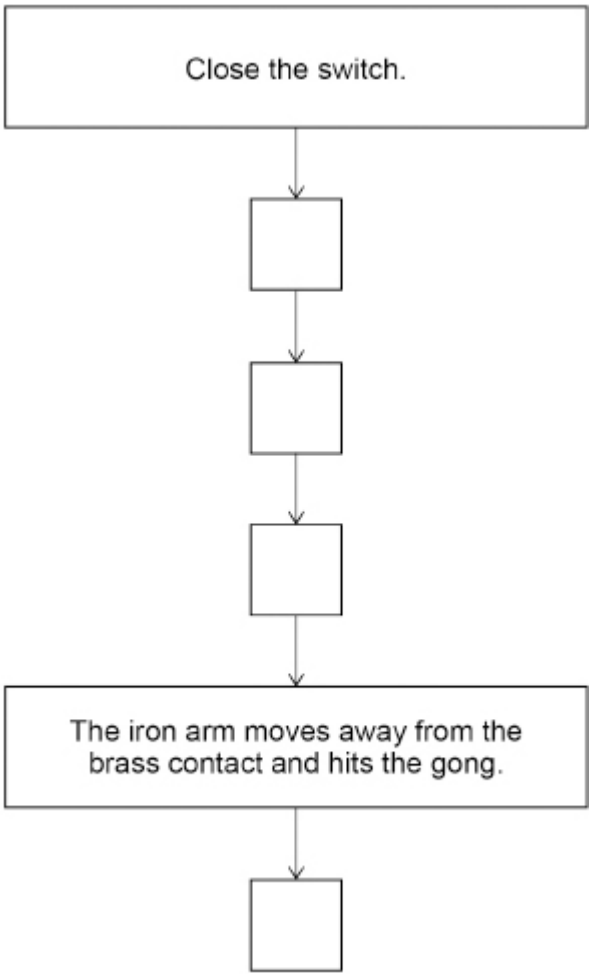
Figure 3 shows the parts of an electric bell.

Figure 3



(d) **Figure 4** shows an incomplete sequence of how the bell works.

Figure 4



Write **one** letter in each box to show the correct sequence.

Use each letter once. **(Physics only)**

A A magnetic field is created around the electromagnet.

B A resultant force acts on the iron arm causing it to move towards the electromagnet.

C The iron arm returns to its original position.

D There is a current in the circuit.

(2)

(e) Which of the following would increase the resultant force on the iron arm?

Tick (✓) **one** box. **(Physics only)**

Decrease the distance between the electromagnet and the iron arm	☐
Decrease the number of cells in the circuit	☐
Decrease the number of turns on the electromagnet	☐

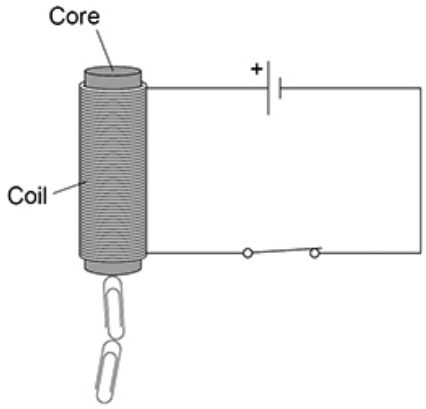
(1)

(Total 6 marks)

Q2.

Figure 2 includes an electromagnet.

Figure 2



(a) Which metal is used to make the core of the electromagnet?

Tick (✓) **one** box.

Aluminium	☐
Copper	☐
Iron	☐
Magnesium	☐

(1)

(b) Complete the sentence.

Choose the answer from the box.

coil	**metal core**	**paper clip**

The switch is closed. There is a current in the _____.

(1)

(Total 2 marks)