

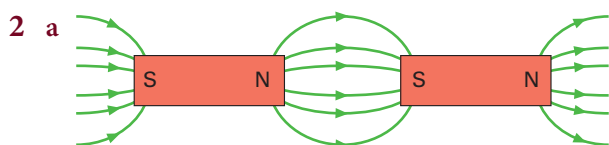
Answers to Self-assessment practice tests Block 4

1 a N pole

b S pole

c Place the compass near the end of the magnetised wire; the end which points N in Earth's field will point towards S magnetic pole.

d Heat it or hammer it; test with compass to see if poles remain.



b attract

3 a stronger field

b weaker field

c no field

4 a rub it with a cloth

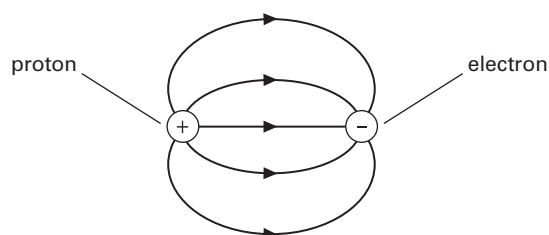
b repulsion; they have charge of same sign

c charges of opposite signs

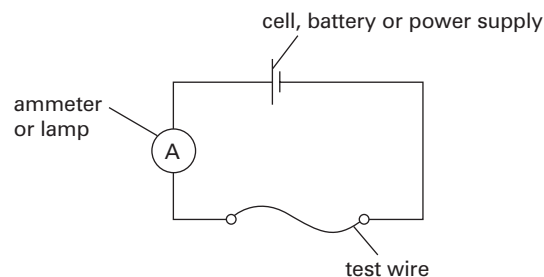
d Bring up a known charge, e.g. a metal sphere charged with electrons from a Van de Graaff generator or a polythene rod given a negative charge by rubbing with a woollen cloth. If the rod moves towards it, it has charge of opposite sign. If the rod moves away, it has charge of the same sign.

5 a proton: positive; electron: negative

b



6 a



b the brightest lamp or the biggest current

c wires should be of equal length and equal thickness, repeat the tests

7 a electrons

b from negative to positive

c 180 C

d ammeter

8 a diagram with arrow from right to left in resistor (positive to negative)

b increase

c decrease

d 7.0Ω

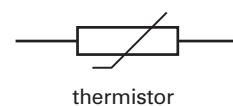
9 a 40 V

b 0.40 A

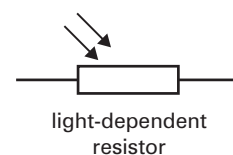
c 2.0 W

d 600 J

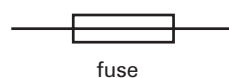
10 a



b



c



- 11 a** $90\ \Omega$
b $0.20\ \text{A}$; $0.20\ \text{A}$
c $20\ \Omega$
d $20\ \text{V}$

- 12 a** $3.6\ \text{V}$
b $2.0\ \text{V}$
c $0.20\ \text{A}$

- 13 a** AND gate

Input 1	Input 2	Output
0	0	0
0	1	0
1	0	0
1	1	1

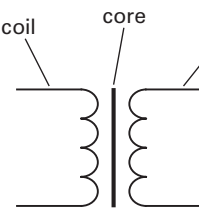
- b** OR gate

Input 1	Input 2	Output
0	0	0
0	1	1
1	0	1
1	1	1

- 14 a** The fuse would blow with normal current flowing.
b Even if the current rose to a dangerous level (e.g. $5\ \text{A}$), the fuse would not blow.
c for example, $3\ \text{A}$ or $5\ \text{A}$

- 15 a** It flows along the steel support rods.
b It must not be attracted to the permanent magnets.
c downwards (from N to S)
d Fleming's left-hand rule
e horizontally to the right, in the direction of the steel support rods
f reverse the current; reverse the magnetic field
g increase the current; increase the strength of the magnets.
- 16 a** electrons have negative charge; attracted towards positively-charged anode
b beam would be deflected upwards, towards the upper plate
c beam would be deflected towards the viewer (Fleming's LH rule).

- 17 a** primary coil core secondary coil



- b** alternating current
c step-up; more turns on secondary than primary
d $60\ \text{V}$
e $5.0\ \text{A}$
f $1.67\ \text{A}$