

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE O Level

MARK SCHEME for the November 2005 question paper

5070 CHEMISTRY

5070/04

Paper 4 maximum raw mark 60

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

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- 1 (a) 46 (1) cm³
- (b) less (1) rate decreases as reaction proceeds (1) or similar.
- (c) (i) 0.005 (1)
(ii) 100 (1)
(iii) 120 (1) cm³
- (d) (i) more powdered (1)
(ii) increase concentration (1) [8]
- 2 (a) (i) hydrogen (1)
(ii) pops in flame (1)
(iii) magnesium (1)
(iv) Ag/Pb (1) reference to Reactivity series (1)
- (b) (i) III/IV/V (1)
(ii) Zn (1), reason based on relative reactivities (1)
(iii) displacement or redox (1)
(iv) Produces zinc oxide and carbon dioxide (1)
 $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$ (1)
- (c) (i) carbon monoxide or dioxide(1)
(ii) burns with a blue flame or lime water turns milky (1)
(iii) $\text{Fe}_2\text{O}_3 + 3\text{C} \rightarrow 2\text{Fe} + 3\text{CO}$ (2) **or**
 $2\text{Fe}_2\text{O}_3 + 3\text{C} \rightarrow 4\text{Fe} + 3\text{CO}_2$ (2) [15]
- 3 to 6 (c), (b), (b), (c). [1 mark for each] [4]
- 7 (a) 2.05g (1)
- (b) yellow to orange, red or pink (1)
- (c)

25.8	47.0	32.3
0.0	21.8	6.9
25.8	25.2	25.4

[1 mark for each correct row or column] (3)
- Mean value 25.3 (1) cm³
- (d) 0.0024 (1)
- (e) 0.0012 (1)
- (f) 0.012 (1)
- (g) 170.8 (1)
- (h) (i) 137 (1),
(ii) Barium (1) [12]

Page 2	Mark Scheme	Syllabus	Paper
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- 8 1 coloured (1) solution, effervescence (1)
test: lime water, turns milky (1) carbon dioxide (1)
- 2 green precipitate (1) insoluble in excess (1)
- 3 green precipitate (1) insoluble in excess (1)
- FeCO₃ (1) **[9]**
- 9 (a) 27.8, 30.6, 33.3, 34.0 [all correct] (1)
Temp rises: 2.8, 5.6, 8.3, 9.0, 9.0 [all correct] (1)
- (b) points correctly plotted (1)
two straight lines intersecting correctly (2)
- (c) (i) 0.29 (1)g
(ii) 0.65 (1)g
(iii) reaction complete
or all copper(II) sulphate reacted (1)
- (d) zinc dissolves, reacts, disappears
solution becomes less blue to colourless,
copper, or red deposit or solid collects on floor of beaker; [any 2] (2)
- (e) 0.56 (1)g which is 0.01 moles or similar explanation based on (c)(ii) (1) **[12]**

[For answers (c)(i) and (ii) please read candidate's graph to nearest half square.]