Cambridge Assessment International Education
Cambridge Ordinary Level

BIOLOGY **5090/61**

Paper 6 Alternative to Practical **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.

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 schemes will use these abbreviations:

;	separates marking points
/	alternatives
()	contents of brackets are not required but should be implied
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
Ig	ignore (for incorrect but irrelevant responses)
AW	alternative wording (where responses vary more than usual)
AVP	alternative valid point (where a greater than usual variety of responses is expected)
ORA	or reverse argument
underline	actual word underlined must be used by candidate
+	statements on both sides of the **+** are needed for that mark

Question	Answer	Marks	Guidance
1(a)	lipase ;	**1**	
1(b)(i)	measuring cylinder / syringe ;	**1**	
1(b)(ii)	(dropping / teat) pipette / dropper ;	**1**	
1(b)(iii)	30–45 °C ;	**1**	unit °C must be included for mark
1(b)(iv)	for the contents of the three test-tubes to be at the same temperature / **AW** ;	**1**	
1(b)(v)	to keep the (total) volume the same (in each test-tube) ;	**1**	
1(c)(i)	time ; minutes ; column A correct (white at 5 minutes only) ; column B correct (white at 3, 4 and 5 minutes) ;	**4**	
1(c)(ii)	(change in) pH ; (more) acidic / fatty acids ;	**2**	**A** change in acidity/alkalinity / **AW** = 1 mark
1(d)	A – fat digested as enzyme present ; B – presence of bile salts speeds up digestion ; C – no enzyme so no digestion ;	**3**	
1(e)(i)	same / specified volume / concentration of enzyme ; same / specified volume / type of milk ; same / specified volume of indicator ; same temperature / all in same water-bath ; different pHs used / **AW** ; at least three specific pH values given ; record / observe colour ; regular time intervals (for observation) ;	**6**	

Question	Answer	Marks	Guidance
1(e)(ii)	suitable safety precaution ; explanation ;	2	**A** goggles, test-tube holders / rack **Ig** gloves **A** acids / alkalis affect skin / eyes **AW**

Question	Answer	Marks	Guidance
2(a)(i)	size (width of cotyledon at least 50 mm) ; clear and continuous outline using sharp pencil **+** no shading ; plumule **+** radicle drawn ; radicle straight or curved left ;	4	
2(a)(ii)	plumule labelled ; cotyledon labelled ;	2	
2(b)	5.75 , 6.5 , 8.0 ;	2	**A** 5.8 for 5.75 2 marks if all correct 1 mark if 2 correct
2(c)	water ; age of seeds ; type of seeds ; light intensity ; space between seeds ;	2	
2(d)	both axes labelled (mean number of seeds, temperature / °C) **+** temperatures central to bars ; linear scale for mean number axis **+** value at origin **+** size (at least half of grid) ; 5 mean numbers plotted correctly ; sides of bars ruled **+** bars of equal width ;	4	
2(e)	more germination as temperature increases ;	1	

Question	Answer	Marks	Guidance
2(f)	seeds were dead / not viable / damaged ; not left for long enough / not enough / competition for water / space ;	**2**	