
BIOLOGY**9700/34**

Paper 3 Advanced Practical Skills 2

October/November 2016**MARK SCHEME**Maximum Mark: 40

Published

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge International AS/A Level – October/November 2016	9700	34

Question	Answer	Mark
1(a)(i)	<i>(conclusion)</i> least ;	1
1(a)(ii)	<i>(decision)</i> cut length at least 50 mm / 5 cm ;	1
1(a)(iii)	<i>(decision)</i> repeat (with same piece or replicate with both pieces of plant tissue) ;	1
1(a)(iv)	<i>(recording results)</i> 1 table drawn + heading, solutions ; 2 heading, angle of bend + correct units ; 3 readings recorded for all three samples of potato + repeats ; 4 correct pattern of results ; 5 records as whole numbers or to half a degree ; ;	5
1(a)(v)	<i>(interpretation of results)</i> correct identification of S1 , S2 and S3 according to results ;	1
1(a)(vi)	<i>(collects angle of bend for S4)</i> records as a whole number or to half a degree ;	1

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Question	Answer	Mark
1(a)(vii)	<i>(interpretation of result)</i> correct estimate according to results from (iv) and (v) ;	1
1(a)(viii)	<i>(layout of data)</i> 1 (x-axis) concentration of sodium chloride / mol dm ⁻³ + (y-axis) angle of bend / degree(s) or ° ; 2 (scale on x-axis) 0.2 to 2 cm, labelled at least each 2 cm + (scale on y-axis) reasonable scale with results, labelled at least each 2 cm ; 3 five plots either joined point to point or as a line of best fit, drawn as a thin line ;	3
1(a)(ix)	<i>(collects and interprets angle of bend)</i> 1 shows on graph at S4 angle of bend using at least one line to x-axis or a plotted point ; 2 records correct concentration from graph + units ;	2
1(b)	<i>(improvements to procedure)</i> <i>three from</i> 1 increased number of concentrations ; 2 use proportional or simple or serial dilution ; 3 repeat or replicate ; 4 AVP ;	3

Page 4	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
1(c)	<p><i>(conclusions)</i></p> <p>1 water has higher water potential than cells/tissue/ ora ;</p> <p>2 water moves into cells by osmosis ;</p>	2
	Total:	21

Question	Answer	Mark
2(a)(i)	<p><i>(plan drawing)</i></p> <p>1 large size + no shading ;</p> <p>2 no cells + correct section drawn + appropriate detail ;</p> <p>3 correct proportions ;</p> <p>4 vascular tissue divided into at least three layers ;</p> <p>5 outermost layer drawn as two lines (on both surfaces of leaf) ;</p> <p>6 label line and label to epidermis ;</p>	6

Page 5	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
2(a)(ii)	<p><i>(high power drawing)</i></p> <ol style="list-style-type: none"> 1 quality of line for outer wall of cells thin and sharp + minimum size at least 40 mm across largest cell ; 2 only four cells drawn + each cell touching at least one of the other cells ; 3 cell walls drawn as two lines close together ; 4 at least one cell drawn with at least five sides ; 5 width of one cell smaller than another cell or an inclusion present in at least one cell ; 6 uses one label line + one label to cell wall ; 	6
2(b)(i)	<p><i>(collects and shows display of working)</i></p> <ol style="list-style-type: none"> 1 correct measurements for <u>all five</u> lines + as whole numbers or to 0.5 only + units as mm ; 2 shows division by 75 ; 	2
2(b)(ii)	<p><i>(shows display of working and interpretation)</i></p> <ol style="list-style-type: none"> 1 shows addition of measurements from (b)(i) + division by 5 ; 2 correct answer to appropriate degree of accuracy + units μm ; 	2

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
2(c)	<p><i>(observable differences)</i></p> <p>organises comparison into three columns with one column for features, one headed L1 and one headed Fig. 2.2 ;</p> <p>any three observable differences of comparison ; ;</p>	3
	Total:	19