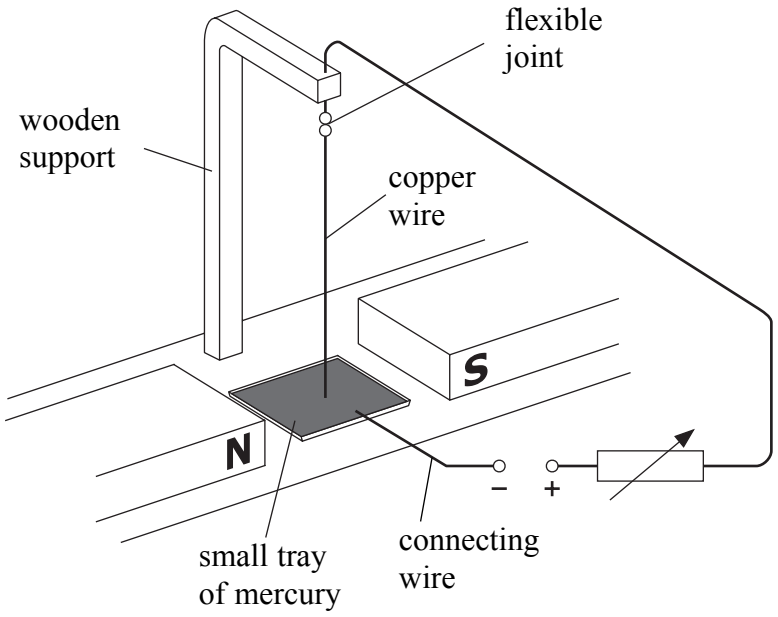
Leave blank

15. (a) A teacher sets up the apparatus shown. A copper wire carrying a current is placed between the poles of two bar magnets. This wire dips into a small tray of mercury.



The teacher sets up the apparatus in a fume cupboard because mercury vapour is poisonous.

Draw arrows on the diagram to show the direction of

(i) the current in the copper wire and label it **I**

(1)

(ii) the magnetic field between the poles and label it **M**

(1)

(iii) the resulting force on the copper wire and label it **F**.

(1)

(b) At first the copper wire does not move.
State two changes that could be made to increase the force acting on the copper wire.

1 .....

2 .....

(2)

(c) Give two reasons why mercury is used in this demonstration.

1 .....

2 .....

(2) **Q15**

(Total 7 marks)

Leave blank

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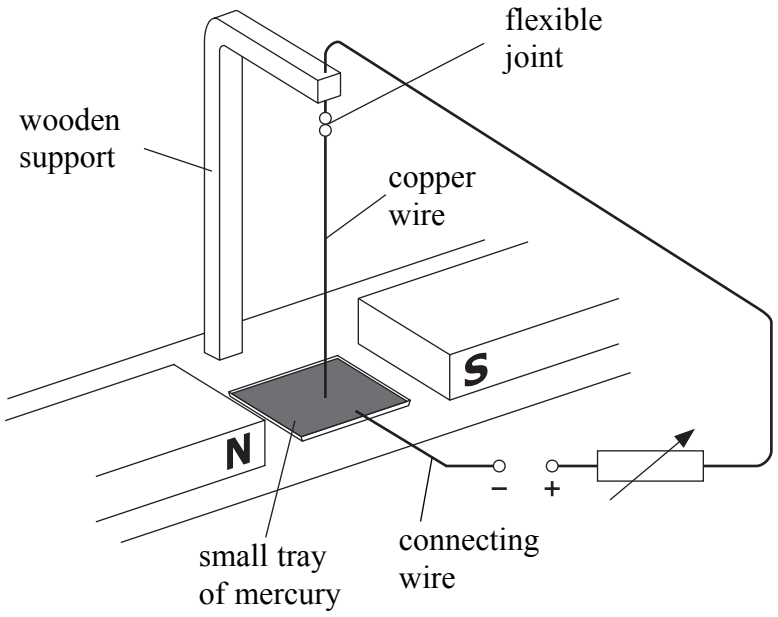

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2 .....

(2)

(c) Give two reasons why mercury is used in this demonstration.

1 .....

2 .....

(2) **Q15**

(Total 7 marks)

Question 15

	Answer(s)	Extra information	Mark(s)
(a)(i)	I downwards	seen anywhere in circuit	**1**
(ii)	M from N to S		**1**
(iii)	F out of the paper	can be scored if I and/or M missing must be consistent with I and M if both shown	**1**
(b)	increase the current	reduce resistance / increase power supply / thicker wire / shorter (connecting) wire	**1**
	move poles closer together	stronger field/ magnets	**1**
(c)	liquid (at room temperature) metallic conductor to allow the end of the wire to move non-magnetic	ANY TWO	**1** **1**

Total 7 marks

Question 16

(a)		-4		**1**
	+1	0	accept 1 instead of +1	**1 1**
	0	0		**1 1**
(b)	3			**1**
	2			**1**
(c)	protons (and electrons)		'atomic number'	**1**
	neutrons		nucleons/ nucleon number/ mass number	**1**

Total 9 marks

Question 17

(a)	A : (most of) the atom is empty / space / hollow	OWTTE : e.g.'nucleus is a long way from electrons' not homogeneous	**1**
(b)	B: small(er than atom)	larger <u>than alpha particle</u>	**1**
	massive	heavy / <u>very</u> dense	**1**
(c)	C : same as alpha / + ve		**1**
	like charges repel	dop	**1**

Total 5 marks