Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

BIOLOGY **5090/31**

Paper 3 Practical Test **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.

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.

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)	5 volumes recorded, one in each box **;** volume at 3 minutes greater than at 0 minutes / start **;**	**2**	
1(b)(i)	time on x-axis **+** volume on y-axis **+** labelled at least t / min **+** volume / cm^3 **;** linear scales with values at origin of both axes **+** good use of grid **;** 6 plots correctly plotted **;** centres of plots joined with ruled lines **;**	**4**	
1(b)(ii)	0–1 **;** minutes **;**	**2**	**A** the first minute = 2 marks
1(b)(iii)	(at first) increases / goes up **;** then plateaus / flattens / line horizontal / gradient becomes 0 / goes down again **;**	**2**	
1(c)(i)	to evenly distribute the yeast cells / mix / **AW ;** to prevent cross-contamination of yeast suspension and hydrogen peroxide **AW ;**	**2**	
1(c)(ii)	top of foam not flat / timing when measuring / difficulty in seeing scale **AW ;**	**1**	

Question	Answer	Marks	Guidance
1(d)	same or specified volume / concentration of catalase or volume / batch of yeast used ; same or specified volume / concentration of hydrogen peroxide used ; reference to use of different samples at different temperatures ; specific range of temperatures given ; water bath (to maintain temperature) ; sample left for same time (to produce foam) ; measure volume of foam / final or total volume ;	**6**	

Question	Answer	Marks	Guidance
2(a)	apple in photograph drawn **+** size A–B at least 65 mm **;** clear, continuous outline drawn with a sharp pencil **;** no shading **;** (realistic proportions) width greater than height **+** side A taller than side B **;** seed correctly labelled **;**	**5**	
2(b)(i)	44–46 **;**	**1**	
2(b)(ii)	line drawn in widest position across drawing **;** correct measurement **;**	**2**	
2(b)(iii)	length in 2(b)(ii) ÷ length in 2(b)(i) **;** answer **;**	**2**	
2(c)(i)	Benedict's (solution / reagent) **;**	**1**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>2(c)(ii)</td><td>
<table>
<tr><th>test solution</th><th>observation</th><th>conclusion</th></tr>
<tr><td>Benedict's solution</td><td>yellow / green / orange / red ;</td><td>positive</td></tr>
<tr><td>biuret solution</td><td>blue ;</td><td>negative</td></tr>
<tr><td>iodine solution</td><td>yellow / brown ;</td><td>negative</td></tr>
</table>
</td><td>3</td><td></td></tr>
<tr><td>2(c)(iii)</td><td>(reducing) sugar present ;
no protein + no starch ;</td><td>2</td><td></td></tr>
<tr><td>2(d)(i)</td><td>apple + ethanol ;
ethanol then added to water / ethanol then mixed with water ;
cloudy / opaque / milky / white ;</td><td>3</td><td></td></tr>
<tr><td>2(d)(ii)</td><td>no naked flames ;
ethanol flammable ;</td><td>2</td><td></td></tr>
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