UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

MARK SCHEME for the October/November 2009 question paper for the guidance of teachers

5070 CHEMISTRY

5070/04

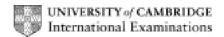
Paper 4 (Alternative to Practical), maximum raw mark 60

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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	Pa	ge 2	Mark Scheme: Teachers' version	Syllabus	Paper
			GCE O LEVEL – October/November 2009	5070	04
1	(a)	•	hydrate/absorb water to mention ammonia or product		[1]
	(b)	X sugges	s dense or lighter than air (1), soluble in water (1) sted but property(ies) is/are correct (1) or (2) on X and appropriate properties. Z scores 0.		[3]
	(c)	(i) phos	sphorus or P (1) (not phosphate)		[1]
		amn	m (1) aq. NaOH (1) ammonia or gas + test (1) nonia + test on its own 0 marks of HC <i>l</i> + warm + NH₃/test only scores NH₃ mark		[3]
		(iii) r.m.ı 1kg	m. of $(NH_4)_3PO_4 = 149 (1)$ contains 281.9 (282)g N. (1) (not 280 or 281)		[-]
			for 149 somewhere in working ect answer gets 2 (e.c.f from wrong M_r)		[2]
					[Total: 10]
					-
2	(a)	1.89g (1	.90 penalised only if used in (d))		[1]
	(b)		yellow solid or powder (both colour and solid)		[4]
		(not ppt)			[1]
	(c)	toxic (or	any word meaning toxic) gas/NO ₂ evolved		[1]
	(d)	0.01 mol	es (1) incorrect answer to (d) may be used e.c.f in (e)		[1]
	(e)	e.c.f exa			
			ver in dm ³ but shown as cm ³ . incorrect but 60 based on 1 st volume.		
			any other first reasonable incorrect volume. a all cases		[2]
	(f)	nitric acid	d		[1]
					[Total: 7]
3	(d)				[Total: 1]
4	(c)				[Total: 1]
5	(d)				[Total: 1]

	Pa	ge ა	I)	wark Schem	ie: reache	rs' version	Sylia	abus	Paper
			GCE	O LEVEL -	October/N	lovember 2009	50	70	04
6	(c)								[Total: 1]
7	(b)								[Total: 1]
8	(a)	1.7(0)g							[1]
	(b)			lime water to) no other ga		cloudy/white ppt. counts	(1)		[2]
	(c)	orange, ı	red, pink to	yellow (1) a	any combin	ation of dark to li	ght.		[1]
	(d)		48.6 23.3 25.3 lue = 25.4 or each rov		(3) (mark r	ows <u>or</u> columns)			[4]
	(e)	0.00254							[1]
	(f)	0.00254							[1]
	(g)	0.0254							[1]
	(h)	0.05							[1]
	(i)	0.0246							[1]
	(j)	0.0123*							[1]
	(k)	any valu	` , `		` '	e for potassium	as answer to	o (I).	[2]
	(I)	potassiu	m (1) reas	on based or	ion charge	e/position in Grou	p 1 in Perio	dic Table (1). [2]
		1 st mark if answe acceptab alternativ	in (k) scor er to (j) is ble answer ve reasons	es but no ful the same	rther mark i as (i), (k)	becomes 70 a		ecomes 5.	Lithium is
		A_r isIt is		netal or in Gı	roup 1 in the	e Periodic Table			[Total: 18]

Mark Scheme: Teachers' version

Syllabus

Paper

[Total: 18]

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Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
-	GCE O LEVEL – October/November 2009	5070	04

9 (a) C contains a transition metal ion/transition metal/d-block metal (1) not it is a transition metal.

(b) and (c) (red brown precipitate) insoluble in excess (both) (1) [1]

(b) and **(c) C** contains Fe³⁺ ions (both) (1) [1]

(d) aq. NaOH (1) aluminium foil (1) and heat (1) (brown ring test) if either NaOH or Al not mentioned only heat scores if neither NaOH nor Al mentioned heat does not score gas evolved or ammonia + test (1) Fe(NO₃)₃ (1) e.c.f for Fe²⁺ concluded in (b) and (c)

[Total: 8]

[5]

[1]

10 (a) (i) 0.25 g (1)

(ii) 35.2, 26.3. (1) 8.9 °C (1) [3]

(b) (i) 60 [1]

(ii) 0.0042 (1) allow 0.00416, 0.00417 but <u>not</u> 0.0041 [1]

* (iii) -1780 (1) kJ/mol answer must include -ve sign. [1]

(c) exothermic [1]

(d) heat loss/no insulation/incomplete combustion of the alcohol/evaporation of alcohol any 2 [2]

(e) all points plotted correctly (1) points connected by a smooth curve (1) [2]

(f) 0.59 g (1) (read candidates curve) to +/- half small square but accept 0.585 etc [1]

[Total: 12]