

BIOLOGY**9700/35**

Paper 3 Advanced Practical Skills 1

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	35

Question	Answer	Mark
1(a)(i)	<p><i>(decisions on simple dilutions)</i></p> <ol style="list-style-type: none"> 1 correct percentage concentration of E as 0.75, 0.5, 0.25 ; 2 correct volumes of E ; 3 correct total volume of E and W for each concentration ; 	3
1(a)(ii)	<p><i>(recording results)</i></p> <ol style="list-style-type: none"> 1 table drawn + heading, percentage concentration of ethanol ; 2 heading, intensity of colour ; 3 results recorded four or five concentrations ; 4 uses symbols on scale + correct trend in results ; ; 	4
1(a)(iii)	<p><i>(collects and interprets result for unknown)</i></p> <ol style="list-style-type: none"> 1 records a result for U in correct format ; 2 appropriate concentration for U (as one of concentrations prepared or between two of prepared concentrations) + units ; 	2

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Question	Answer	Mark
1(a)(iv)	<p><i>(conclusions)</i></p> <ol style="list-style-type: none"> 1 more concentrated the ethanol the more (methylene) blue is released from the plant cells ; 2 cell membrane is damaged/more permeable ; 3 <u>proteins</u> in the cell membrane are denatured/AW or <u>phospholipids</u> are dissolved in the ethanol or the methylene blue is able to leave the cell by <u>diffusion</u> ; 	3
1(a)(v)	<p><i>(modification to investigate another variable)</i></p> <ol style="list-style-type: none"> 1 (to standardise concentration of ethanol) same concentration of ethanol ; 2 (changes independent variable – temperature) at least five temperatures ; 3 (method) uses thermostatically controlled water-bath ; 	3
1(b)(i)	<p><i>(interpretation)</i></p> <p><u>9.0</u> ;</p>	1

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Question	Answer	Mark
1(b)(ii)	<p><i>(layout of data)</i></p> <ol style="list-style-type: none"> 1 (x-axis) concentration of sucrose / mol dm⁻³ + (y-axis) change in mass / % ; 2 (scale on x-axis) 0.2 to 2 cm, labelled at least each 2 cm + (scale on y-axis) 10 to 2 cm, labelled at least each 2 cm ; 3 correct plotting of five points with a small cross or dot in circle ; 4 five plots either joined point to point or as a line of best fit, drawn as a thin line ; 	4
1(b)(iii)	<p><i>(collects from graph and correct interpretation)</i></p> <ol style="list-style-type: none"> 1 shows on graph at 0.7 mol dm⁻³ using at least one line to y-axis ; 2 records correct percentage change in mass from graph ; 	2
	Total:	22

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Question	Answer	Mark
2(a)(i)	<p><i>(plan drawing)</i></p> <ol style="list-style-type: none"> 1 large size + no shading ; 2 no cells + correct section drawn + appropriate detail ; 3 endodermis layer drawn as two lines ; 4 label line and label to xylem ; 	4
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 two of the other cells ; 3 cell walls drawn as two lines close together ; 4 at least one air space or at least one cell drawn with at least five sides ; 5 uses one label line + one label to cell wall ; 	5
2(b)(i)	<p><i>(shows display of working)</i></p> <ol style="list-style-type: none"> 1 correct measurements for <u>all five</u> air spaces + as whole numbers or to 0.5 only + units as mm ; 2 shows division by 36 ; 3 multiplies by 1000 ; 	3

Page 6	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
2(b)(ii)	<p><i>(calculation)</i></p> <p>1 shows addition of measurements from (b)(i) + division by 5 ;</p> <p>2 correct answer to appropriate degree of accuracy + units μm ;</p>	2
2(c)	<p><i>(observable differences)</i></p> <p>organises comparison into three columns with one column for features, one headed K1 and one headed Fig. 2.2 ;</p> <p>any three observable differences of comparison ; ; ;</p>	4
	Total:	18