Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/53**

Paper 5 Practical Test **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

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Mark schemes will use these abbreviations

- **;** separates marking points
- / alternatives
- **I** **I**
- **R** reject
- **A** **A** (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

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Question	Answer	Marks	Guidance
1(a)	table with 2 columns ; column 1 heading 'vegetable extract' column 2 headed volume of iodine and column 2 units – cm^3 ; correct trend ;	**3**	
1(b)	to allow iodine to change colour ;	**1**	**A** as an indicator
1(c)	volume of vegetable extract ; volume / concentration of starch solution ; concentration of iodine ; temperature; mixing time;	**2**	**I** amount **R** volume iodine solution

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(d)</td><td>
<table>
<tr><td>source of error ;;</td><td>improvement ;;</td></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>
<tr><td>1(e)(i)</td><td>L: 25.00 ;

N: 62.5 ;

correct number of decimal places on both ;</td><td>3</td><td></td></tr>
<tr><td>1(e)(ii)</td><td>axes labelled and units;

even scale to fill more than half of printed grid ;

plot three / four points correctly ;

line of best fit / trend line ;</td><td>4</td><td>ecf candidate result for 1(e)(i)</td></tr>
</table>

Question	Answer	Marks	Guidance
1(e)(iii)	mark volume of iodine used on (y axis of) graph / extend horizontally and extend 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

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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**	

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