

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

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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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)
 $ZnCO_3 \rightarrow ZnO + CO_2$ (1)
- (c) (i) carbon monoxide or dioxide(1)
(ii) burns with a blue flame or lime water turns milky (1)
(iii) $Fe_2O_3 + 3C \rightarrow 2Fe + 3CO$ (2) **or**
 $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ (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.]