## MARK SCHEME for the October/November 2014 series

## **0654 CO-ORDINATED SCIENCES**

0654/51

Paper 5 (Practical), maximum raw mark 45

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Pa	age 2	2	Mark Scheme	Syllabus	Paper	
			Cambridge IGCSE – October/November 2014	0654	51	
1	(a)	) both temperatures recorded to nearest °C and within range for each water-bath ;				
	(b)	all	east 4 pairs of results recorded ; (do not allow <i>h</i> = 0) pairs of results recorded in mm and not greater than 200 ; ght generally higher in <b>B</b> than <b>A</b> ;		[3]	
	(c)	at l poi	ear vertical axis labelled with height and units ; east 5 correct plots to ± ½ small square for <b>B</b> (for <b>A</b> if <b>B</b> not plotted) nts plotted for <b>A</b> and <b>B</b> and both labelled ; at fit curve or straight lines for <b>A</b> <u>and</u> <b>B</b> ;	•	[4]	
	(d)	car	bon dioxide ;		[1]	
	(e)		int bubbles in water/measure volume of gas produced/use gas syri er and narrower tube/use set square for top of bubbles ;	nge/uses	[1]	
	(f)	(i)	higher yeast activity with higher temperature/it increases with temp it is faster at higher temperature ; (mark may only be awarded if there are results in the table)	oerature/	[1]	
		(ii)	range of different temperature water baths ; named condition constant/all other conditions constant ; record minimum temperature (above 40 °C) that gives no foam ; investigate intermediate values/tubes differ by 1 °C ;		[4]	
			(one tube method allow: one tube gradually heated ; until no bubbles produced ; 2 marks m	ax)		
					[Total: 15]	
2	(a)		ate: colourless ; idue: brown/black/grey ; colours reversed 1 mark max)		[2]	
	(b)	(i)	white ppt. ; ppt. disappears to form colourless solution/ppt. soluble in excess (	NaOH) ;	[2]	
		(ii)	white ppt. ; ppt. disappears to form colourless solution/ppt. soluble in excess ( solution) ;	ammonia	[2]	
		(iii)	Zn <sup>2+</sup> /zinc ; ( <b>not</b> Zn) (mark is linked to a correct observation in <b>(b)(i)</b> or <b>(b)(ii)</b> )		[1]	

Pag	e 3	Mark Scheme	Syllabus	Paper
		Cambridge IGCSE – October/November 2014	0654	51
(	c) (i)	bubbles/effervescence ; (ignore colours)		[1]
	(ii)	filtrate: green/turquoise/blue; residue: brown/black/grey; (if colours reversed 1 mark max)		[2]
(•	d) (i)	(pale) blue ppt. ;		[1]
	(ii)	(pale) blue ppt. ; dark(er) blue solution/deep blue solution/purple solution ;		[2]
	(iii)	Cu <sup>2+</sup> /copper ; <i>(independent mark)</i> ( <b>not</b> Cu)		[1]
(•	e) ad	d dilute sodium hydroxide/ammonia solution <b>AND</b> brown/orange pp	t;	[1]
				[Total: 15]
3 (a	a) (i)	all three values present with $l = 10 \text{ cm}$ and $I$ less than 1;		[1]
	(ii)	R value correct for $l = 10  cm$ and minimum of two significant figures	s;	[1]
	(iii)	all units present and correct (A, V, $\Omega$ OR amps, volts, ohms) ;		[1]
	(iv)	all <i>I</i> approximately the same ; all <i>V</i> to at least one decimal place ; <i>V</i> values increasing (for increasing length); <i>R</i> values correct for <i>l</i> = 25 cm onwards ;		
		consistent use of either two or three significant figures for <i>R</i> ;		[5]
	(v)	so that the wire does not become hot/because resistance of wire n increase/as battery or cell may run down ;	nay	[1]
(1	sui (no at l	es labelled with units (allow ecf from <b>(a)(iii)</b> ); table choice of linear scales and use of at least 50% of each axis; o marks may be awarded beyond this point in <b>(b)</b> for a non-linear scale east four plots correct to $\pm \frac{1}{2}$ small square; od best fit straight line judgement;	le)	[4]
(4	-	ationship: proportional ; tification: straight line ;		[2]
				[Total: 15]