Cambridge International AS Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/33**

Paper 3 Advanced Practical Skills 1 **May/June 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 May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U 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)	1. labels under the 2nd, 3rd, 4th and 5th beakers 10(.00)%, 1(.00)%, 0.1(0)%, and 0.01% **;** 2. shows transfer of 1 cm^3 from 1st beaker to 2nd beaker and 1 cm^3 from 2nd beaker to 3rd beaker and 1 cm^3 from 3rd beaker to 4th beaker **;** 3. shows 9 cm^3 of **W** added to 2nd, 3rd and 4th beakers **;**	**3**
1(a)(ii)	1. heading for percentage concentration of milk **;** 2. heading for symbol or colour **;** 3. records results for at least four concentrations of milk **;** 4. shows correct trend **;**	**4**
1(a)(iii)	records result for **X** using one of the symbols in the key **;**	**1**
1(a)(iv)	estimates the concentration of protein in **X** **;**	**1**
1(a)(v)	identifies a source of error such as the difficulty in judging the exact shade of colour **;**	**1**
1(a)(vi)	1. makes a range of concentrations of milk with narrower intervals **;** 2. uses a colorimeter **;** 3. carry out the testing of **X** at the same time as the test for proteins on each concentration of milk **;**	**3**

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Question	Answer	Marks
1(b)	1. *x*-axis labelled as type of mammal **+** *y*-axis labelled as percentage mass of protein **;** 2. equal width of bars **+** scale on *y*-axis is 1 to 2 cm, labelled at least every 2 cm **;** 3. correct plotting of five bars in the order in the table **;** 4. five separate bars, drawn with vertical lines meeting horizontal lines exactly **+** labelled correctly **;**	**4**
1(c)(i)	describes trend as pH increases the percentage mass of protein remaining increases **;**	**1**
1(c)(ii)	*any three from:* 1. enzyme becomes denatured as pH increases (above pH2) **;** 2. the shape of the active site changes **;** 3. substrate cannot bind to the active site **;** 4. fewer enzyme substrate complexes form **;**	**3**

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Question	Answer	Marks
2(a)(i)	***K1** is TS Erica stem* 1. minimum size **+** at least two layers of tissue **;** 2. draws whole stem **+** at least three layers of tissue **;** 3. correct shape of stem **;** 4. correct proportion of inner vascular area to the other tissues **;** 5. label line and label to identify the epidermis **;**	**5**
2(a)(ii)	1. minimum cell size **+** lines thin and continuous **;** 2. draws only four cells **+** each cell touching at least two others **;** 3. draws at least one cells with at least five sides **;** 4. two lines drawn around each cell, three lines where cells touch **;** 5. label line and label to identify the cell wall **;**	**5**
2(b)(i)	1. measures scale bar within range **;** 2. measures length of line **Z** within range **;** 3. measurement of scale bar multiplied by 1000 **+** divided by 317 **;** 4. shows measurement of line **Z** divided by the answer to mp3 **;** 5. uses correct units **;**	**5**

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Question	Answer	Marks
2(b)(ii)	organises comparison into three columns with one column for features, one headed **K1** and one headed Fig 2.1 **;** records observable differences between **K1** and Fig. 2.1 **; ; ;** e.g. **K1** has fewer layers of tissues than Fig. 2.1 **K1** has a smooth, continuous outer layer while Fig. 2.1 has a rough outer layer cells of **K1** are larger than the cells of Fig. 2.1	**4**

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