Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY **9700/36**

Paper 3 Advanced Practical Skills 2 **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	completes Table 1.2 by stating three further concentrations of ethanol **;**	**2**
	mp 2	volumes of **A** and **W** add up to ten for each concentration **;**	
1(a)(ii)	mp 1	records results using heading percentage concentration of ethanol **;**	**5**
	mp 2	uses heading cloudiness **;**	
	mp 3	records results for 5 concentrations of ethanol, using key **;**	
	mp 4	results show expected pattern, it is cloudiest for the highest concentration of ethanol **;**	
	mp 5	shows mean result for each concentration of ethanol **;**	
1(a)(iii)	mp 1	states independent variable as concentration of ethanol **;**	**1**
1(a)(iv)	mp 1	identifies a significant source of error such as difficulty of judging cloudiness **;**	**2**
	mp 2	suggests an improvement such as using a colorimeter **;**	
1(a)(v)	mp 1	statement supporting or rejecting hypothesis according to candidate's results **;**	**3**
	mp 2	refers to the results of two concentrations of ethanol **;**	
	mp 3	refers to the results of two concentrations with supporting data **;**	
1(a)(vi)	mp 1	reference to how to measure the volume of ethanol such as using a burette **;**	**2**
	mp 2	suggestion of when to stop adding ethanol, such as the disappearance of the layer above the emulsion **;**	
1(b)(i)	mp 1	shows 10.75 divided by 34.25 (addition of 10.75 and 23.5) multiplied by 100 **;**	**3**
	mp 2	correct answer **;**	
	mp 3	final answer to the correct degree of accuracy **;**	

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Question	Answer	Marks
1(b)(ii)	mp 1 *x*-axis: labelled food sample, *y*-axis: labelled mass of fat in 100 g of food / g ; mp 2 even width of bars, scale on *y*-axis is 5.0 to 2 cm labelled each 2 cm ; mp 3 correct plotting of bars in the order of the table ; mp 4 6 bars drawn, with separation between food samples and all bars drawn with vertical lines meeting horizontal lines exactly, labelled (**X**, **Y**, **Z**, **U**, **S**) ;	**4**

Question	Answer		Marks
2(a)(i)	mp 1	drawing of a minimum size with minimum number of tissue layers and no cells drawn ;	**5**
	mp 2	draws only 2 vascular bundles ;	
	mp 3	draws one closed end ;	
	mp 4	draws two caps on a vascular bundle ;	
	mp 5	uses label line and label **C** to identify tissue containing chloroplasts ;	
2(a)(ii)	mp 1	drawing of a minimum size and drawn with thin, continuous lines ;	**5**
	mp 2	draws only 4 touching xylem vessel elements ;	
	mp 3	two lines drawn around each xylem vessel element ;	
	mp 4	at least one xylem vessel element with angular sides ;	
	mp 5	uses label line and label to identify the lumen ;	
2(a)(iii)	mp 1	uses label **T** to identify xylem wall or lumen ;	**2**
	mp 2	explanation of how xylem wall or lumen enables water to be transported through element, such as the wall preventing vessel collapsing or the lumen having no contents so less resistance to flow of water ;	
2(b)(i)	mp 1	uses label line and the label **Q** to identify the area of cartilage as the feature preventing tube from collapsing ;	**1**

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Question	Answer		Marks
2(b)(ii)	mp 1	uses same units to measure **P1**, **P2** and **P3 ;**	**5**
	mp 2	collects measurements within range for **P1** and **P2 ;**	
	mp 3	collects measurements within range for **P3 ;**	
	mp 4	shows answer as larger whole number to smaller whole number **;**	
	mp 5	answer to lowest common denominator **;**	

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