Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/63**

Paper 6 Alternative to Practical **May/June 2017**

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 will not enter into discussions about these mark schemes.

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

Mark schemes will use these abbreviations

- **;** separates marking points
- / alternatives
- **I** ignore
- **R** reject
- **A** accept (for answers correctly cued by the question, or guidance for examiners)
- AW alternative wording (where responses vary more than usual)
- AVP any valid point
- **ecf** credit a correct statement / calculation that follows a previous wrong response
- **ora** or reverse argument
- ( ) the word / phrase in brackets is not required, but sets the context
- underline actual word given must be used by candidate (grammatical variants excepted)
- max indicates the maximum number of marks that can be given

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(a)</td><td>table with two columns ;

column 1 heading ‘vegetable extract’, column 2 headed volume of iodine and with unit as cm^3 ;

correct readings from Fig 1.2 ;</td><td>3</td><td></td></tr>
<tr><td>1(b)</td><td>to allow iodine to change colour ;</td><td>1</td><td>A as an indicator</td></tr>
<tr><td>1(c)</td><td>volume of vegetable extract ;

volume / concentration of starch solution ;

concentration of iodine ;

temperature ;

mixing time ;</td><td>2</td><td>I amount

R volume iodine solution</td></tr>
<tr><td>1(d)</td><td><table><tr><th>source of error ;;</th><th>improvement ;;</th></tr><tr><td>contamination</td><td>washing all apparatus / use new syringes</td></tr><tr><td>overshoot of end-point / adding too much iodine / many drops</td><td>add smaller quantities of iodine</td></tr><tr><td>determination of end-point</td><td>allow sufficient time for colour to change / use colorimeter / colour standard</td></tr><tr><td>change in vitamin C with time</td><td>test same time after extraction for each</td></tr><tr><td>no repeats</td><td>repeat each concentration</td></tr><tr><td>AVP e.g. difficult reading scale coloured vegetable extracts</td><td>AVP e.g. use burette</td></tr></table></td><td>4</td><td>improvement must relate to given error

A subjective colour change</td></tr>
</table>

Question	Answer	Marks	Guidance
1(e)(i)	**L**: 25.00 ; **N**: 62.5 ; correct number of decimal places on both ;	**3**	
1(e)(ii)	axes labelled **and** units ; even scale to fill more than half of the printed grid ; plot three / four points correctly ; line of best fit / trend line ;	**4**	**ecf** candidate result for 1(e)(i)
1(e)(iii)	mark volume of iodine used on (*y*-axis of) graph / extended horizontally and extended line vertically from plotted point to *x*-axis ; correct reading from graph on answer line ;	**2**	
1(f)	range of temperatures ; values for temperatures stated ; time at each temperature ; use of water-bath / named method ; description of extracting juice ; detail of use of iodine drops / volume / addition of starch for end point ;; at least two repeats ; (controlled variables) heating time / same type of vegetable / all samples from same vegetable ; relevant reference to safety ;	**6**	minimum of three at least one above 50

Question	Answer	Marks	Guidance
2(a)	*any four from:* drawing with clear outline ; scaled to fit more than half the space ; shape 5 / 6 sides for both ; detail showing 3 / 4 layers with no shading and no cells ;	**4**	
2(b)(i)	length of **PQ** = 80 mm ; (x)64 ;;	**3**	± 1mm (80) ÷ 1.25
2(b)(ii)	plane of section / AW ; magnification ; number of villi different ;	**2**	
2(c)(i)	**A**: 3 **B**: 9 **C**: 11 ;	**1**	**A** 2 instead of 3 for **A** 3 correct answers = 1 mark
2(c)(ii)	30 °C ; has highest rate of reaction / AW ;	**2**	
2(c)(iii)	it is much higher / different than trial 1 and 3 / AW ;	**1**	
2(c)(iv)	(IV) temperature ; (DV) rate of reaction ;	**2**	