

**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

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- 1 (a) 0.36g [1]
- (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) 0.6g [1]
(ii) 0.24g [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]**

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- 8 (a) 1.44 g [1]
- (b) (i) hydrogen [1]
(ii) pops in a flame [1]
(iii) $\text{Fe} + \text{H}_2\text{SO}_4 \rightarrow \text{FeSO}_4 + \text{H}_2$ [1]
- (c) pink or purple (1)
small excess of manganate (VII) ions, etc (1) [2]
- (d)

25.1	28.6	37.1
0.0	4.2	12.5
25.1	24.4	24.6

[Mark rows or columns to the benefit of the candidate.
One mark for each correct row or column (3)]
mean value = 24.5 (1) cm³ [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) CO₂ (1)
(CO₂ 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)
CuCO₃ (1)

[Total: 9]

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