Cambridge International AS & A Level

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BIOLOGY **9700/33**

Paper 33 (Advanced Practical Skills 1) **May/June 2017**

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.

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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

Question	Answer	Marks
1(a)	1 line for concentration of reducing sugar increases from zero **;** 2 line for concentration of reducing sugar horizontal (where line for concentration of biological molecule horizontal) **;**	**2**
1(b)(i)	1 iodine solution **+** stated number of drops or stated volume **;** 2 records colour **+** degree of colour (blue / black) **;**	**2**
1(b)(ii)	1 states volume of sample **+** volume of Benedict's solution **+** equal volume or in excess **;** 2 states temperature (80 °C or higher or boiling) **;** 3 reference to shortest time to colour change **;**	**3**
1(b)(iii)	1 table drawn **+** heading, colour (starch test) **;** 2 heading, time **+** seconds (reducing sugar test) **;** 3 records colours for at least four concentrations of samples (starch test) **;** 4 records times for at least four concentrations of samples (reducing sugar test) **;** 5 times recorded as whole seconds **;**	**5**
1(b)(iv)	1 correct **S2 + S4 ;** 2 correct **S1 + S3 ;**	**2**
1(b)(v)	1 no starch as hydrolysed **or** all reducing sugar from hydrolysis **;**	**1**

Question	Answer	Marks
1(c)	1 5 or more concentrations of reducing sugar **;** 2 made by proportional dilution **or** simple dilution **or** serial dilution **;** 3 reference to comparing results of unknown concentration to results for known concentrations **or** reference to drawing graph and reading off **;**	**3**
	Total:	**18**

Question	Answer	Marks
2(a)(i)	1 states 4 measurements (**L** to **Q**, **L** to **M**, **M** to **N**, **N** to **Q**) **;** 2 **M** to **N** lowest value **;** 3 measurements of **L** to **Q** equal to sum of other measurements **;**	**3**
2(a)(ii)	1 correct sum of **L** to **M** and **N** to **Q** **;** 2 shows division by the measurement for **L** to **Q** multiplied by 100 **;** 3 answer to the appropriate degree of accuracy **;**	**3**
2(a)(iii)	1 minimum size at least 90 mm **+** at least three lines drawn **;** 2 no cells **+** draws correct half of the root **;** 3 stele drawn in correct proportion to the diameter of the root **;** 4 draws outline of xylem correctly **;** 5 uses one label line **+** label to xylem **;**	**5**

Question	Answer	Marks
2(a)(iv)	1 quality of line for outer wall of cell (thin line) **+** minimum size at least 40 mm **;** 2 only four cells drawn **+** each cell touching at least two of the other cells **;** 3 cell wall drawn as two lines close together **;** 4 at least one cell with five sides or more **;** 5 uses one label line **+** one label to cell wall **;**	**5**
2(b)(i)	1 (*x*-axis) height / m; 2 scale on *x*-axis: 10 to 2 cm, labelled at least each 2 cm **+** origin labelled 50 **;** 3 correct plotting of five points with a small cross or dot in circle **;** 4 five plots joined point to point or as a line of best fit drawn as a ruled thin line **;**	**4**
2(b)(ii)	*max 2 of:* 1 (cohesion) water molecules joined to other water molecules **;** 2 (adhesion) water molecules joined to walls of xylem vessel elements **;** 3 water pulled up xylem or reference to supporting column of water **;**	**2**
	Total:	**22**