Cambridge International AS & A Level

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BIOLOGY **9700/34**

Paper 3 Advanced Practical Skills 2 **October/November 2016**

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Mark
1(a)(i)	*(conclusion)* least **;**	**1**
1(a)(ii)	*(decision)* cut length at least 50 mm / 5 cm **;**	**1**
1(a)(iii)	*(decision)* repeat (with same piece or replicate with both pieces of plant tissue) **;**	**1**
1(a)(iv)	*(recording results)* 1 table drawn **+** heading, solutions **;** 2 heading, angle of bend + correct units **;** 3 readings recorded for all three samples of potato + repeats **;** 4 correct pattern of results **;** 5 records as whole numbers or to half a degree **; ;**	**5**
1(a)(v)	*(interpretation of results)* correct identification of **S1**, **S2** and **S3** according to results **;**	**1**
1(a)(vi)	*(collects angle of bend for **S4**)* records as a whole number or to half a degree **;**	**1**

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Question	Answer	Mark
1(a)(vii)	*(interpretation of result)* correct estimate according to results from **(iv)** and **(v)** **;**	**1**
1(a)(viii)	*(layout of data)* 1 (*x*-axis) concentration of sodium chloride / mol dm^{-3} **+** (*y*-axis) angle of bend / degree(s) or ° **;** 2 (scale on *x*-axis) 0.2 to 2 cm, labelled at least each 2 cm **+** (scale on *y*-axis) reasonable scale with results, labelled at least each 2 cm **;** 3 five plots either joined point to point or as a line of best fit, drawn as a thin line **;**	**3**
1(a)(ix)	*(collects and interprets angle of bend)* 1 shows on graph at **S4** angle of bend using at least one line to *x*-axis or a plotted point **;** 2 records correct concentration from graph **+** units **;**	**2**
1(b)	*(improvements to procedure)* *three from* 1 increased number of concentrations **;** 2 use proportional or simple or serial dilution **;** 3 repeat or replicate **;** 4 AVP **;**	**3**

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Question	Answer	Mark
1(c)	*(conclusions)* 1 water has higher water potential than cells / tissue / **ora ;** 2 water moves into cells by osmosis **;**	**2**
	Total:	**21**

Question	Answer	Mark
2(a)(i)	*(plan drawing)* 1 large size **+** no shading **;** 2 no cells **+** correct section drawn **+** appropriate detail **;** 3 correct proportions **;** 4 vascular tissue divided into at least three layers **;** 5 outermost layer drawn as two lines (on both surfaces of leaf) **;** 6 label line and label to epidermis **;**	**6**

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Question	Answer	Mark
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 one of the other cells **;** 3 cell walls drawn as two lines close together **;** 4 at least one cell drawn with at least five sides **;** 5 width of one cell smaller than another cell **or** an inclusion present in at least one cell **;** 6 uses one label line **+** one label to cell wall **;**	**6**
2(b)(i)	*(collects and shows display of working)* 1 correct measurements for all five lines **+** as whole numbers or to 0.5 only **+** units as mm **;** 2 shows division by 75 **;**	**2**
2(b)(ii)	*(shows display of working and interpretation)* 1 shows addition of measurements from **(b)(i) +** division by 5 **;** 2 correct answer to appropriate degree of accuracy **+** units μm **;**	**2**

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Question	Answer	Mark
2(c)	*(observable differences)* organises comparison into three columns with one column for features, one headed **L1** and one headed Fig. 2.2 **;** any three observable differences of comparison **; ;**	**3**
	Total:	**19**

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