Cambridge International AS & A Level

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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)* 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)	*(recording results)* 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)	*(collects and interprets result for unknown)* 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)	*(conclusions)* 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)	*(modification to investigate another variable)* 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)	*(interpretation)* <u>9.0</u> **;**	**1**

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Question	Answer	Mark
1(b)(ii)	*(layout of data)* 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)	*(collects from graph and correct interpretation)* 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)	*(plan drawing)* 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)	*(high power drawing)* 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)	*(shows display of working)* 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**

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Question	Answer	Mark
2(b)(ii)	*(calculation)* 1 shows addition of measurements from **(b)(i)** + division by 5 **;** 2 correct answer to appropriate degree of accuracy + units μm **;**	**2**
2(c)	*(observable differences)* 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**

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