UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2009 question paper

for the guidance of teachers

5070 CHEMISTRY

5070/04 Paper 4 (Alternative to Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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1 **(a)** 0.36 g

(b) **(i)** to prevent product escaping [1]

(ii) to allow air (oxygen) to enter crucible [1]

(c) **(i)** shiny, silver or grey [1]

(ii) white/yellow/grey powder [1]

(d) to ensure that all Mg had reacted, etc. [1]

(e) **(i)** 0.6 g [1]

(ii) 0.24 g [1]

(f) 0.36/24 = 0.015 and 0.24/16 = 0.015 (1)
MgO (1) [answer only 1] [2]

[Total: 10]

2 **(a)** **A** – bromine (1), **B** – lead (1), **C** – oxygen (1), **D** – hydrogen (1)
(reversed electrodes in each cell; half marks) [4]

(b) **(i)** less bright [1]

(ii) less bright, eventually going out (1)
solid lead(II) bromide does not conduct,
or any correct appropriate explanation (1) [2]

[Total: 7]

3 (c) [1]

4 (b) [1]

5 (b) [1]

6 (a) [1]

7 (c) [1]

[Total: 5]

8 **(a)** 1.44 g

(b) **(i)** hydrogen [1]

(ii) pops in a flame [1]

(iii) $Fe + H_2SO_4 \text{ -------- } FeSO_4 + H_2$ [1]

(c) pink or purple (1)
small excess of manganate (VII) ions, etc (1) [2]

(d)

25.1	28.6	37.1	[Mark rows or columns to
0.0	4.2	12.5	the benefit of the candidate.
25.1	24.4	24.6	One mark for each correct row or column (3)]

mean value = 24.5 (1) cm^3 [4]

(e) 0.00049 [1]

(f) 0.00245 [1]

(g) 0.0245 [1]

(h) 1.37 g [1]

(i) 95.1 to 91.3% [1]

[Total: 15]

9 **(a)** **(i)** effervescence/fizzing/bubbles (1)

(ii) turns lime water milky (1) CO_2 (1)
(CO_2 does not score without test)

(b) blue/coloured solution (1)

(c) **(i)** blue ppt. (1)

(ii) insoluble in excess (1)

(d) **(i)** blue ppt. (1)

(ii) dissolves – DEEP (darker than **(i)**) blue solution (1)
$CuCO_3$ (1)

[Total: 9]

10 **(a)** 21, 35, 43, 48. all correct (2) [one error 1]

(b) all points plotted correctly (1) two smooth curves (1)
through zero (1) [3]

(c) 2 – last two readings are the same [1]

(d) 4.2 – 1.7 (1) = 2.5 (1) minutes [2]

(e) 1 – 21/2.5 (1) = 8.4: 2 – 40/2.5 (1) = 16
two correct results (1) [3]

(f) copper – reaction is faster or rate is greater [e.c.f on answers to **(e)**] [1]

(g) same – catalysts are unchanged in mass during a reaction
[because 'it is a catalyst' is not enough] [1]

(h) heat, more finely powdered catalyst,
or more concentrated H_2O_2 [1]

Please note: in **(d)** and **(e)** read candidate's graph to nearest half small square.

[Total: 14]