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

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

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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**

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**

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**

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 all five air spaces **+** as whole numbers or to 0.5 only **+** units as mm **;** 2 shows division by 36 **;** 3 multiplies by 1000 **;**	**3**

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**