UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2008 question paper

5070 CHEMISTRY

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

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1 Volume mark on lower end (or wrong end) of pipette (1)
(or any reasonable answer) [1]

2 **(a)** 4.04 (1) g

(b) white (1) powder (1)

(c) **(i)** 1.52 (1) g

(ii) 2.52 (1) g

(d) **(i)** 106

(ii) 18 (1) both

(e) **(i)** 0.0143 (1) moles (0.014 loses mark)

(ii) 0.140 (1) moles

(f) 0.140 / 0.0143 = 9.80 (1) x = 10 (1)
(use of 0.014 from **(e)(i)** can gain both marks so long as working is shown for answer of 10) [10]

3 **(a)** **(i)** chlorine (1)

(ii) decolourises, colour fades, disappears, bleaches (1)

(iii) chlorine decolourises, bleaches etc. litmus (1)

(b) **(i)** hydrogen (1)

(ii) pops in a flame (1) no glowing splints or burning of hydrogen to get a 'pop'.

(iii) turns blue (1)

(iv) excess of hydroxide ions or wtte. (1)
(a)(i) and **(b)(i)** reversed may still get remaining appropriate marks in each section.
Oxygen stated in either **(a)(i)** or **(b)(i)** is incorrect but may get an ecf on correct test only.

(c) hydrochloric acid or HC*l* (1)

(d) molten or fused (1) [9]

4 to **8** **(d)**, **(c)**, **(d)**, **(d)**, **(b)** 1 mark each. [5]

9 **(a)** pipette (1)

(b) appropriate test e.g. white fumes with conc. HC*l*. (1), or litmus turns blue.

(c) **(i)** yellow

(ii) orange, pink, or red (1) (both)

(d)

27.2	47.8	30.2	(1 mark for each correct
0.0	21.4	3.6	row **OR** column (3))
27.2	26.4	26.6	

Mean value 26.5 (1) cm^3

(e) 0.00212 (1)

(f) 0.00212 (1)

(g) 0.0212 (1)

(h) 0.05 (1)

(i) 0.0288 (1)

(j) **(i)** 0.0288 (1)

(ii) 0.0288 x 40 = 1.152 mol/dm^3 [14]

10 **(a)** colourless (solution) (1)

(b) Al^{3+} and Zn^{2+} and Pb^{2+} or names of ions (any 2) (2)
(ignore charges)
Incorrect elements +1/–1

(c) Al^{3+} or Pb^{2+} (1) (no e.c.f. on Ca)

(d) NaOH (1) *Al* (1) warm (1) ammonia produced or gas turns red litmus blue (1)
(must show presence of both *Al* and NaOH to get observation mark).
(*Al* and NaOH may score on own, not heat)
$Al(NO_3)_3$ or $Pb(NO_3)_2$ or e.c.f. for $Zn(NO_3)_2$ (1)
Formula must be correct. [9]

11 (a) $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$
correct formulae (1) balanced (1)

(b) 8.0(+/– 0.5), 16.0, 24.0, 28.0, 28.0
all correct (2), one error (1), more than 1 error, 0 marks.

(c) All (candidate's) points correctly plotted (1)
two intersecting lines (2)
(Points joined by a curve, 1 mark, points joined by a series of st. lines 0 marks)

(d) (i) 7.0 cm^3 (1)

(ii) moles $Pb(NO_3)$: moles KI = 1:2
concentration of KI = 3.5 mol/dm^3
Correct answer with working (2)
(evidence of some correct working (1))
Mole ratio of 1:1 gives 1.75 mol/dm^3

(e) (i) 3.5 (1) cm^3 (half of answer **(d)(i)**)

(ii) 28 mm (1) [12]

[Total: 60]