Mark schemes

Q1.

(a) D

1

(b) C

1

(c) sections **A**, **B** and **C**

1

(d) can be bent and shaped

1

good conductor of electricity

1

(e) evidence of the outer electron on the potassium atom moving to leave a potassium ion with no outer electrons

allow any combination of ×, •, ○, $e^{(-)}$ for electrons

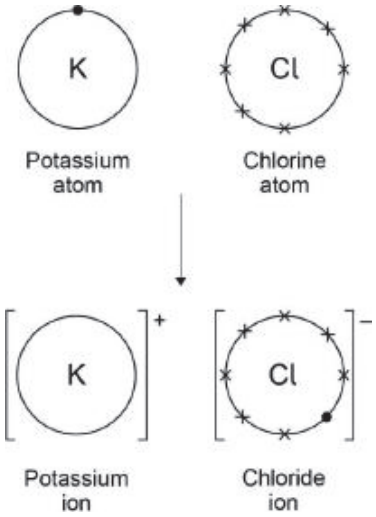
ignore any inner shells

allow potassium ion with eight outer electrons

1

chloride ion with eight outer electrons

an answer of



*scores **2** marks*

1

(f) B

1

(g) A

1

[9]

Q2.

(a) any **one** from:

- unreactive
  - *allow does not react with air / water / skin*
  - *allow does not tarnish*
- appearance
  - *allow aesthetic reasons*
- easily shaped
  - *allow malleable*
  - *allow easily moulded*
  - *ignore references to cost*
  - *ignore references to hardness / strength*
  - *ignore references to melting / boiling point*

1

(b) any **two** from:

- bubbles
- moves
- floats
- melts
  - *allow forms a ball*
- disappears
  - *allow catches fire*

2

(c) copper is harder

1

copper is less reactive

1

(d) **Level 2:** Some logically linked reasons are given. There may also be a simple judgement.

3-4

Level 1: Relevant points are made. They are not logically linked.

1-2

No relevant content

0

Indicative content

- copper is the better conductor
- so heats food more quickly

- copper has the higher density
- so the pan is heavier

- copper costs more per kilogram
- so the pan is more expensive to buy

- simple judgement

[9]

Q3.

(a) **D**

1

(b) **B**

1

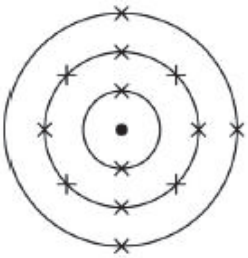
(c) any **two** from:
(Group 1 elements)
- have lower melting / boiling points
- have lower densities
- are less strong
- are softer

allow (Group 1 elements are) more malleable / ductile
allow (Group 1 elements) are not useful as catalysts
ignore transition elements form coloured compounds
ignore transition elements form ions with different charges
ignore references to chemical properties

2

allow converse statements for transition elements

(d)



allow any combination of x, •, o, $e^{(-)}$ for electrons

1

(e) delocalised electrons
allow free electrons

1

(the electrons) carry (electrical) charge
ignore current / electricity for charge

1

(the electrons move) through the metal / aluminium / structure
ignore throughout for through

1

(f) ionic

1

(g) magnesium (atom) loses electrons

1

oxygen (atom) gains electrons

1

two electrons (are transferred)

1

magnesium ions **and** oxide ions are formed

*allow Mg^{2+} (ions) **and** O^{2-} (ions) are formed*

allow magnesium forms positive ions and oxygen forms negative ions

allow (both) form a complete outer shell

1

[13]