CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2014 series

9700 BIOLOGY

9700/36

Paper 3 (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.

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Mark scheme abbreviations:

; separates marking points

I 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

Page 3			Mark Scheme	Syllabus	Paper
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(a)	(i)	at le	east 4 further concentrations of E + %;		
		at le	east 3 correct volumes for E + cm ³ ;		
		for	at least three concentrations of E final volumes add up to 20 + c	m³;	[3]
	(ii)	1	organised into table all columns separated by a line + all headings underlined;		
		2	headings (top or to left of data) percentage concentration of E - (any column/row headed) time (/)s or seconds;	+	
		3	whole seconds for at least three concentrations of E;		
		4	highest concentration of ${\bf E}$ recorded in shorter time than next concentration ;		
		5	records in multiples of 30 seconds;		[5]
((iii)	(de	pendent variable) colour or end-point + idea of judging/determin	ning;	[1]
((iv)	rep	licates or put E / M in water-bath (to reach temperature);		[1]
/b\	/;\	1	acleate temperature + pH .		
(b)	(1)	1	selects temperature + pH;		
		2	temperature + use thermostatically controlled water-bath;		
		3	pH + use buffers;		[3]
	(ii)	0.2	50;		
		0.0	0.019;		[2]
((iii)	1	(x-axis time/min(utes) + (y-axis) mass of glucose/mg;		
		2	(x-axis) 2 cm to 5 minutes labelled each 2 cm except origin and + (y-axis) 2 cm to 1 mg each 2 cm except origin and 5;	20 minutes	3
		3	correct plotting of five points as small cross or dot in circle or cr	ross;	
		4	five plots + ruled sharp lines exactly point to point		
			or ruled line of best fit + sharp smooth line;		[4]
((iv)	(be	tween 0 and 12 minutes) many enzyme substrate complexes/ESCs/binding/fitting of su	ıbstrate/en:	zyme;
		(be	tween 12 and 20 minutes) fewer ESCs or less substrate can bin	d;	[2]
					[Total: 21]

Mark Scheme

Syllabus

Paper

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2 (a) (i) central stele/vascular tissue;

[1]

- (ii) 1 at least 2 lines + size at least 100 mm across diameter + no shading;
 - 2 no cells + half drawn;
 - 3 endodermis shown by 2 lines;
 - 4 correct proportion stele compared to cortex;
 - 5 label + line to xylem;

[5]

- (ii) 1 at least 6 cells + size at least 40mm across largest cell at widest point + sharp continuous lines;
 - 2 only 6 whole cells drawn + as two groups of touching cells;
 - 3 cell wall of xylem cells drawn correctly (angular);
 - 4 cell walls as double lines with middle lamella between;
 - 5 label + line to lumen;

[5]

- **(b)** measures line **Y** within range + mm + to 0.5; (range 86–88 mm)
 - measures line **Z** within range + mm + to 0.5; (range 14–16 mm)
 - answer as larger whole number to smaller whole number to simplest ratio;

[3]

- (c) 1 organise as table with 3 columns headed feature + M1 + Fig. 2.2;
 - 2 only observable differences recorded;

max 3 for differences - see table below:

mp	point of comparison	Fig 2.1	Fig 2.2
3	stele shape vascular bundle/ vascular tissue/ xylem/phloem	cross (do not accept irregular/central)	round/circular/scattered;
4	stele layers around stele endodermis	1 or 2 layers/fewer layers/thin	2 or 3 layers/more layers/thick;
5	stele size in relation to diameter of root/size of specimen	small(er)	larg(er) ;

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mp	point of comparison	Fig 2.1	Fig 2.2
6	cortex air spaces	air spaces absent	air spaces present
	shape of cells	round/circular/oval	elongated / long / rectangular
	length of cells	small/short(er)	large/long(er);
7	cortex number of cells in cortex (must refer to cortex)	filled with cells/more/ many cells	not filled with cells/less /few(er)
	packing	more packed	less packed;
8	epidermal layer red stained cells (near epidermis)	one layer/thin(ner) absent	several layers/thick(er) present;
9	total number of layers	less/few(er) layers or expressed as a number of layers, e.g. 5	more layers or expressed as a number of layers, e.g. 8;

[max 5]

[Total: 19]