Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/33**

Paper 3 Advanced Practical Skills 1 **March 2019**

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 March 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

© UCLES 2019

PUBLISHED

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.

© UCLES 2019

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

© UCLES 2019

Question	Answer	Marks
1(a)(i)	(without distilled water) no movement of sucrose solution observed **and** (with distilled water) sucrose solution moves out of syringe ;	**1**
1(a)(ii)	phloem tissue **and** ref. to sucrose transport ;	**1**
1(b)(i)	fill large test-tube with water up to mark ; volume of water measured using measuring cylinder or syringe ;	**2**
1(b)(ii)	states volume in cm^3 ;	**1**
1(b)(iii)	time to first colour change shortest for **S2** and longest for **S8** / AW ;	**1**
1(b)(iv)	heading (for independent variable): solution or test-tube ; heading (for dependent variable): time / seconds ; records times for **S2**, **S4**, **S6** and **S8** ; expected pattern of results ; records times in whole seconds ;	**5**
1(b)(v)	states whether supports or rejects hypothesis **and** explains how results provide evidence ;	**1**

© UCLES 2019

Question	Answer	Marks
1(c)(i)	*x*-axis: time / minutes **and** *y*-axis: rate of movement of sucrose solution / arbitrary units **;** *x*-axis scale: 5 to 2 cm, labelled at least every 2 cm **and** *y*-axis scale: 0.05 to 2 cm, labelled at least every 2 cm **;** 5 points plotted accurately with a small cross or a small dot in a circle **;** 5 points connected plot to plot or connected with a curved line **;**	**4**
1(c)(ii)	shows on graph how answer determined **;** correct answer for the rate of movement of sucrose solution at 5 minutes from candidate's graph **;**	**2**
1(c)(iii)	states a time with units that is consistent with a valid reason **;**	**1**
1(c)(iv)	states at least 5 concentrations of sucrose solutions **;** states how concentrations prepared **;** e.g. proportional dilution serial dilution **;**	**2**

Question	Answer	Marks
2(a)(i)	minimum size **and** draws at least 2 layers of tissue **and** no cells **;** draws epidermis **and** only 2 vascular bundles **;** draws at least one tissue layer passing through vascular bundles **;** subdivides vascular bundles **;** label line and label to identify the cortex **;**	**5**

© UCLES 2019

Question	Answer	Marks
2(a)(ii)	minimum cell size **and** lines thin and continuous **;** draws only four cells **;** draws one large xylem vessel **and** 3 cells touching the xylem vessel **and** each cell touching at least 2 of the other cells **;** two lines drawn around each cell **and** three lines where cells touch **;** the size of largest cell is at least three times the size of the smallest cell **;** label line and label to identify the lumen of one of the cells **;**	**6**
2(b)(i)	correctly measures lengths of vascular bundles, **R**, **S** and **T ;** uses the same units for lengths **R**, **S** and **T ;**	**2**
2(b)(ii)	shows 3 lengths added together **and** divided by 3 **;** correct mean length **;**	**2**
2(b)(iii)	shows answer from **(b)(ii)** multiplied by 1000 (for mm) or 10000 (for cm) **and** divided by 66 **;** correct answer **;**	**2**
2(b)(iv)	line labelled **J** drawn to observable feature (e.g. epidermis of Fig. 2.2) **and** description of difference (e.g. in **P1** the epidermis is continuous) **;** line labelled **K** drawn to observable feature (e.g. vascular bundle of Fig. 2.2) **and** description of difference (e.g. in **P1** the vascular tissue is in a ring near to the epidermis) **;**	**2**

© UCLES 2019