UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education O Level

MARK SCHEME for the November 2004 question paper

5070 CHEMISTRY

5070/04

Paper 4 (Alternative to Practical), maximum mark 60

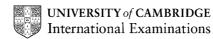
This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking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

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.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

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NOVEMBER 2004

GCE O Level

MARK SCHEME

MAXIMUM MARK: 60

SYLLABUS/COMPONENT: 5070/04

CHEMISTRY Paper 4 (Alternative to Practical)



	Page 1	Mark Scheme O LEVEL – NOVEMBER 2004	Syllabus 5070	Paper 4						
1	24(1) cm ²	3		[1]						
2	 (a) (i) ethanol (1), C₂H₅OH (1) (e.c.f. allowed or mark separately for ethanol or correct formula) 									
	(b) yeast (1)									
	(c) when the thermometer showed an increase, or temperature rises above the boiling point of ethanol (1)									
	 <u>not</u> no more distillate produced. (d) (i) orange (1) to green (1) (mark separately within reason) (ii) ethanoic acid (1) 									
(e) (i) ethyl ethanoate (1), $CH_3COOC_2H_5$ (1) no e.c.f except for an es $C_4H_8O_2$										
	(ii) es	sters (1) e.c.f allowed here from (e) (i)								
	(c	arboxylic acids not organic acids if appropriate e.c	e.f.)	[10]						
3	(a) chron	natography (1)								
(b) line drawn below base line (1) (must be straight, using a ruler, and with the base line)										
	 (c) ink consists of different colours, dyes, components (1) which would b separated (1) (d) X contains S and U. (1) 									
Y contains R, S, and T. (1) (all in each case for 1 mark)										
	(e) distar									
	distar	nce travelled by solvent front = 5.5 cm (both 1)								
	(No o 5.5 cr	ther values are acceptable as they are drawn exac n.)	ctly at 4.0 ar	nd						
	R _f = 4	/5.5 = 0.72 or 0.73 (1) (to two d.p.) (not 0.7)								
	Accep	ot any e.c.f. for R _f even if >1		[8]						
Qı	uestion 4 t	o 7 (a), (b), (c). 1 mark each		[4]						
8	3 (a) 1.55 g (1)									
	(b) to allo	w gas to escape (1) or to prevent pressure build נ	ıp.							
	(c) red o	r pink or orange to yellow (1)								

	Page 2		Mark Scheme						Syllabus	Paper	
								EL – NOVEMBER 2004	5070	4	
	(d)	24.1 0.0 24.1				28.5 4.8 23.7	co co	mark for prrect row or plumn (3)			
		mean value = 23.6 (1) cm^3									
	(e)) 0.00236 (1)				(i)	0.0264 (1)				
	(f)	0.00236 (1)					(j)	0.0132 (1)			
	(g)) 0.0236 (1)					(k)) (i) 100 g (1)			
	(h)	0.05 (1)					(ii) 1.32 g (1)				
								(iii) 85.2% (1)		[16]	
9	1	colourless solution (1) (no substances or solids.)									
	2	(a) white ppt. (1)									
		(b) soluble in excess (1)									
	3	(a) white ppt. (1)									
		(b) insoluble in excess (1)									
	4	A <i>l</i> foil (1), aq NaOH <u>and</u> heat (1), NH ₃ <u>or</u>									

gas evolved (1), test for NH_3 (1).

Al foil (1) followed by incorrect chemistry loses the second mark <u>and</u> the ammonia or gas evolved mark. The test for ammonia may be scored if correct.

or 'Brown Ring' test:

aq. $FeSO_4$ (1), conc. H_2SO_4 (1), aq. and conc. (1)

brown ring (1)

Formula $Al(NO_3)_3(1)$

- **10 (a)** hydrogen (1)
 - (b) 18, 40, 54, 60 (2) all correct (one error 1 mark)
 - (c) all points, recorded in the table, plotted correctly (1) two smooth curves (1), any attempt to draw reasonable curves (no straight lines between points) both passing through zero (1)

[10]

Page 3	Mark Scheme	Syllabus	Paper
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- **(d) (i)** 48 (1) cm³
 - (ii) 2.6 (1) minutes (in both cases read candidates graph and insist **to** half a small square)
- (e) (i) powdered (1)

25 cm³ of 0.200 mol/dm³ or equivalent (2 or 0)

or double the concentration and halve the volume (2)

or increase the concentration and reduce the volume to give the same number of moles (2)

(increase concentration and reduce volume worth 1) [11]