UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

5070 CHEMISTRY

5070/42 Paper 4 (Alternative to Practical), maximum raw mark 60

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1 **(a)** 46 (1) cm^3 [1]

(b) less (1) rate reduces as reaction progresses (1)
or acid is less concentrated (1) **or** $CaCO_3$ used (1) [2]

(c) **(i)** 0.01 (1) moles

(ii) 100 (1)

(iii) 0.5 (1) g

(iv) 120 (1) cm^3 **or** 0.12 dm^3 (1) so long as units are stated. [4]

(d) **(i)** powdered (1) **or** decrease in particle size (1)

(ii) increase concentration (1) [2]

(e) heat (1) **or** use of a catalyst (1) [1]

[Total: 10]

2 **(a)** blue (1) [1]

(b) **(i)** **B** (1) (when cell **A** is chosen only a few of the following marks may be obtained as a consequence of the incorrect choice of cell)

(ii) Copper, pink, brown or orange deposit on **K** (1)
or **K** increases in size or mass (1)
electrode **J** reduced in size or mass (1)

(iii) Cu ion concentration remains the same in solution (1)
or Cu is removed from **J** at same rate as deposited on **K** (1) [4]

(c) **(i)** (blue) to colourless (1) **or** colour fades (1)

(ii) H (1)

(iii) oxygen (1) relights a glowing splint (1)

(iv) Copper, pink, brown, or orange deposit (1) **or** electrode gets thicker (1) [5]

[Total: 10]

3 **(a)** (1) [1]

4 **(c)** (1) [1]

5 **(c)** (1) [1]

6 **(d)** (1) [1]

7 **(b)** (1) [1]

[Total: 5]

8 **(a)** iron(III) cannot be oxidised (1) **or** is an oxidising agent (1) **or** is not a reducing agent (1). [1]

(b) 5.08 (1) g [1]

(c) pipette (1) [1]

(d) colourless, green or yellow to pink or purple (1) [1]

(e)

26.3	29.4	47.2
0.0	3.6	21.6
26.3	25.8	25.6

1 mark for each correct row **or** column, total (3)
Mean value 25.7 (1) cm^3 [4]

(f) 0.00046(3) (1) moles [1]

(g) 0.0023 (1) moles [1]

(h) **(i)** 0.023 (1) moles

(ii) 3.50/3.52 (1) g [2]

(i) 688/693 (1) g / 1000 g [1]

[Total: 13]

9 **(a)** Transition metal not present (1) [1]

(b) **(i)** aq. NaOH (dilute or solution) (1) white ppt. (1)
(NaOH must be described as aqueous, dilute or in solution).

(ii) excess aq. NaOH (1) ppt. insoluble (1) [4]

(c) no ppt. (1) **or** slight white ppt. (1) [1]

(d) NaOH (1) A*l* (1) warm (1)
NH_3 (1) **or** gas turns litmus blue (1)
(Omission of NaOH **or** A*l* in test (0) but NH_3 or gas turns litmus blue (1).) [4]
(Use of nitric acid, any nitrate or ammonium salt in test (0) even if conclusion is correct.)

[Total: 10]

10 **(a)** white (ppt) (1) [1]

(b) 0.58, 1.05, 1.75, 2.33, 2.33, 2.33 (2) (one error 1, > 1 error 0) [2]

(c) all points plotted correctly (1)
Two straight lines (2) (joined by a curve (1) only) [3]

(d) correct point ringed: 1.15 g /4.65 g (1) **or** 3.6 cm^3 of **K** (1) [1]

(e) **(i)** 5.2 (1) cm^3

(ii) 2.33 (1) g

(iii) 8.0 (1) cm^3
(marks awarded based on reading of the candidate's graph.) [3]

(f) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2HCl$ (1) [1]

(g) 1.25 (1) mol/dm^3 [1]

[Total: 12]