## **CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Advanced Subsidiary Level** 

## MARK SCHEME for the May/June 2014 series

## 9700 BIOLOGY

9700/34 Paper 34 (Advanced Practical Skills 2), maximum raw mark 40

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 May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.



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## Mark scheme abbreviations:

separates marking points

alternative answers for the same point

R reject

A accept (for answers correctly cued by the question, or by extra guidance)

**AW** alternative wording (where responses vary more than usual)

<u>underline</u> actual word given must be used by candidate (grammatical variants accepted)

max indicates the maximum number of marks that can be given

**ora** or reverse argument

**mp** marking point (with relevant number)

ecf error carried forward

I ignore

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1	(a) (i)	idea	of increase;		[1]	
	(ii)	stated volume or same volume of sample or starch + syringe;		[1]		
	(iii)	two	levels drawn and labelled with 'before'; + 'after' + water level af	ter lower than be	efore;	
		lowe	est level still covers contents of Visking tubing;		[2]	
	(iv)	state	ed volume or same volume of sample or starch + syring	ge;	[1]	
	(v)	all c	olumns separated by a line + all headings underlined;			
		(top	or left of data) time (/) min(utes); + (any column / row headed) vol(ume) of ioc	<u>line</u> or <u>l</u> <u>cm³</u> or <u>m</u>	<u>l</u> (s);	
		records results at four times (0, 5, 10, 15);				
		records a value for 5 minutes that is lower than the rest;				
		all v	alues to one decimal place ;		[5]	
	(vi)	ched	ck results against answer to (a)(i) must show agreeme	nt ;	[1]	
	(vii)	idea	of serial dilution or simple dilution (of 1%);			
		use	graph to find % concentration;		[2]	
	(viii)	•	nge or stopwatch + no effect + if use same syringe or s	topwatch		
		<b>or</b> idea	of different syringe used + systematic error + not true	value ;	[max 1]	
	(b) (i)		oxis) <u>vol(ume) of iodine</u> (/) <u>cm³</u> -axis) <u>percent(age) or % of <u>starch</u> <u>reacted</u> (with iodine</u>	solution);		
			exis) 0.5 to 2 cm labelled each 2 cm except origin and 3 –axis) 20 to 2 cm labelled each 2 cm except origin and			
		corre	ect plotting of five points as small cross or dot in circle	or cross;		
		five plots + ruled sharp lines exactly point to point				
		<b>or</b> rule	d line of best fit + sharp smooth line;		[max 4]	
	(ii)	corre	ect estimation from graph by shown extrapolation;		[1]	
	(iii)	idea of too much ascorbic acid then iodine may not stain				
		or idea of having to add more iodine in order to observe colour;				
		need	d to know how much ascorbic acid in plant tissues to m	nake test accurat	te; [max 2]	

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(iv)	use 3 cm <sup>3</sup> or more of iodine or more iodine, or excess iodine or				
		olume given in (b)(ii) or more;		[max 1]	
				[Total: 22]	
(a) (i)		ast 3 enclosed areas + size 40 mm across largest enc arp continuous line + no shading;	closed area at wide	est point	
	-	three complete enclosed areas ch enclosed area touching at least one other enclosed	d area ;		
	nucle	eus drawn + membrane no more than twice the width	of the nucleus;		
	uses	label line + label to only one nucleus;		[4]	
(ii)	corre	ect label line to the surface of the alveoli;		[1	
(iii)	air space/large surface area/wall one cell thick/thin alveolar wall;				
	diffus	sion or idea of more efficient gas exchange ;		[2	
(b) (i)	<b>Z</b> to 0	closed guard cells ;			
	idea	of stomata/guard cell/air space(s) + closed + reduces diffusion of water or	reduces evapora	tion; [2]	
(ii)	at lea	ast whole 5 cells + size of the largest cell at its largest + no ruled	t dimension at lea d lines + no shadir		
	draw	s only whole cells within the boundary + at least five	cells;		
	length of stomatal gap is the same or shorter than the length of the guard cell on the right				
	show	vs inclusions in the three largest cells;			
	corre	ectly labelled with label line to only one guard cell;		[5]	
(iii)	meas	sures scale bar to 22 + mm + to within 1 mm;			
	(A) s	hows conversion of scale bar in mm to $\mu$ m (× 1000)			

or

- **(B)** shows conversion of  $54 \, \mu m$  to mm ( $54 \, \text{divided by } 1000 = 0.054 \, \text{mm}$ );
- (A) show measurement of scale bar in  $\mu m$  divided by 54  $\mu m$

or

- (B) shows measurement of scale bar in mm divided by 0.054 mm;
- (A) and (B) rounds answer to a whole number;

[4]

[Total: 18]