Mark schemes

Q1.

(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]

Q2.

(a) (i) any **one** from

- bubbles
- fizzing

  accept 'effervescence'
- gas is given off

  *'metal goes into solution **or** turns into a salt' and 'there would be a rise in temperature' are insufficient answers as they are **not** shown in the drawings*

1 (L3)

(ii)
- magnesium

  accept 'Mg'
- zinc

  accept 'Zn'
- iron

  accept 'Fe'
- copper

  accept 'Cu'

  answers must be in the correct order

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

1 (L4)

(b) (i) • copper

accept 'Cu'

1 (L3)

(ii) • iron

accept 'Fe'

1 (L4)

[4]

Q3.

(a) any **one** from

- there is a colour change

  *accept 'it goes green **or** orange'*
  'the colour' is insufficient

- a new metal is formed

  accept 'the iron filings change colour'

1 (L5)

(b) (i) copper

accept 'Cu'

1 (L5)

(ii) iron sulphate

accept '$FeSO_4$'

1 (L6)

(iii) • no ✓

any **one** from

- iron is more reactive than copper

  accept 'iron is higher on the reactivity series'

- copper is less reactive than iron

  accept 'copper does not displace iron'

  ***both** an indication that the reaction does not happen and the explanation are required for the mark*

1 (L6)

(c) • calcium ✓
potassium ✓

if more than two boxes are ticked, award no mark
***both** answers are required for the mark*

1 (L6)

[5]

Q4.

(a) hydrogen

1 (L6)

(b) (i) region 3

1 (L6)

(ii) region 1

1 (L6)

(iii) region 2

1 (L6)

(c) any **one** from

- it is a compound
- it is not an element
- it is made up of more than one element

*do **not** accept 'it is **not** a single substance'*

1 (L5)

(d) (i) copper + iron sulphate

answers may be in either order
***both** are required for the mark*

1 (L6)

(ii) the nail becomes brown **or** pink **or** copper coloured

accept 'it is covered in copper'
accept 'it is rust coloured'
*do **not** accept 'it goes rusty'*

1 (L6)

[7]

Q5.

(a) • magnesium displaces copper from the copper sulphate

accept 'magnesium has taken the sulphate'

- copper is replaced by magnesium

accept 'copper and magnesium change places'

1 (L6)

(b)

pairs of chemicals	***Does a displacement reaction take place? Yes or no***	***reason***
iron + sodium chloride	no	iron is below sodium (in the reactivity series) or sodium is above iron (in the reactivity series)
magnesium + lead nitrate	yes	magnesium is above lead (in the reactivity series) or lead is below magnesium (in the reactivity series)

*accept 'iron is less reactive' **or** the converse*
*accept 'magnesium is more reactive' **or** the converse*
***both** the answer and the correct reason are required*

for each mark

2 (L7)

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

- add zinc to a solution of a salt of each of the other metals
  accept 'add zinc to copper chloride and if it reacts add it to a solution of a salt of the next metal up and so on'
- add each of the other metals to a solution of a zinc salt
  accept 'add the other metals to zinc chloride'
  accept any named zinc salt

1 (L7)

(ii) any **one** from

- place zinc between the metal in the salt which does react and the metal in the salt which does not react
  accept 'whatever zinc displaced should be below zinc'
- place zinc between the metal which does react and the metal which does not react
  accept 'put zinc below all the metals that react'
  parts (c)(i) and(c)(ii) should be marked together
  *do **not** accept 'test the other metals with zinc to see if they react'*

1 (L7)

[5]

Q6.

(a) aluminium oxide

1 (L7)

(b) aluminium
iron
copper

answers must be in the correct order
*do **not** accept 'iron oxide'*

1 (L6)

(c) (i) no reaction
accept 'nothing'
accept 'zinc and calcium oxide'

1 (L7)

(ii) any **one** from

- zinc
  accept 'Zn'
- silver
  accept 'Ag'
- magnesium
  accept 'Mg'

1 (L7)

(d) zinc + oxygen →

1 (L7)

zinc oxide

1 (L7)

[6]

Q7.

(a) (i) magnesium
zinc
iron
copper

*all **four** metals must be in the correct order for the mark*

1 (L6)

(ii)

	copper	iron	magnesium	zinc
copper sulphate				✓
iron sulphate				
magnesium sulphate		×		×
zinc sulphate				

award one mark for each correct column

2 (L7)

(b) (i) copper nitrate + silver

the products may be in either order

2 (L6)

(ii) copper
silver
platinum

1 (L7)

(c) iron because it is more reactive

***both** the metal and the reason are required for the mark*

accept 'iron because copper does not react'

1 (L7)

[7]

Q8.

(a)

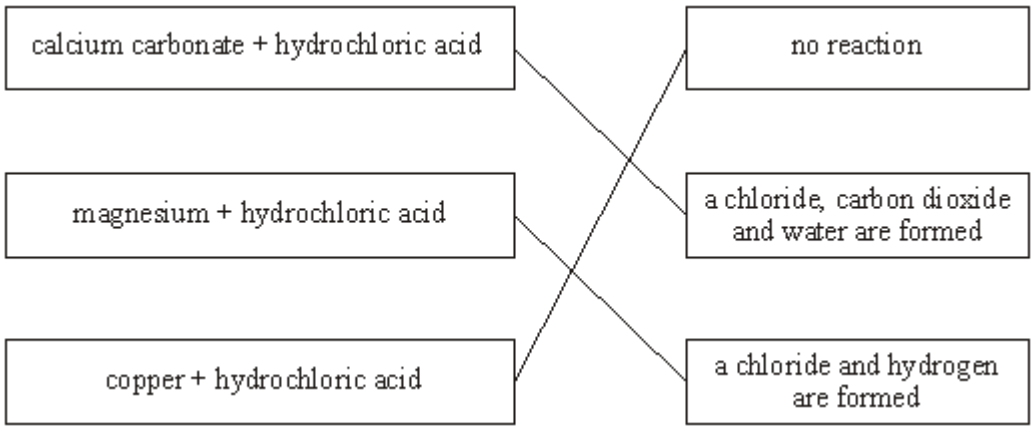
	copper	iron	magnesium	zinc
calcium nitrate	X	X	X	X
copper nitrate		✓	✓	✓
iron	X		✓	✓

nitrate				

award one mark for each correct row

3 (L7)

(b)



if all three answers are correct, award two marks
*if one **or** two answers are correct, award one mark*
if more than one line is drawn from a pair of reactants, award no credit for that pair

2 (L7)

[5]