Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/61**

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)(i)	22 **;**	**1**	
1(a)(ii)	5.5 **;**	**1**	**A** 5 / 6 / ecf from **1(a)(i)**
1(a)(iii)	suitable table drawn **;** appropriate headings **;** eight times recorded **;** correct conversion to seconds for all times recorded **;**	**4**	
1(b)(i)	40 **;;**	**2**	
1(b)(ii)	grapes / **G**, contain (reducing) sugars **;** grapes / **G**, contain more reducing sugars than the sugar solutions / **S1**, **S2** and **S3** **;** the more reducing sugar there is the less time it takes to change colour / **ora** **;**	**1**	
1(c)(i)	volume of solutions / 5 cm^3 of each solution**;** volume of Benedict's solution / 5 cm^3 Benedict's solution**;** concentration of Benedict's solution**;** variety / type, of grape**;** temperature (of the water-bath) / 80 °C water-bath**;**	**1**	

Question	Answer	Marks	Guidance
1(c)(ii)	idea of judging colour by eye / hard to see when colour starts to change ; idea of using a white / black background / colour chart / colorimeter ; idea of colour of grape juice might make it difficult to see the colour change ; idea of using white grapes ; idea of only three concentrations to compare with ; idea of having a range of colour comparisons ; reducing sugar in grape juice beyond the range of the standard solutions ; increase the range of standard solutions used ; idea of observing four tubes at the same time (so miss the colour change) ; idea of measuring each separately ; idea that not enough trials are carried out ; idea that three or more trials should have been done ;	**2**	the error must match the improvement
1(c)(iii)	wear, eye protection / gloves ; Benedict's solution could damage the eyes / skin / is an irritant / toxic ; use a water-bath (for heating) / tongs / stand while doing the experiment / wear goggles / wear gloves ; ref. to use of hot water / dangers of Bunsen burners ;	**2**	reason must match the safety precaution
1(d)	*idea of* taking grapes of different ages / size / AW ; *idea of* taking grapes from the same bunch / same group of grapes / same plant ; (testing with Benedict's) to find time at which a colour change first appears ;	**2**	
1(e)(i)	22 ;	**2**	

Question	Answer	Marks	Guidance
1(e)(ii)	*axes:* labelled with units i.e. age (of grapes) / days and percentage change in volume **;** *scale:* suitable even scale and data occupies at least half the grid in both directions **;** *plot:* points plotted accurately **;** *line:* suitable line drawn **;**	**4**	ecf for their calculated plot
1(e)(iii)	as the age (of the grape) increases the percentage change in volume increases **;** grapes aged 12–84 days increase in volume by 2% every 12 days **;** sharper / steeper increase from 84–96 days onwards / grapes aged 96–120 days increase by 5% every 12 days **;**	**2**	
1(e)(iv)	age (of grapes)**;**	**1**	

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Question	Answer	Marks	Guidance
2(a)(i)	(vertical bar) 6 mm ±1 **and** (horizontal bar) 9 mm ±1 **;** (average) 7.5 mm ±1 **;**	**2**	ecf for average
2(a)(ii)	6 (µm) **;;;**	**3**	**A** ecf from **2(a)(i)**
2(a)(iii)	*outline:* clear continuous outline with no shading **;** *size:* occupies at least half the space available **;** *detail 1:* drawing showing most of three alveoli and one or more capillaries **;** *detail 2:* walls of alveoli drawn as double lines or showing thickness **;**	**4**	
2(b)(i)	31 **;**	**1**	
2(b)(ii)	*independent variable:* varying type / intensity / duration, of exercise **;** *dependent variable:* measure chest / circumference **;** *controlled variables (max two from) ;;* same number each sex / all same sex / same age / same mass / same fitness / same time after eating or drinking / no caffeine / no medication / no alcohol / no other named chemical / same environment / same temperature / same altitude / exercise for same amount of time if type or intensity varied / same type of exercise if duration changed *methodology:* idea of measuring increase in chest circumference, as soon as exercise is complete / before chest circumference returns to normal **;** rest before carrying out higher intensity of exercise **;** detail of the exercise completed e.g. running **;** two or more repeats for each person / three or more people doing the test **;** relevant safety precaution, e.g. all healthy / suitable footwear **;**	**5**	