



General Certificate of Secondary Education
2011

Science: Double Award (Modular)

Paper 2
Foundation Tier

[G8202]

FRIDAY 27 MAY, MORNING

MARK
SCHEME

- 1 (a)
- | | | |
|-------------------|---|--------------------------|
| saucepan | → | conductor of electricity |
| glass milk bottle | → | low density |
| polythene bag | → | conductor of heat |
| ceramic ovenware | → | transparent |
| copper wire | → | high melting point |

-----> = Alternative correct answer

4 correct [3] 2 or 3 correct [2] 1 correct [1] [3]

(b)

Substance	Element	Mixture	Compound
rust			✓
magnesium	✓[1]		
copper carbonate			✓[1]
sea water		✓[1]	
helium	✓[1]		

[4]

(c) (i) idea of particles [1] which move/diffuse [1] [2]

(ii) idea that salt particles have separated/broken down [1] and idea that they have moved between the water particles [1] [2]

(d) (i) any three of:
natural gas/LPG/petrol/diesel/paraffin/candle wax/peat/lignite/coal/
coke/oil or other correct (3 × [1]) [3]

(ii) carbon dioxide [1] water [1] [2]

(e)

Symbol	Number of protons	Number of neutrons	Number of electrons	Mass number	Electron arrangement
Na	11 [1]	12	11	23	2,8,1
Ca	20	20	20	40 [1]	2,8,8,2
Al	13	14 [1]	13	27	2,8,3 [1]

[4]

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- 2 (a) (i) C [1]
- (ii) D [1]
- (iii) A [1]
- (b) Any three of:
heat (the acid)/stir or shake/break up zinc/use more concentrated acid
accept add catalyst (copper sulphate)
(3 × [1]) [3]
- (c) (i) heat it **NOT** warm it **NOT** burn [1]
- (ii) use lime water [1] turns milky [1] [2]
NOT idea of extinguishing a lit taper
- (iii) lighter [1]
- (d) tests could be linked to:
conductor of heat
conductor of electricity
malleable
ductile
shiny
sonorous
effect on water
i.e. an acceptable test is one which can have a “result” with a metal
NOT sodium or potassium

Test	Result if metal	Result if non-metal
Acceptable test	Acceptable result	Acceptable result
2 × [1]	2 × [1]	2 × [1]
e.g. hit with hammer	ringing sound	no ringing sound

- [6]
- (e) (i) true [1]
- (ii) false [1]
- (iii) true [1]
- (iv) not possible to work out [1]

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- 3 (a) nitrogen → weather balloons
 sulphur → fire extinguishers
 carbon dioxide → food packaging
 ammonia → vulcanising rubber
 hydrogen → fertilisers
- 4 correct [3] 2 or 3 correct [2] 1 correct [1] [3]
- (b) (i) Any two of:
 colourless/odourless/low density/insoluble in water or other correct no marks relating to mp or bp
 (2 × [1]) [2]
- (ii) meteorological balloons/rocket engines/clean fuel or other correct, e.g. Haber Process or hydrogenation of fats [2]
- (iii) $\text{CuO} + \text{H}_2$ [1] → $\text{Cu} + \text{H}_2\text{O}$ [1] [2]
- (c) (i) sulphur dioxide [1]
- (ii) 3 [1]
- (iii) kills fish/corrodes or damages stonework or buildings (**NOT** erodes)/destroys or damages or kills vegetation/leaches nutrients from the soil or other correct, e.g. corrodes metal [1]
- (iv) idea of scrubbers/filters/use low sulphur fuels/desulphonation **NOT** use of alternative energy sources [1]
- (d) Advantages (allow up to four of):
 use of lignite as a fuel/providing jobs/cheap (fuel)/helping local economy/allow improved transport links/or other correct
 Disadvantages (allow up to four of):
 loss of habitat/eyesore/noise pollution/dust pollution/using up natural resource or other correct
 (max 6 × [1])
 QWC mark for clear articulation – **NOT** just list [1] [7]

AVAILABLE
MARKS

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