## **CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education** 

## MARK SCHEME for the October/November 2015 series

## 0654 CO-ORDINATED SCIENCES

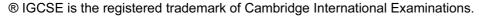
**0654/53** Paper 5 (Practical), maximum raw mark 45

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2015 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.





		Cambridge IGCSE – October/November 2015	0654	53
1	(a)	(first column heading is) time (in) minutes ; (subsequent column headings are) beaker <b>A</b> temperature °C <b>and</b> be temperature °C, can be in any order ;	beaker <b>B</b>	[2]
	(b)	two temperature recorded for time = 0 to 0.5 °C; time = 0 readings within 5 °C of each other; full set of results for beaker <b>A and</b> beaker <b>B</b> ; both sets decrease in temperature; temperature at time = 10 is lower in beaker <b>B</b> ;		[5]
	(c)	inear scale for temperature axis such that plotting uses half of grid; at least 5 points plotted correctly for either <b>A</b> or <b>B</b> ; two smooth best-fit curves;		[3]
	(d)	test-tubes <b>A</b> cooled more slowly/retained heat/ORA; prevents penguins getting too cold/helps body temperature to be maintaities heat loss/less surface area exposed/ORA;	ined/	[2]
	(e)	(i) different start temperatures/can't read both thermometers at the sam time/stirring water to ensure same temperature throughout/different thickness of test-tube/temperature recorded from only one of three in (any reasonable inaccuracy)		[max 1]
		ii) do each set separately/record temperature of all three test-tubes in A	<b>A</b> ;	[1]
	(f)	repeat the experiment <b>AND</b> some explanation ;		[1] [Total: 15]
2	(a)	T <sub>1</sub> recorded in correct box for experiment <b>1</b> ; T <sub>2</sub> recorded in correct box for experiment <b>1</b> ; solution less blue/grey/colourless; solid brown/darker grey/black;		[4]
	(b)	(i) blue ppt.;		[1]
		ii) $T_1$ and $T_2$ recorded in correct boxes for experiment <b>2 AND</b> $T_2$ lower the value in experiment <b>1</b> ;	nan	[1]
	(c)	$T_1$ and $T_2$ recorded in correct box for experiment <b>3 AND</b> $T_2$ lower than experiment <b>2</b> ;	value in	
		all temperatures in table recorded to same accuracy;		[2]

**Mark Scheme** 

Syllabus

Paper

Page 2

Pá	age 3	3	Mark Scheme	Syllabus	Paper
			Cambridge IGCSE – October/November 2015	0654	53
	(d)	(i)	$\Delta T$ values correct; $\Delta T$ values decrease down the table; (second mark may be awarded if $\Delta T$ values have <b>not</b> been entered Table 2.1)	in	[2]
		(ii)	$\Delta T$ decreases with increasing volume of solution <b>X</b> ;		[1]
	(	(iii)	sodium hydroxide/NaOH/other reasonable hydroxide; (not ammonia solution)		[1]
	(	(iv)	<b>X</b> reacts with copper sulfate solution; less copper sulfate to react with zinc and produce heat;		[2]
	(e)		teep the volume of liquid constant/for fair comparison of $\Delta T/{ m because}$ ume would reduce the temperature ;	se a larger	[1]
					[Total: 15]
3	(a)	(i)	H recorded to nearest 0.1 cm; $H = 1.5 \pm 0.1$ cm;		[2]
		(ii)	for $d = 55 \mathrm{cm}$ , value of $h$ recorded;		[1]
	(	(iii)	all values of <i>h</i> recorded; values of <i>h</i> increasing; when <i>d</i> = 35 cm, <i>h</i> between 2.1 cm and 3.1 cm;		[3]
	(	(iv)			[1]
(h)		ave	es labelled with units ;		
	(2)	at l	east four plots correct to half a small square ; od best-fit curve judgement ;		[3]
	(c)	(i)	value correctly read from candidate's graph to half a small square;		[1]
		(ii)	H calculation correct; (ecf from (c)(i)) $H = 1.5 \pm 0.2 \text{cm}$ ; (accuracy mark so corrected as necessary)		[2]
	(	(iii)	correct value from sensible extrapolation to half a small square;		[1]
	,	()	The state of the s		1.1
	(d)		dow would become too big to fit on the screen/shadow becomes morred/hard to see shadow;	ore	[max 1]
					[Total: 15]