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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0610 BIOLOGY

0610/61 Paper 6 (Alternative to Practical), maximum raw mark 40

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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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Question	Mark scheme	Marks	Comments
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)	pH of buffer X = 4 ; pH of buffer Y = 8 ;	[2]	
(c)	comparison / control / keep the same volume or amount (at the start) / AW ;	[1]	
(d)	A – 10, B – 19, C – 11, D – 11 ; cm^3 in column heading ;	[2]	all 4 correct measurements = 1 mark
(e) (i)	A has (9 cm^3) less volume or amount than B / **ora** ; B is clear and A is cloudy / AW ;	[2]	
(ii)	C and D are both the same volume or amount / 11 cm^3 ; both (as) cloudy / AW / look the same ;	[2]	

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Question	Mark scheme	Marks	Comments
(f)	*effect of pH on volume:* pH 4 / acidic – more juice or pH 8 / alkaline – less juice **;** *effect of pH on appearance*: pH 4 / acidic – juice more clear or pH 8 / alkaline – juice more cloudy / AW **;** *effect of pH on enzyme:* enzyme works better / faster at pH 4 or acidic, works less well / slower at pH 8 or alkaline / AW **;**	[3]	

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Question	Mark scheme	Marks	Comments
(g) (i)	*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]	
(ii)	*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 / AVP **;;**	max [2]	
		[Total 20]	

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Question	Mark scheme	Marks	Comments
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 or skin **/** arteries can be pressed against bone or hard structure beneath **/** AW **;**	[1]	
(b)	apply pressure (using finger) to pulse site / AW **;** count pulse **/** number of beats per unit time / AW **;**	[2]	
(c) (i)	65 +/ – 1 [mm] **;**	[1]	
(ii)	(65 +/– 1 / 125 = 0.51 – 0.53 [mm])	[1]	ecf from **(c) (i)**
(iii)	take multiple (more than one) readings for diameter across different positions **;** calculate average length and use this value in calculation **;**	[2]	

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<table>
<tr><th>Question</th><th>Mark scheme</th><th>Marks</th><th>Comments</th></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>
<tr><td>(d) (i)</td><td>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 ;</td><td>max [4]</td><td></td></tr>
</table>

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Question	Mark scheme	Marks	Comments
(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 20]	

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