Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/62**

Paper 6 Alternative to Practical **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.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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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 responses for the same marking point
- **R** reject the response
- **A** accept the response
- **I** ignore the response
- ecf error carried forward
- AVP any valid point
- ora or reverse argument
- AW alternative wording
- underline actual word given must be used by candidate (grammatical variants excepted)
- ( ) the word / phrase in brackets is not required but sets the context

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Question	Answer	Marks	Guidance
1(a)	1.3 / 1.2 (%) **;;**	**2**	
1(b)	suitable table drawn **;** headings with units **;** correct measurements recorded **;** height of precipitate at 5 minutes greater than at 10 minutes for P1, 2 and 3 **;**	**4**	
1(c)	greater concentration (of pectinase) means clearer juice / less precipitate **;** (in P4) juice does not clear / no precipitate formed if pectinase is absent **;** the longer the time the less precipitate / precipitate settles over time (so precipitate is denser) / pectinase has broken down the precipitate (so less is present) **;**	**2**	
1(d)(i)	concentration or percentage of pectinase **;**	**1**	
1(d)(ii)	volume pectinase solution **;** volume apple juice **;** (same) sample apple juice / type of juice / type of fruit / apple / AW **;** stirring a set number of times **;** measurement times at 5 and 10 mins / set times **;** diameter / size test-tube / (same) total / final volume of solution in each test-tube **;** temperature **;** pH **;**	**2**	

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Question	Answer	Marks	Guidance
1(d)(iii)	*error* 1 no clear demarcation of where precipitate ends / difficult to measure (height of precipitate) accurately or reliably with a ruler **;** 2 difficult to measure all at the same time / AW **;** *improvement* 1 measure mass of precipitate / have a white back-ground or grid / use measuring cylinders or graduated test-tubes / use callipers / syringe / AW 2 do each test separately / AW **;**	**2**	error and correction must match
1(e)	(P4) is a control **;** to ensure pectinase / enzyme is causing the effect / AW **;**	**2**	
1(f)	use tubes with and without pectinase **;** repeats (with and without pectinase) a minimum of three for each **;** using DCPIP (to test for vitamin C) **;** method of measuring volume of DCPIP used (e.g. use a pipette / burette or count drops) **;** shake after each addition of DCPIP / description of end point **;** colour change blue to colourless if vitamin C present **;** relevant safety point **;** *controlled variables (max 2 from);;* same concentration of pectinase same volume of fruit juice same type of juice / same age of fruit / same species / from same tree same temperature same pH / use buffer same concentration of DCPIP	**6**	**A** other methods of estimating vitamin C e.g. alternative method for DCPIP / iodine titration

Question	Answer	Marks	Guidance
1(g)	*lines:* single clear and continuous **;** *size:* at least 85 mm in diameter **;** *detail 1:* wall and 5 compartments **;** *detail 2:* solid tissue mass shown in each compartment **;**	**4**	
1(h)	blue-black **;**	**1**	

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Question	Answer	Marks	Guidance
2(a)	(length **XY**) 30 mm ±1 ; (x) 6 ;	**2**	
2(b)(i)	(flower 9) = 19 / 20 **and** (flower 10) = 19 / 20 ;	**1**	both needed for 1 mark
2bii	6 ;	**1**	
2(b)(iii)	mark each petal as counted / detach petals as each is counted / repeat the count (twice) ;	**1**	
2(c)	**A** both axes labelled: • species plus **A** and **B** • (average) number of petals ; **S** even scale and plot area occupying at least half the grid in both directions ; **P** bar heights plotted correctly, bars same width and not touching ;	**3**	ecf number calculated in **(b)(i)** for species **B**
2(d)	to identify anomalous results / AW ; to increase reliability ; AVP e.g. petals may have fallen off / been eaten ;	**2**	
2(e)(i)	Benedict's (solution / reagent) ; heat / 80 °C ; positive result is green / yellow / orange / (brick) red ;	**3**	
2(e)(ii)	use of water-bath / safety goggles / gloves / test-tube holders / point tubes away from people ;	**1**	

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