



Cambridge
International
AS & A Level

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Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY

9700/35

Paper 3 Advanced Practical Skills 1

October/November 2016

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **6** printed pages.

Page 2	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
1(a)(i)	<i>(decisions on simple dilutions)</i> - correct percentage concentration of E as 0.75, 0.5, 0.25 ; - correct volumes of E ; - correct total volume of E and W for each concentration ;	3
1(a)(ii)	<i>(recording results)</i> - table drawn + heading, percentage concentration of ethanol ; - heading, intensity of colour ; - results recorded four or five concentrations ; - uses symbols on scale + correct trend in results ; ;	4
1(a)(iii)	<i>(collects and interprets result for unknown)</i> - records a result for U in correct format ; - appropriate concentration for U (as one of concentrations prepared or between two of prepared concentrations) + units ;	2

Page 3	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
1(a)(iv)	<i>(conclusions)</i> 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)	<i>(modification to investigate another variable)</i> 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)	<i>(interpretation)</i> <u>9.0</u> ;	1

Page 4	Mark Scheme	Syllabus	Paper
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Question	Answer	Mark
1(b)(ii)	<i>(layout of data)</i> (x-axis) concentration of sucrose / mol dm⁻³ + (y-axis) change in mass / % ; (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 ; - correct plotting of five points with a small cross or dot in circle ; - five plots either joined point to point or as a line of best fit, drawn as a thin line ;	4
1(b)(iii)	<i>(collects from graph and correct interpretation)</i> - shows on graph at 0.7 mol dm⁻³ using at least one line to y-axis ; - records correct percentage change in mass from graph ;	2
	Total:	22

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