Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/35**

Paper 3 Advanced Practical Skills 1 **May/June 2018**

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 International will not enter into discussions about these mark schemes.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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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)	shows 4 concentrations of sucrose as 5 **+** 2.5 **+** 1.25 **+** 0.625 **+** % **;** shows transfer of 5 cm^3 of sucrose solution from beaker to beaker **;** shows addition of 5 cm^3 water to each beaker **;**	**3**
1(a)(ii)	1 heading for percentage concentration of sucrose **;** 2 heading for time / seconds **;** 3 records raw and processed results for each concentration **;** 4 time for the highest concentration of sucrose recorded as shortest time **;** 5 seconds recorded as whole numbers **;**	**5**
1(a)(iii)	rate worked as 1 / t **;** calculates correct rate of enzyme activity in 10% sucrose solution **+** answer given in standard form to the appropriate degree of accuracy **;**	**2**
1(a)(iv)	use same concentration of substrate **;** use at least five pH values **;** use of buffers **;**	**3**
1(b)(i)	label on *x*-axis percentage substrate concentration **+** label on *y*-axis rate of enzyme activity / arbitrary units **;** scale on *x*-axis is 2 to 2 cm **+** *y*-axis is 2 to 2 cm **+** labelled each 2 cm **;** correct plotting of five points with a small cross or dot in circle **;** line sharp and joined point to point **;**	**4**

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Question	Answer	Marks
1(b)(ii)	as the substrate concentration increases rate of enzyme activity increases **;** more enzyme substrate complexes form **;** reference to inhibition **+** binding to active site **;**	**3**
1(b)(iii)	competitive (inhibitor) **;**	**1**

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Question	Answer	Marks
2(a)(i)	1 minimum size **+** no shading **+** no cells **;** 2 draws epidermis **+** 3 vascular bundles **;** 3 shows at least 2 layers of tissue **;** 4 shows subdivision of vascular bundle **;** 5 vascular bundle and other tissues of stem drawn in the correct proportion **;** 6 label line and label to identify the phloem **;**	**6**
2(a)(ii)	1 minimum cell size **+** lines thin and continuous **;** 2 4 cells drawn **+** each cell touching at least two of the other cells **;** **3** cell walls drawn as two lines **;** **4** correct shape of cells **;** 5 label line and label to identify the cell wall **;**	**5**
2(b)	differences are observable **+** uses label lines **+** uses letters **P**, **Q** and **R ;** *any three* correct differences **;;;** e.g. label line to vascular bundle **+** (Fig. 2.2) vascular bundles arranged in 2 rings while in **L1** vascular bundles in one ring	**4**
2(c)(i)	units given as µm **;** multiplies 0.01 by 1000 **;**	**2**
2(c)(ii)	correctly measures length of **X**–**Y** as eyepiece graticule divisions **;** shows length of **X**–**Y** multiplied by 10 **+** µm **;**	**2**

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