M1.(a) (i) central block

1

(ii) conducts electricity

1

(b) any **two** from:

- visual pollution
- noise pollution
- dust pollution
- habitat destruction.

2

(c) (i) to concentrate the ore / copper carbonate

or

to remove / separate the rock

1

(ii) 12 (tonnes)

If answer is incorrect allow one mark for (127 + 132) − 247 or 259 - 247

2

(iii) any **one** from:

- so no reactant is wasted / left unreacted
- so they know how much product they will make
- need to record / compensate for the carbon dioxide produced

allow so they can work out their carbon footprint.

1

[8]

M2. (a) (i) **A**

1

(ii) **F**

1

(iii) **E**

1

(iv) **C**

1

(v) **A or B**

1

(b) (i) Rb K Na

allow rubidium, potassium, sodium

*do **not** accept RB or NA*

1

(ii) decrease

or

become lower / smaller / less

allow from 180° C to 27° C

1

(c) They are harder than Group 1 metals.

1

They have higher melting points than Group 1 metals.

1

They often form coloured compounds but Group 1 compounds are usually white.

1

[10]

M3. (a) (i) elements

1

(ii) atomic weight

1

(iii) atomic (proton) number

1

(b) (i) transition metals

1

(ii) has a higher melting point is harder

2

[6]

M4. (a) tungsten

1

has the high(est) melting point

accept that metals other than tungsten are likely to melt

1

(b) argon

1

is an unreactive gas

accept that gases other than argon are reactive

accept that argon is a noble gas or in Group 0

1

[4]

M5. (a) (good)conductor of electricity

conductor of electricity and heat (+/–) = 0

*accept can be drawn into wires **or** ductile*

ignore flexible

1

(b) strong

*accept tough **or** hard **or** high tensile strength*

1

(c) reference to <u>colour</u>

1

[3]

M6. conducts heat

list principle applies after 4 ticks

1

forms coloured compounds

1

high melting point

1

strong

1

[4]

M7. (i) zinc

accept Zn

1

iron only

accept Fe

1

copper

accept Cu

do not credit iron

1

(ii) iron

1

(iii) copper **or** iron or manganese

*accept Cu **or** Fe **or** Mn*

1

[5]