CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0610 BIOLOGY

0610/51 Paper 5 (Practical Test), maximum raw mark 40

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.

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Abbreviations used in the Mark Scheme

- **;** separates marking points
- / separates alternatives within a marking point
- **R** reject
- **ignore** mark as if this material was not present
- **A** accept (a less than ideal answer which should be marked correct)
- AW alternative wording (accept other ways of expressing the same idea)
- underline words underlined (or grammatical variants of them) must be present
- max indicates the maximum number of marks that can be awarded
- mark independently the second mark may be given even if the first mark is wrong
- ecf credit a correct statement that follows a previous wrong response
- ( ) the word / phrase in brackets is not required, but sets the context
- **ora** or reverse argument
- AVP any valid point

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	Mark scheme	Marks	Guidance for Examiners
1 (a)	drawing uses single clear unbroken lines with no shading ; drawing occupies at least half of the space provided ; minimum detail is outer layer and central area with segments indicated ; correctly labelled structure ;	[4]	
(b) (i)	buffer X yellow / orange buffer Y green / blue ;	[1]	1 mark for both colours correct
(ii)	buffer X pH5 buffer Y pH8 ;	[1]	1 mark for both pH values correct
(c)	four volumes completed ; units cm^3 ; B2 highest volume of juice ; A2 / C2 lowest volume of juice ;	[4]	
(d) (i)	B2 has a larger volume / A2 less or smaller volume / AW ; comparison of appearance of filtrate, i.e. B2 is clear and A2 is cloudy / transparent / AW ;	[2]	

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	Mark scheme	Marks	Guidance for Examiners
(ii)	D2 has a larger volume / C2 less or smaller volume / AW **;** comparison of appearance of filtrate, i.e. D2 is clear and C2 is cloudy / transparent / AW **;**	[2]	
(e)	B2 more juice than D2 / **ora ;** B2 juice clearer / lighter than D2 / AW / **ora ;** (enzyme) works better or faster in B2 **/** at pH 4 / in acidic conditions / **ora ;**	[3]	

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	Mark scheme	Marks	Guidance for Examiners
(f) (i)	comparison / control / keep the same volume or amount (at start) / AW **;**	[1]	
(ii)	*any two from:* type of fruit / volume or amount of fruit / total volume of mixture / time to filter fruit/ volume of buffer / AW **;;**	max [2]	
(iii)	*two improvements from:* wider range of pH values / (stand for) longer time / stir (continuously for longer) / filter for longer / maintain same temperature / repeat for reliability or to eliminate anomalies or to calculate mean results / change to apparatus e.g. clips to hold filter paper / AVP **;;**	max [2]	
		[Total: 22]	
2 (a) (i)	*two sites marked on Fig 2.1:* wrist / neck / groin / temple / finger / toe / elbow / thumb / arm pit / back of knee **;;**	max [2]	
(ii)	arteries near surface of skin / arteries can be pressed against bone or hard structure beneath / AW **;**	[1]	
(b) (i)	65 +/– 1 [mm] **;**	[1]	
(ii)	(65+/– 1 / 125 = 0.51 – 0.53 [mm]) **;**	[1]	ecf from **(b) (i)** 1 mark for correct answer with no working shown

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<table>
<tr><th></th><th>Mark scheme</th><th>Marks</th><th>Guidance for Examiners</th></tr>
<tr><td>(iii)</td><td>take multiple (more than one) readings for diameter across different positions ;
calculate average length and use this value in calculation ;</td><td>[2]</td><td></td></tr>
<tr><td>(iv)</td><td>
<table>
<tr><td>feature</td><td>vein</td><td>artery</td></tr>
<tr><td>shape</td><td>round</td><td>oval / AW</td></tr>
<tr><td>wall</td><td>thin</td><td>thick</td></tr>
<tr><td>(detail of) layers</td><td>smooth / single layer / AW</td><td>uneven / two or more layers / AW</td></tr>
<tr><td>lumen / inner space / internal diameter AW ;</td><td>large / circular</td><td>small / oval ;;;</td></tr>
</table>
</td><td>max [4]</td><td>1 mark for all 3 correct features
1 mark for each pair of appropriate differences</td></tr>
</table>

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	Mark scheme	Marks	Guidance for Examiners
(c) (i)	heart / pulse rate taken before and after exercise ; heart / pulse rate taken immediately after exercise ; exercise – same type / same length of time / AW ; students – same age / gender / clothing / AW ; repeat for each type of student / use groups of students ;	max [4]	
(ii)	table drawn with (ruled) lines and distinct columns / rows ; *correct headings:* type of student / AW ; pulse / heart rate before and after exercise with unit for pulse rate, i.e. beats per min / bpm / beats per unit time in the heading / s ; increase / difference in pulse rate / average pulse rate for all students ;	max [3]	
		[Total: 18]	

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