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 **October/November 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.

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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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)	mp 1	60 + 50 + 40 + °C at least once **;**	**1**
1(a)(ii)	mp 1	heading for temperature / °C, to left of data and separated by a line from data **;**	**5**
	mp 2	heading for time / seconds **;**	
	mp 3	result recorded for 70°C **+** 30 °C and three chosen temperatures **;**	
	mp 4	correct trend of (mean) results **;**	
	mp 5	seconds recorded as whole numbers or repeats **;**	
1(a)(iii)	mp 1	displays rate as 1 / 75 **;**	**2**
	mp 2	correct answer (0.013(33)) **;**	
1(a)(iv)	mp 1	put a mark (*e.g. a cross or some text*) and time to see it / film it / use a data logger / use a colour standard to compare with sample **;**	**2**
	mp 2	use a thermostatically controlled water bath **;**	
1(a)(v)	mp 1	use distilled water instead of enzyme **or** use boiled enzyme **;**	**1**
1(b)(i)	mp 1	pH **;**	**1**
1(b)(ii)	mp 1	label on *x*-axis, 'pH' **+** label on *y*-axis, 'activity of enzyme / arbitrary units' **;**	**4**
	mp 2	scale on *x*-axis is 1 to 2 cm **+** *y*-axis is 20 to 2 cm **+** labelled at least each 2 cm **;**	
	mp 3	correct plotting of five points with a small cross or dot in circle **;**	
	mp 4	line sharp and joined point to point **;**	

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Question	Answer		Marks
1(b)(iii)	mp 1	activity rises, then drops slightly, then drops more sharply **;**	**2**
	mp 2	states at least two pH values and the correct corresponding activity **+** units **;**	
1(b)(iv)	mp 1	causes denaturation / changes tertiary structure, of enzyme / milk protein **or** changes the shape of the active site of the enzyme **;**	**2**
	mp 2	so fewer enzyme substrate complexes formed or substrate cannot bind to the active site **;**	
1(b)(v)	mp 1	use a narrower range of pH values **;**	**2**
	mp 2	from 1.5 to 3 **;**	

Question	Answer		Marks
2(a)(i)	mp 1	minimum size **+** at least two lines **+** no cells **;**	**5**
	mp 2	draws epidermis **+** at least 3 vascular bundles **;**	
	mp 3	shows at only 2 whole smaller vascular bundles and 1 whole larger inner vascular bundle **;**	
	mp 4	shows subdivision of vascular bundle **;**	
	mp 5	label line and label to identify the xylem **;**	
2(a)(ii)	mp 1	minimum cell size **+** lines thin and continuous **+** no shading ;	**5**
	mp 2	only 4 cells drawn in a line **+** each cell touching at least one of the other cells **;**	
	mp 3	cell walls drawn as two lines **;**	
	mp 4	correct shape of cells (convex top and bottom) **;**	
	mp 5	label line and label to identify the cell wall **;**	

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Question	Answer	Marks
2(a)(iii)	mp 1 for buoyancy or support **;**	**1**
2(b)	mp 1 correct measurement of **J1** and **J2 ;** mp 2 correct measurement of **J3 ;** mp 3 all measurements using the same units (mm / cm) **;** mp 4 shows a larger number to a smaller number and to the lowest common denominator **;**	**4**
2(c)	mp 1, mp 2, mp 3 three correct differences **;;;** e.g. cuticle present in **L1** while in Fig. 2.1 it is absent	**3**

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