

M1.(a) any **one** from:

- there was a flame
 - energy was given out
 - a new substance was formed
 - the magnesium turned into a (white) powder
- answers must be from the figure*

1

(b) Magnesium oxide

1

(c) The reaction has a high activation energy

1

(d) 9

1

(e) They have a high surface area to volume ratio

1

(f) any **one** from:

- Better coverage
- More protection from the Sun's ultraviolet rays

1

(g) any **one** from:

- Potential cell damage to the body
- Harmful effects on the environment

1

- (h) indication of $\frac{1}{1.6} = 0.625$
and
use of indices $10^{-9} - 10^{-6} = 10^3$

Both steps must be seen to score first mark

1

$$0.625 \times 1000 = 625 \text{ (times bigger)}$$

1

[9]

M2.(a) B

1

(b) D

1

(c) E

1

(d) C

1

(e) 92.5×6 and
 7×7.5

1

$$\frac{607.5}{100}$$

1

6.075

1

6.08

1

allow 6.08 with no working shown for 4 marks

[8]

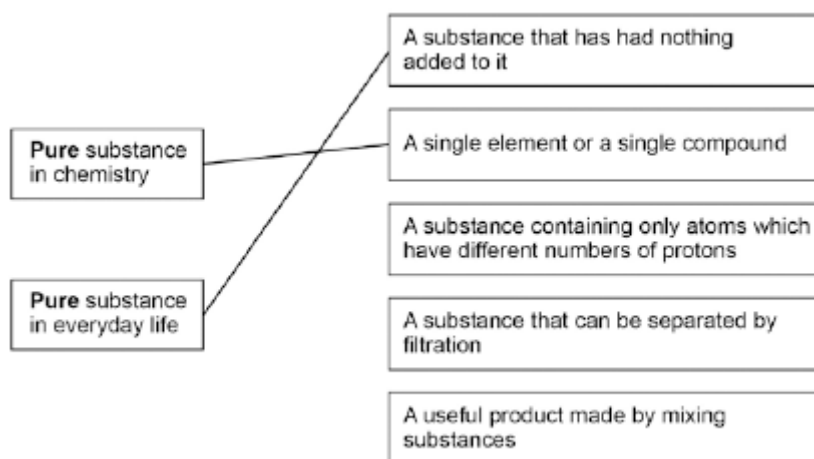
M3.(a) Air

2

Steel

1

(b)



Allow 1 mark for the correct meanings linked to context but incorrect way around

1

1

(c) Damp litmus paper turns white

1

(d) Iron(III)

1

[6]

M4.(a) 50

1

(b) 5%

1

(c) any **two** from:

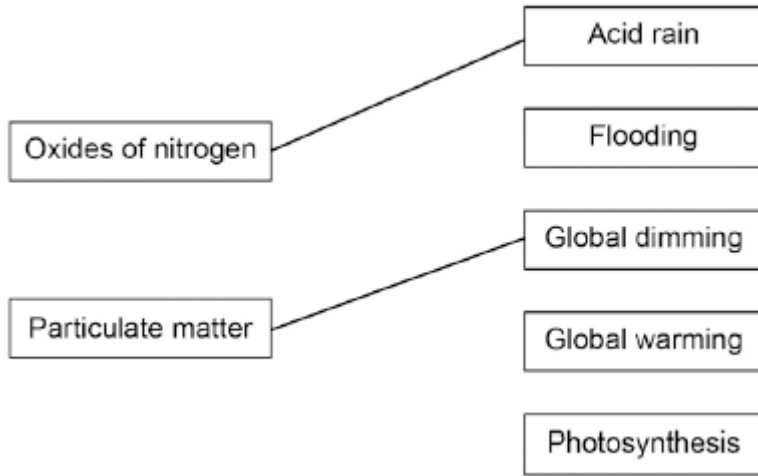
- cost (9 carat is cheaper)
- pure gold is soft
- **or**
24 carat gold is soft
- **or**
9 carat gold is harder
allow 9 carat gold is stronger
allow gold is an alloy in 9 carat gold
- can change the colour

2

[4]

M5.(a)	C_5H_{12}	1
(b)	Alkanes	1
(c)	(3) CO_2	1
	(4) H_2O	1
	<i>allow for 1 mark</i> $4 CO_2 + 3 H_2O$	
(d)	contains hydrogen and carbon	1
	(hydrogen and carbon) <u>only</u>	1
(e)	<i>(diesel)</i> produces more oxides of nitrogen <i>allow converse answers in terms of petrol</i>	1
	produces (more) particulate matter	1
	produces less carbon dioxide	1

(f)



2

[11]

M6.(a) 1

must be in this order

1

very small

accept negligible, 1 / 2000

allow zero

1

(b) The mass number

1

(c) C

1

(d) (i) 2

1

(ii) 3

1

(e) (i) 28

1

(ii) 42.9

accept ecf from (e)(i)

accept 42 - 43

1

(f) (i) 0.9

1

(ii) any **one** from:

- accurate
- sensitive
- rapid
- small sample.

1

[10]

M7.(a) (i) Neutron (top label) 1

Electron (bottom label) 1

(ii) 13 1

(iii) electrons 1

(b) (i) compound 1

hydrogen 1

bond 1

(ii) C_4H_{10} 1

[8]