Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/33**

Paper 3 Advance 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.

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.

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)(i)	mp 1	measurement radius, within range, as whole number or to 0.5 **+** mm **;**	**1**
1(a)(ii)	mp 1	curved surface area to the nearest whole number **;**	**2**
	mp 2	mm^2 or cm^2 **;**	
1(a)(iii)	mp 1	area of one circular end to the nearest whole number **;**	**1**
1(a)(iv)	mp 1	first column of Table 1.3, stating 4 then 8 number of pieces cut from one cylinder **;**	**2**
	mp 2	last column of Table 1.3, stating correct total surface area for 2 pieces cut from one cylinder **;**	
1(a)(v)	mp 1	standardises the position of the delivery tube in the test-tube of water by making a mark on the delivery tube so that the end is always the same depth in the test-tube **;**	**1**
1(a)(vi)	mp 1	records results in a table with heading for number of bubbles / seconds **;**	**5**
	mp 2	total surface area / mm^2 as a heading **;**	
	mp 3	includes 30 seconds, 60 seconds, 90 seconds and 120 seconds in table **;**	
	mp 4	collects results for at least three surface areas and three time periods **;**	
	mp 5	number of bubbles for lowest surface area less than for largest surface area **;**	
1(a)(vii)	mp 1	uses the results for largest surface area **;**	**3**
	mp 2	shows addition of results divided by number of results to find mean **;**	
	mp 3	correctly calculates the rate of activity with units (min^{-1}) **;**	

Question	Answer		Marks
1(a)(viii)	mp 1	completes Table 1.4 by suggesting that the volume of oxygen released could be measured using a gas syringe or by displacement of water ;	3
	mp 2	completes Table 1.4 by suggesting a significant source of error such as different amounts of the enzyme catalase in different potatoes ;	
	mp 3	completes Table 1.4 by suggesting an improvement would be to use potato cylinders from the same potato ;	
1(a)(ix)	mp 1	changes the independent variable, concentration of substrate, by using at least 5 concentrations prepared by proportional or serial dilution ;	1

Question	Answer		Marks
2(a)(i)	mp 1	drawing of a minimum size with a minimum number of tissue layers and no cells drawn ;	5
	mp 2	whole leaf drawn ;	
	mp 3	correct leaf shape with at least three layers of tissue ;	
	mp 4	correct position of vascular bundle ;	
	mp 5	uses label line and label to identify the palisade tissue ;	
2(a)(ii)	mp 1	drawing of a minimum cell size and drawn with thin, continuous lines ;	5
	mp 2	draws three touching epidermal cells and a trichome ;	
	mp 3	two lines drawn around each cell ;	
	mp 4	draws trichome or epidermal cell with an inclusion ;	
	mp 5	uses label line and label to identify the cell wall ;	

Question	Answer		Marks
2(a)(iii)	mp 1	suggests a suitable feature such as the rolled leaf ;	**2**
	mp 2	explanation of how feature prevents water loss such as traps moisture ;	
2(b)	mp 1	shows evidence of counting whole stomata on Fig. 2.1 ;	**3**
	mp 2	shows evidence of counting half stomata on Fig. 2.1 ;	
	mp 3	correct number of stomata within range ;	
2(c)(i)	mp 1	*x*-axis: time of day, *y*-axis percentage of open stomata ;	**4**
	mp 2	scale on *x*-axis: 2 to 2 cm scale, on *y*-axis is 20.0 to 2 cm labelled each 2 cm ;	
	mp 3	correct plotting of five points with small cross or dot in circle ;	
	mp 4	plots joined point to point with thin line ;	
2(c)(ii)	mp 1	explains that between 02:30 and 05:00 more stomata open and the rate of transpiration increases ;	**2**
	mp 2	more evaporation of water and faster diffusion ;	