Cambridge International AS & A Level

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BIOLOGY **9700/35**

Paper 35 (Advanced Practical Skills 1) **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

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Mark scheme abbreviations

;	separates marking points
/	alternative answers for the same point
R	reject
A	accept (for answers correctly cued by the question, or by extra guidance)
AW	alternative wording (where responses vary more than usual)
underline	actual word given must be used by candidate (grammatical variants accepted)
max	indicates the maximum number of marks that can be given
ora	or reverse argument
mp	marking point (with relevant number)
ecf	error carried forward
I	ignore
AVP	alternative valid point

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Question	Answer	Marks
1(a)(i)	appropriate volume of water used **;**	**1**
1(a)(ii)	1 correct concentrations under each beaker: 0.5, 0.25, 0.125, 0.0625 **+** % **;** 2 shows transfer of 10 cm^3 of 0.5% from 2nd to 3rd beaker and transfer of 10 cm^3 of 0.25% from 3rd to 4th beaker and transfer of 10 cm^3 of 0.125% from 4th to 5th beaker **+** cm^3 **;** 3 adds 10 cm^3 of water to each beaker **;**	**3**
1(a)(iii)	1 table drawn **+** heading, percentage concentration of **R or** reducing sugar **;** 2 heading, time **+** seconds **;** 3 records time for at least four concentrations of **R ;** 4 correct pattern of results, the time for the highest concentration of **R** is recorded as shortest time **;** 5 times recorded as whole seconds **;**	**5**
1(a)(iv)	appropriate error with reason, e.g. colour change **+** difficult to judge **;**	**1**
1(a)(v)	records time taken for the first colour change for sample **X +** seconds **;**	**1**
1(a)(vi)	1 correctly labels Fig.1.3 with glucose concentrations **;** 2 correctly places **X** on Fig.1.3 in the correct position according to results **;**	**2**
1(a)(vii)	1 increase number of concentrations (of **R**) or examples of concentrations **;** 2 uses proportional / simple dilution **or** serial dilution to make concentrations **;** 3 reference to drawing a graph and reading off estimate for the concentration of reducing sugar in sample **X** **or** comparing times for sample with times for known concentrations of **R ;**	**3**

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Question	Answer	Marks
1(b)(i)	1 (*x*-axis) temperature / °C **+** (*y*-axis) absorbance of light by the coloured solution / arbitrary units **;** 2 scale on *x*-axis: 10 to 2 cm, labelled at least each 2 cm + origin labelled 30 **+** scale on *y*-axis: 0.2 to 2 cm, labelled at least each 2 cm **;** 3 correct plotting of five points with a small cross or dot in a circle **;** 4 five plots joined with thin line **or** joined plot to plot **or** joined as a smooth curve **;**	**4**
1(b)(ii)	*max 3 of:* 1 (at 49 °C) reference to kinetic energy **;** 2 successful collisions **or** more enzyme substrate complexes **;** 3 (at 70 °C) reference to changing shape of active site or enzyme denatures **;** 4 substrate unable to bind or fewer enzyme substrate complexes **;**	**3**
	Total:	**23**

Question	Answer	Marks
2(a)(i)	records measurements of the depth of the leaf **and** the depth of the vascular bundle (in eyepiece graticule units) **;**	**1**
2(a)(ii)	1 shows measurement of the vascular bundle divided by the measurement of the width of the leaf multiplied by 100 **;** 2 shows the answer to the appropriate degree of accuracy **;**	**2**

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Question	Answer	Marks
2(a)(iii)	1 minimum size at least 90 mm **+** at least 4 lines drawn **+** no shading **;** 2 no cells **+** draws correct section of leaf **;** 3 draws correct proportion of the vascular bundle in relation to the depth of the leaf **;** 4 correct shape of the vascular bundle **;** 5 uses one label line **+** one label to the vascular bundle **;**	**5**
2(a)(iv)	1 quality of the line for the outer wall of vessel elements (thin line) **+** minimum size of at least 40 mm across the largest vessel element **;** 2 only four vessel elements drawn, each touching at least one of the other vessel elements **;** 3 walls of vessel elements drawn as two lines **;** 4 at least one vessel element drawn with more than four sides **;** 5 uses one label line **+** one label to lumen **;**	**5**
2(b)	1 organises comparison into three columns with one column for features, one column headed **L1** and one column headed **Fig. 2.3 ;** 2, 3, 4 any three observable differences of comparison **;;;**	**4**
	Total:	**17**