CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0654 CO-ORDINATED SCIENCES

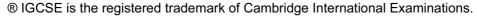
0654/63 Paper 6 (Alternative to Practical), maximum raw mark 60

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.

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[®], Cambridge International A and AS Level components and some Cambridge O Level components.





Pa	age 2	2	Mark Scheme	Syllabus	Paper	
			Cambridge IGCSE – October/November 2015	0654	63	
1	(a)	min	<u>minutes</u> ;			
	(b)	cor	axes labelled with units; temperature/°C and time/mins; correct plots for set $\mathbf{A} \pm \text{half}$ square; correct plots for set $\mathbf{B} \pm \text{half}$ square (allow 1 incorrect per set); two best-fit curves;			
	(c)	_	large test-tubes cooled more slowly/retained heat; prevents penguins getting too cold/helps body temperature to be maintained;		[2]	
	(d)	(i)	water cooler at start in last tube poured/can't read both thermomets same time/only measures temperature in one tube in A ;	ters at the	[max 1]	
		(ii)	do each set separately/have two people reading the thermometers three tubes and average;	s/read all	[max 1]	
	(e)	rep	eat the experiment ;		[1]	
				[Total 10]	
2	(a)	(i)	43; 32.5; 29.5;		[3]	
		(ii)	23, 12.5, 8. <u>0</u> (all required for mark);		[1]	
	(b)	(i)	the temperature changes get less as volume of X increases ;		[1]	
		(ii)	X reacts with copper sulfate/some copper sulfate is removed from less copper sulfate to <u>react</u> with zinc/less heat produced;	the solution ;	[2]	
	(c)	sod	lium hydroxide/potassium hydroxide/sodium carbonate/potassium	carbonate ;	[1]	
	(d)		stic absorbs less heat (than glass)/more accurate temperature char at losses/better insulation ;	nge/reduces	[max 1]	
	(e)	to keep the volume constant for a fair comparison of the temperature rise/owtte; solution X is the only variable; fair test;		se/owtte;	[max 1]	
					Γotal: 10]	
				ין	Julian. 10]	

Pag	ge .	3	Mark Scheme	Syllabus	Paper
			Cambridge IGCSE – October/November 2015	0654	63
3	(a)	(i)	1.5 cm (± 0.1 cm);		[1]
	(-,				
		(ii)	light rays cannot bend (so part of the screen is not lit)/the object bl	ocks the lig	ht ; [1]
	/h\	(d -	- 15 cm): 6.1 ± 0.1 : (must have 1dn)		
	(D)	-	= 15 cm): 6.1 ± 0.1 ; (must have 1dp) = 25 cm): 3.8 ± 0.1 ; (must have 1dp)		[2]
		•			
	(c)	(i)	points correctly plotted ± ½ small square (allow 1 error) (ecf);		
			smooth curve drawn ;		[2]
		(ii)	H ₃₀ or suitable line marked on the graph ;		
			equation used correctly;		[2]
	(d)	(i)	<i>h</i> correctly read from candidate's extrapolation at $d = 10 \text{cm}$;		[1]
,	(ω,				
		(ii)	shadow will not fit on screen/will become blurred;		[1]
					[Total: 10]
4	(a)	cor	ntrol;		[1]
,	(h)	/i\ <i>&</i>	4(ii) 4.3 (cm) for A ;		
,	(0)	(1)0	2.9 (cm) for B ;		
			0.1 (cm) for A and 3.1 (cm) for B ;		[3]
	(a)	(i)	may have cooled/warmed slightly ;		[4]
,	(0)	(1)			[1]
		(ii)	(use a) water-bath ;		[1]
	(4)	ora	anisms use up oxygen (in flask) ;		
	(u)	in r	espiration;		
		car	bon dioxide produced absorbed (by soda lime);		[3]
	(e)	oil ،	drop travels further (to left)/faster/AW ;		[1]
,	(~)	On V	are action (to long) lactor, (iv)		
					[Total 10]

Mark Scheme

Syllabus

Paper

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P	age 4	1	Mark Scheme	Syllabus	Paper
			Cambridge IGCSE – October/November 2015	0654	63
5	(a)	(i)	80 (cm ³); 125 (cm ³);		[2]
		(ii)	both points plotted correctly $\pm \frac{1}{2}$ square ; smooth curve drawn ; beginning at the origin $\pm \frac{1}{2}$ or 1 square ;		[3]
	(b)	hyd	Irogen does not dissolve in water/does not react with water;		[1]
	(c)	as les	reaction slows; reactant used up/gets less concentrated; s (frequent) collisions; d stops (when level)/no more H₂ produced;		[max 3]
	(d)		c is less reactive/zinc pieces have lower surface area/pieces of zind ger/ORA ;		[max 1]
					[TOtal. TU]
6	(a)	36,	78 (cm³) 54 (°C) ;; 4 correct 2 marks, 3 or 2 correct 1 mark		[max 2]
	(b)	(i)	so that the syringe/gas are at the same temperature as the water/	owtte ;	[1]
	(-)	(ii)	add ice to water/put in freezer;	·	[1]
	(c)	mo	lecules move faster/have more energy/gas has more (kinetic) energlecules get further apart; lecules hit syringe with more force/harder;	ЭУ ;	[max 2]
	(d)	gas	s G turns to a liquid/condenses ;		[1]
	(e)	ten ver no	ter level too low/all of gas not in water; apperature of water not gas; tical syringe gravity acting on barrel compresses gas; stirring/thermometer too high; b between seal and syringe;		[max 2]
	(f)	C r	narked on barrel – above the level of the beaker ;		[1] [Total: 10]
					•

Mark Scheme

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Syllabus

Paper