



# **KS3 Science**

## **Electricity**

### **Mark Scheme**


**Time available: 41 minutes**

**Marks available: 57 marks**



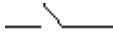
## Mark schemes


1.

- (a) • correct bulb symbol 

*accept other symbols for a bulb e.g. *

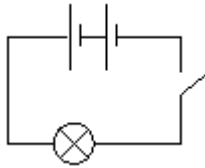
1 (L4)

- correct switch symbol 

*do not accept a closed switch *

1 (L4)

- components connected in series



*accept circuits with the components in a different order  
accept incorrect but recognisable symbols or drawings for the third marking point only*

*do not accept responses where the number of components is incorrect*

1 (L4)

- (b) • cell(s)

*accept 'battery'*

1 (L3)

- (c) • the bulb would be dimmer

*accept 'it decreases'*

*accept 'it would become dimmer'*

*'the current is less' is insufficient*

*'there is less power' is insufficient*

*a comparative answer is required for the mark*

*'it would be dim' is insufficient as it does not describe the change*

*do not accept 'it goes out'*

1 (L4)

- (d) (i) • increase

*accept 'brighter' or 'becomes bright'*

*accept 'stronger'*

*'there is more power' is insufficient*

*a comparative answer is required for the mark*

*'it is bright' is insufficient as it does not describe the change*

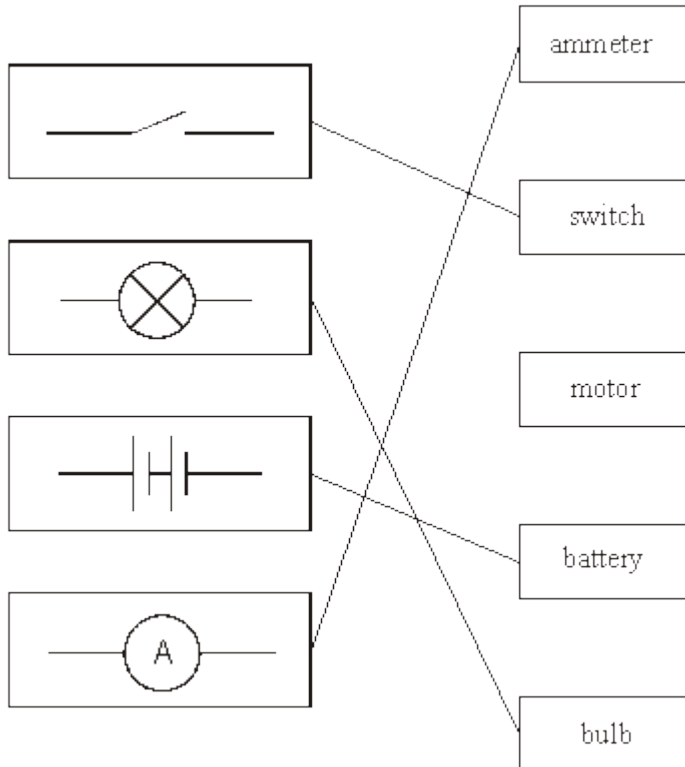
1 (L4)

- (ii) • bulbs would go out
  - accept 'no brightness' or 'no light'*
  - accept 'it decreases'*
  - accept 'weaker'*
  - 'not bright' is insufficient*
  - 'none' or 'nothing' are insufficient*
  - 'there is no power' is insufficient*
  - 'darker' is insufficient*

1 (L4)

[7]

**2.** (a)



**all four** lines are required for three marks  
 any **three** lines are required for two marks  
 any **two** lines are required for one mark  
 if more than one line is drawn from a symbol,  
 do **not** give credit for that symbol

3 (L4)

(b) battery

*accept 'cell' or 'cells'*  
*accept 'power supply' or 'power pack'*

1 (L4)

(c)

	series	parallel
circuit 1	✓	
circuit 2		✓

*both ticks are required for one mark  
if more than one box is ticked in any row, award no mark*

1 (L4)

(d) copper

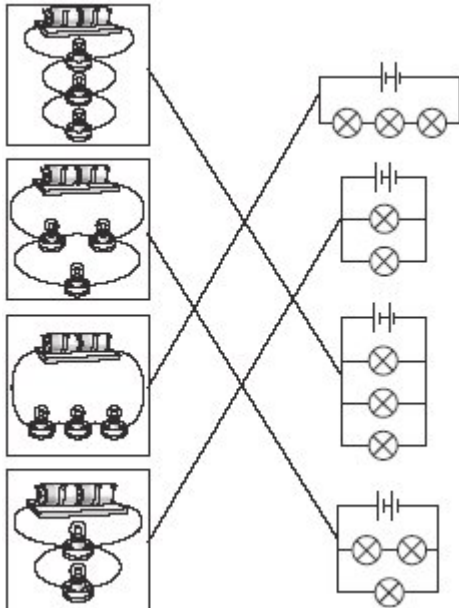
*accept 'aluminium'  
accept 'gold'  
do **not** accept any other metal*

1 (L4)

[6]

3.

(a) •



*award two marks for all **four** correct lines  
award one mark for any **two** or **three** correct lines  
if more than one line is drawn from any box,  
do not credit either line*

2 (L3)

- (b) • off ✓  
 off ✓

*both ticks are required for the mark  
 if more than one box is ticked in any row, award no mark*

1 (L3)

- on ✓  
 on ✓

*both ticks are required for the mark  
 if more than one box is ticked in any row, award no mark*

1 (L4)

- (c) • battery

*accept 'cell' or 'cells'*

1 (L4)

- (d) • Copper is a good conductor of electricity. ✓

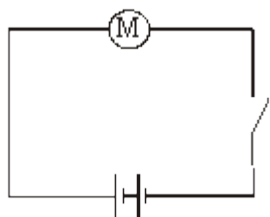
*if more than one box is ticked, award no mark*



1 (L3)

**[6]**

**4.**

- (a) •




*accept a battery drawn as  or ,*

**all three** symbols must be connected in series

**all three** symbols must be drawn correctly

*do not accept a switch drawn as *

*do not accept a battery drawn as *

*do not accept a motor drawn as *

1 (L4)

- (b) (i) • the battery or cell(s)

*accept 'batteries'*

1 (L4)

- (ii) • heat

1 (L4)

- sound

*accept 'thermal'*

*answers may be in either order*

1 (L4)

- (c) (i) • it turned more slowly  
*accept 'not as much energy'*  
*accept 'it was less powerful'*  
*accept 'it does not work as well'*  
*accept 'it would stop' or 'it would not go round'*  
*'it heats up' is insufficient*
- 1 (L4)

- (ii) • it was brighter  
*accept 'blew it' or 'it went out'*  
*accept 'it became hotter' or 'it heated up'*
- 1 (L4)

[6]

5.

- (a) • E
- 1 (L5)

(b)

	P	Q	R
•	off	off	off
•	on	off	on
•	off	off	off

*award one mark for each correct row*

2 (L5)

- (c) • \* 0.8 0.8 ✓  
*if more than one box is ticked, award no mark*
- 1 (L6)

[4]

6.

(a)

•	P	off
	Q	on
	R	on

*accept 1 for 'on' and '0' for 'off'*

**all three** answers are required for the mark

1 (L3)

(b) any **one** from

- battery

*accept 'batteries'*

- cell

*accept 'cells'*

1 (L4)

(c)

on	
off	✓

on	
off	✓

on	✓
off	

*if all three answers are correct, award two marks  
if two answers are correct, award one mark if more  
than one box is ticked for any circuit, award no credit  
for that circuit*

2 (L4)

[4]

7.

(a)

A	B	C	D
off	off	off	off
off	off	off	off
on	on	on	on
on	on	off	off

*award a mark for each correct row*

3 (L6)

(b) any **one** from

- close  $S_4$  and  $S_5$

- only leave  $S_3$  open

*accept 'close 4 and 5'*

*accept 'only leave 3 open'*

*'leave switch 3 or 3 open' is insufficient*

1 (L6)

[4]

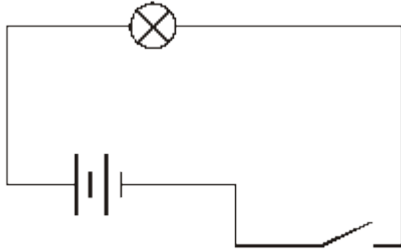


8.

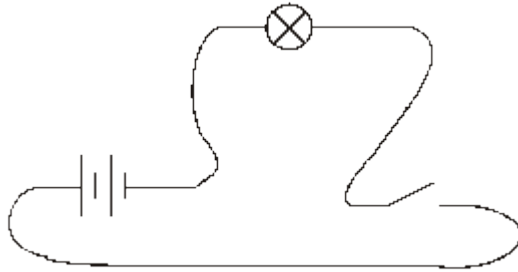
- (a) (i) any **one** from
- it let the current **or** electricity flow
  - current could flow through the bulb
  - it completed the circuit
- accept 'the contacts came together'*

1 (L3)

- (ii) all three components must be correctly connected in series



*accept*



*a mark may be awarded for any correctly connected circuit drawn with straight **or** curved wires*  
*award a mark for a correct circuit diagram in which the pupil has drawn the symbols instead of connecting the printed symbols*

1 (L3)

- (b) (i) any **one** from
- the bulb is broken **or** blown
  - the filament is broken
- accept 'the coil is broken'*  
*'the bulb is not connected properly' is insufficient*

1 (L3)

- (ii) turn one of the cells around
- accept 'turn a battery round'*  
*accept 'turn the battery'*  
*accept 'put the batteries in the right way'*  
*'turn the batteries round' is insufficient*  
*the mark may be awarded for a description of the fault eg 'both batteries are the same way up'*

1 (L3)

- (c) any **one** from
- it stopped current from flowing  
*accept 'to stop the batteries running down'*
  - paper does not conduct **or** is an insulator
  - the circuit was broken **or** incomplete  
*accept 'to stop the contacts coming together'*
  - so that the circuit can be completed
- 1 (L3)

[5]

9.

- (a) (i) series  
all  
*answers must be in the correct order*  
**both** answers are required for the mark
- 1 (L4)
- (ii) parallel  
none  
*answers must be in the correct order*  
**both** answers are required for the mark
- 1 (L4)
- (b) they were reflected **or** scattered  
*accept 'some light was absorbed or refracted'*  
*accept 'they bounced off'*
- 1 (L4)
- (c) They absorb water from the soil. ✓  
They absorb minerals from the soil. ✓  
*if more than two boxes are ticked, deduct one mark for each incorrect tick*  
*minimum mark zero*
- 1 (L3)

[5]

10.

- (a) circuit A: series  
circuit B: parallel  
**both** answers are required for the mark
- 1 (L5)
- (b) (i) the circuit **or** heating element will stop working  
*accept 'it will not work' or 'it will be off'*  
*accept 'the whole circuit has no current through it'*  
*accept 'it becomes cooler'*  
*do not accept 'it breaks the heater or element or it'*
- 1 (L5)

(ii) any **one** from

- the circuit **or** element will continue to work
- one wire will not heat the window  
*accept 'the bottom one has no current through it'  
'nothing' or 'it will not be affected' are insufficient  
accept 'it will work less well'  
accept 'the bottom wire becomes cooler'  
do **not** accept 'it becomes cooler'  
do **not** accept 'it does not work properly'*

1 (L5)

(c) (i) thermal accept 'heat'

1 (L5)

(ii) *from solid to liquid to gas*

- all three** states are required for the mark  
*accept 'from solid to liquid to vapour or steam'  
accept 'from ice to water to vapour or gas'*

1 (L5)

[5]

11.

circuit drawing	buzzer on only	lamp on only	both on	neither on
A				* /
B		* /		
C	* /			
D				* /
E			* /	

*if more than one box is ticked in any row  
award no mark for that row*

[5]