UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

MARK SCHEME for the May/June 2011 question paper for the guidance of teachers

5070 CHEMISTRY

5070/41

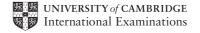
Paper 4 (Alternative to Practical), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	GCE O LEVEL – May/June 2011	5070	41

1 (a) measuring cylinder (1) [1]

(b) 24 (1) cm³ [1]

(c) (i) (litmus) turns red (1) [1]

(ii) effervescence/gas evolved/solid dissolves **or** disappears (1) [1]

(d) C_2H_5OH or C_2H_6O /ethanol (1) (both for 1 mark) [1]

[Total: 5]

2 (a) 5.40 (1) g [1]

(b) (i) 4.27 (1) g

(ii) 1.13 (1) g [2]

(c) 136/18 (1) [1]

(d) x = 2 (1) (not 1.99)

(e) anhydrous/dehydrated/efflorescent (1) [1]

[Total: 6]

3 (a) improve conductivity or wtte (1) [1]

(b) (i) oxygen (1)

(ii) relights a glowing splint (1)

(iii) $4OH^- \rightarrow 2H_2O + O_2 + 4e^-(2)$ electrons not included **or** unbalanced (1) [4]

(c) (i) hydrogen (1)

(ii) pops in a flame (1)

(iii) $2H^{+} + 2e^{-} \rightarrow H_{2}(1)$ [3]

(d) $40 (1) \text{ cm}^3$ [1]

[Total: 9]

	Pa	ge 3				ers' version	Syllabus 5070	Paper 41
4	(d)	(1)		GCE O LI	EVEL – May	/June 2011	5070	[1]
7	(u)	(1)						ניו
5	(c)	(1)						[1]
6	(b)	(1)						[1]
7	(b)	(1)						[1]
8	(a)	(1)						[1]
								[Total: 5]
9	(a)	1.76 (1)	g					[1]
	(b)	pink to c	olourloss	(1)				[1]
	(D)	pilik to c	olouness	(1)				[1]
	(c)		7.6 0.0	40.7 13.6	47.2 19.9			
		1 mark fo	7.6 or each c	27.1 orrect line <u>c</u>	27.3 or column (3)		
		Mean va	lue 27.2	(1) cm ³				[4]
	(d)	0.00272	(1)					[1]
	(e)	0.00272	(1)					[1]
	(£)	0.0070./	4)					[4]
	(f)	0.0272 (1)					[1]
	(g)	0.05 (1)						[1]
	(h)	0.0228 (1)					[1]
	(i)	(i) 0.38	88 (1)					
		(ii) 220	(.22) (1) ຢູ)				[2]
	(j)	ammoniı	um hvdro	xide (or aɑ.	Ammonia) -	+ nitric acid (1)		[1]
	u,		,	(/	(•)		r.1
	(k)	NH ₄ NO ₃ 350 g (1)		× 100 = 35%	%			[1]

[Total: 15]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
	GCE O LEVEL – May/June 2011	5070	41

10 (a) coloured solution (1)

[1]

(b)(i), (b)(ii), (c)(ii), (c)(ii) Fe³⁺ ions present at least once in each of tests (b) and (c) (1) [1]

(b)(ii) and (c)(ii) ppt insoluble (1) total

[1]

(d) aq. NaOH (1), Al foil (1), warm (1) ammonia or gas turns litmus blue (1)

IF Al or NaOH missing max 1 for result of test on gas

IF heat missing remaining 3 marks are available

IF Nitric acid or any nitrate is added (0)

OR

Brown ring test

Conc (1) Sulfuric acid (1) Iron(II) Sulfate (1) Brown ring (1) IF Iron(II) Sulfate missing or Nitric acid or any nitrate added (0)

[4]

 $Fe(NO_3)_3$ (1)

[Total: 8]

[1]

(b) All points plotted correctly (1)

Two smooth curves through points (1)

Passing through zero (1)

[3]

(c) (i) $32 (1) \text{ cm}^3$

(ii)
$$58 - 48 (1) = 10 (1) \text{ cm}^3$$

[3]

(d) as a catalyst or to speed up the reaction (1)

[1]

(e) reaction complete (1)

[1]

(f) $M_r KC lO_3 = 122.5 (1)$

using equation 2 moles KC_1O_3 gives 3 moles of O_2 or 2 moles KC_1O_3 gives 3 × 24000 cm³ O_2 (1)

0.245 g KC*l*O₃ (1)

[A correct answer gets all 3 marks]

235 (g) scores (2)

[3]

[Total: 12]

^{*} In all appropriate cases please read the candidate's graph to the nearest half small square.