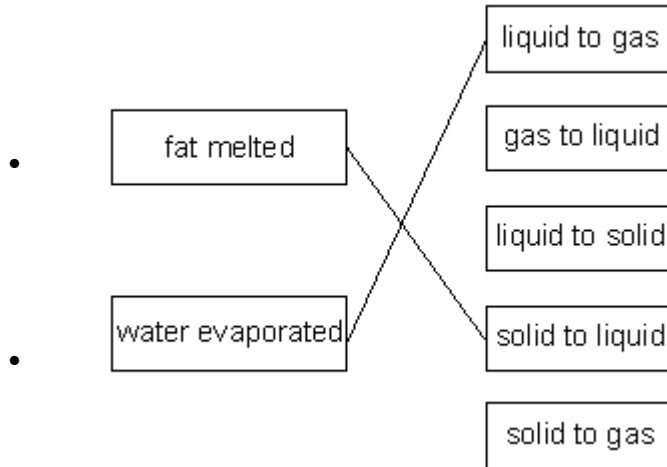# KS3 Science

Changes of State

Mark Scheme

Time available: 35 minutes
Marks available: 51 marks

Mark schemes

1. (a)

*if more than one line is drawn from either 'fat melted'   **or** 'water evaporated', award no mark for that statement*

2 (L3)

(b) (i) • All fuels are sources of energy. ✓

if more than one box is ticked, award no mark

1 (L3)

(ii) • oxygen ✓

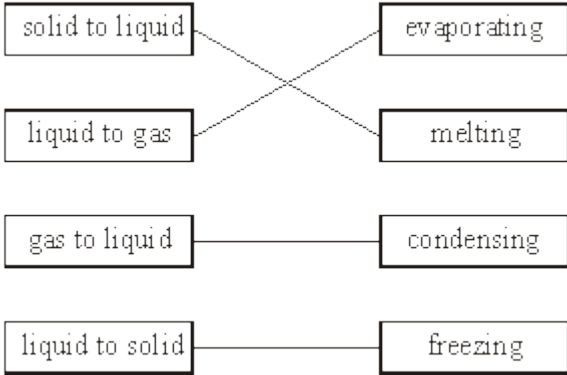*if more than one box is ticked, award no mark*

1 (L4)

(c) • It is rigid. ✓

• It has a very high melting point. ✓

if more than two boxes are ticked, deduct one mark for each incorrect tick minimum mark zero

2 (L4)

[6]

2. (a) •

| solid to liquid | evaporating |
| liquid to gas | melting |

| gas to liquid | condensing |

| liquid to solid | freezing |

*award three marks for **all four** correct lines*
*award two marks for any **three** correct lines*
*award one mark for any **two** correct lines*

if more than one line is drawn from any change of state,
do not credit that change of state

3 (L3)

(b) • 0 ° C

accept 'zero'
*do **not** accept 'nothing'*

1 (L4)

(c) • it decreased

accept 'it got colder'
'it dropped to below 0°C' is insufficient
any references to time are insufficient

1 (L3)

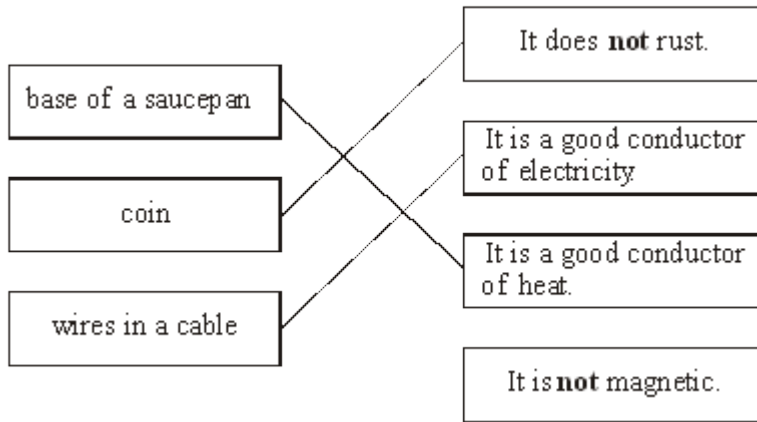(d) • Sand increases friction between car tyres and the road. ✓

• Salt makes ice melt. ✓

if more than two boxes are ticked, deduct a
mark for each incorrect box
minimum of zero

2 (L4)

[7]

3. (a)

base of a saucepan — It is a good conductor of heat.

coin — It does **not** rust.

wires in a cable — It is a good conductor of electricity.

if more than one line is drawn from an object, award no mark for that object

3 (L3)

(b) • Brass does not bend as easily as copper. ✓

if more than two boxes are ticked, deduct one mark for each incorrect tick

1 (L3)

• Brass is harder than copper ✓

minimum mark zero

1 (L3)

(c) • liquid zinc and solid copper ✓

if more than one box is ticked, award no mark

1 (L4)

[6]

4. (a) • water: increased **or** went up

accept 'expanded'

*accept a reading greater than 7 (cm^3) and less than **or** equal to 8 (cm^3)*

• *wax*: decreased **or** went down

accept 'contracted'

*accept a reading lower than 7 (cm^3) and greater than **or** equal to 5.5 (cm^3)*

both *answers are required for the mark*

1 (L3)

(b) • *water*: liquid

**1 (L4)**

• *wax*: solid

1 (L4)

(c) (i) any **one** from

- the liquid had turned blue
    accept 'the colour changed'
    *accept 'the water was blue or coloured **or** grey'*
    'it formed a solution' is insufficient

- crystals **or** copper sulphate **or** solid could not be seen
    accept 'the crystals disappeared'

- there was no solid left

1 **(L3)**

(ii) any **one** from

- stir it
    *accept 'shake it'   **or** 'mix it'*

- heat it

- use warm water
    accept 'use hotter water'
    accept 'add more water'
    *do **not** accept 'put less in'*

1 **(L3)**

(d) (i) it evaporated
    accept 'it went into the air'

1 **(L4)**

(ii) copper sulphate
    accept 'crystals'
    accept 'sulphate'

1 **(L3)**

[7]

5. (a) (i)
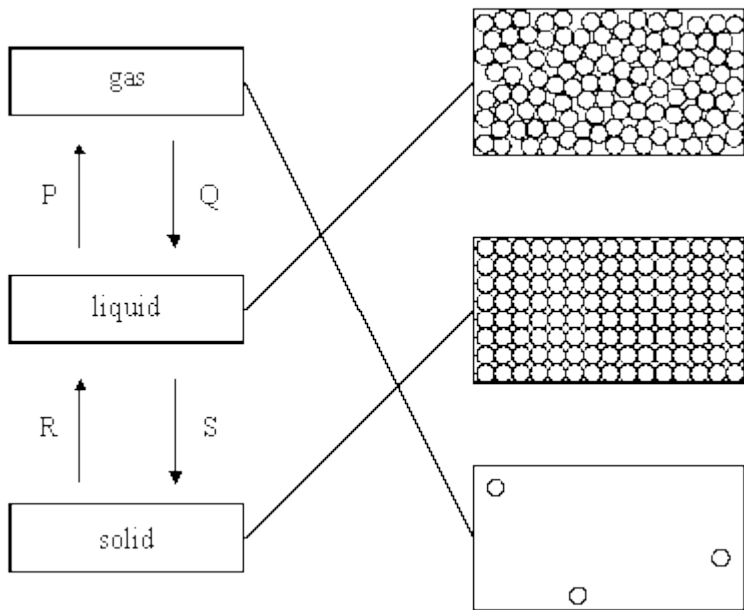
all three lines must be correct for the mark

1 **(L6)**

(ii) *evaporation*: P

1 **(L5)**

melting: R

1 **(L5)**

(b) (i) liquid

1 **(L6)**

(ii) carbon

1 **(L6)**

hydrogen

1 **(L6)**

(iii) carbon dioxide

accept 'CO $_2$'
accept 'carbon monoxide'   or 'CO'
accept 'carbon'   or 'soot'
answers must be in the correct order

1 **(L6)**

[7]

6. (a) (i) iron

*do **not** accept '1540°C'*

1 **(L3)**

(ii) mercury

*do **not** accept '−37°C'*

1 **(L3)**

(b) solid *to a* liquid

> *answers must be in the correct order*
>
> **both** *answers are required for the mark*

1 (L3)

(c) 5

1 (L3)

(d) (i) sodium

1 (L3)

(ii) gold

1 (L3)

[6]

7. (a) any **one** from

- a dip

- a hollow

> *accept 'a hole'*

- a dent

> *accept a drawing of a hollow*
>
> *do **not** accept 'it gets thinner'*

1

(b) it melted

> *accept 'because the air **or** water was warm'*

1

(c) a bar at 3 minutes showing a height of between 10 and 8 cm

1

[3]

8. (a) (i) 100

> *accept answers from 98 to 100*

1 (L5)

(ii) to condense the water vapour

> *accept 'to change the gas into liquid'*
>
> **or** *'condensation' or 'condenser'*
> *accept 'to cool the vapour into water'*
> *do **not** accept 'to cool the vapour or water'*

1 (L5)

(iii) distillation **or** distilling

1 (L5)

(b)   (i)   evaporating **or** boiling

1 (L6)

melting

1 (L6)

freezing

1 (L6)

condensing

1 (L6)

(ii)   A

accept 'boiling'

1 (L6)

D

accept 'condensing'
accept the letters written in the
correct places on the diagram

1 (L6)

[9]