

## **Cambridge International Examinations**

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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Question	Answer	Mark
1(a)(i)	(decisions on simple dilutions)	3
	1 correct percentage concentration of <b>E</b> as 0.75, 0.5, 0.25;	
	2 correct volumes of E;	
	3 correct total volume of <b>E</b> and <b>W</b> for each concentration;	
1(a)(ii)	(recording results)	4
	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;;	
1(a)(iii)	(collects and interprets result for unknown)	2
	1 records a result for <b>U</b> in correct format;	
	2 appropriate concentration for <b>U</b> (as one of concentrations prepared or between two of prepared concentrations) + units;	

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Question	Answer	Mark
1(a)(iv)	(conclusions)	3
	1 more concentrated the ethanol the more (methylene) blue is released from the plant cells;	
	2 cell membrane is damaged/more permeable;	
	3 proteins in the cell membrane are denatured/AW	
	or	
	phospholipids are dissolved in the ethanol	
	or	
	the methylene blue is able to leave the cell by <u>diffusion</u> ;	
1(a)(v)	(modification to investigate another variable)	3
	(to standardise concentration of ethanol)     same concentration of ethanol;	
	(changes independent variable – temperature)     at least five temperatures;	
	3 (method) uses thermostatically controlled water-bath;	
1(b)(i)	(interpretation)	1
	9.0;	

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Question	Answer	Mark
1(b)(ii)	(layout of data)	4
	1 (x-axis) concentration of sucrose/mol dm <sup>-3</sup> +(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;	
1(b)(iii)	(collects from graph and correct interpretation)	2
	1 shows on graph at 0.7 mol dm <sup>-3</sup> using at least one line to <i>y</i> -axis;	
	2 records correct percentage change in mass from graph;	
	Total:	22

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Question	Answer	Mark
2(a)(i)	(plan drawing)	4
	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;	
2(a)(ii)	(high power drawing)	5
	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;	
2(b)(i)	(shows display of working)	3
	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 ;	

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