Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/62**

Paper 6 Alternative to Practical **May/June 2016**

MARK SCHEME

Maximum Mark: 40

Published

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Abbreviations used in the Mark Scheme

- ; separates marking points
- / separates alternatives within a marking point
- **R** reject
- **ignore** 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 error carried forward (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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<table>
<tr><th>Question</th><th>Mark scheme</th><th>Mark</th><th>Guidance</th></tr>
<tr><td>1 (a) (i)</td><td>Biuret ;</td><td>[1]</td><td></td></tr>
<tr><td>(ii)</td><td><table><tr><th>food supplement</th><th>colour at start</th><th>colour at end</th></tr><tr><td>P</td><td>blue</td><td>lilac</td></tr><tr><td>Q</td><td>blue</td><td>blue ;</td></tr><tr><td>R</td><td>blue</td><td>lilac ;</td></tr></table></td><td>[1]</td><td>rows P and R correct – 1 mark
row Q correct – 1 mark</td></tr>
<tr><td>(b)</td><td><table><tr><th>food supplement</th><th>number of drops of iodine solution added</th><th>vitamin C content</th></tr><tr><td>P</td><td>12</td><td>high</td></tr><tr><td>Q</td><td>1</td><td>none</td></tr><tr><td>R</td><td>5 ;</td><td>high ;</td></tr></table></td><td>[2]</td><td>mark each column</td></tr>
<tr><td>(c) (i)</td><td>Benedict’s (solution / reagent) ;</td><td>[1]</td><td></td></tr>
<tr><td>(ii)</td><td>idea of eye protection / safety when using heat qualified ;</td><td>[1]</td><td></td></tr>
</table>

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<table>
<tr><th>Question</th><th>Mark scheme</th><th>Mark</th><th>Guidance</th></tr>
<tr><td>(d)</td><td>
<table>
<tr><td>test-tube</td><td>time for brick red colour to appear / s</td></tr>
<tr><td>P2</td><td>75;</td></tr>
<tr><td>Q2</td><td>more than 180</td></tr>
<tr><td>R2</td><td>25;</td></tr>
</table>
</td><td>[2]</td><td>P2 = 1mark

<u>both</u> Q2 and R2 = 1mark</td></tr>
<tr><td>(e) (i)</td><td>volume of food supplement may not be the same ;</td><td>[1]</td><td></td></tr>
<tr><td>(ii)</td><td>syringe / burette / <u>graduated</u> pipette / measuring cylinder / balance / scales ;</td><td>[1]</td><td></td></tr>
<tr><td>(f)</td><td>
<table>
<tr><th>Source of error</th><th>Improvement</th></tr>
<tr><td>idea of difficult to be sure of end point / difficult to see when the colour changes ;</td><td>white or black background / compare with standard / control / use a colorimeter;</td></tr>
<tr><td>cannot add tubes to hot water / monitor colour change, in three tubes simultaneously ;</td><td>do tubes separately / other people to do other tubes ;</td></tr>
</table>
</td><td>[max 2]</td><td>one error and one matching improvement

I reference to repetition</td></tr>
</table>

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Question	Mark scheme	Mark	Guidance
(g) (i)	**A** – axes labels with units ; **S** – even <u>scale</u> and plots to fill at least ½ of grid both directions ; **P** – plots accurate to ± ½ square ; **B** – bars of equal width, not touching and with equal space between them ;	[4]	*y* axis – protein (content of food) g per 100 g *x* axis – names of foods labelled under each block , or identified with a key
(ii)	177 ;;	[2]	(20 ÷ 11.3) × 100
		[Total: 19]	

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Question	Mark scheme	Mark	Guidance
2 (a)	measure **distance** moved by air / water / meniscus ; for a set period of **time** ;	[2]	
(b)	fan / hairdryer ;	[1]	
(c)	*any 2 from:* leaf area / size ; type/species of plant / use same leaves; light (intensity) ; temperature ; diameter of capillary tubing ; no <u>additional</u> air movement, e.g. windows open ; humidity ;	[max 2]	

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Question	Mark scheme	Mark	Guidance
(d)	to prevent water leakage / AW ; to stop air getting in ;	 [max 1]	e.g. water getting out , water loss
(e)	correct reading from the graph (2.3 and 0.8) ; 2.3 / 0.8 = 3 ;	 [2]	
(f)	idea that it actually measures water uptake (not loss);	[1]	
(g)	drawing showing apparatus set up ; description of the treatments ; a*ny 4 of:* 1 use of a <u>control</u> with a correct example, 2 weigh (mass of) leaves at beginning with petroleum jelly applied; 3 weigh leaf at end ; 4 for a set period of time ; 5 describe a controlled variable / named environmental factor being kept constant ; 6 repeat experiment / described e.g. two leaves with same treatment ;	 2 + 4 [max 6]	*allow any of the points shown as annotations on the diagram* e.g. wind (speed) / temperature / light (intensity) / humidity

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Question	Mark scheme	Mark	Guidance
(h) (i)	O – all lines single, clear and unbroken with no shading ; S – drawing occupies at least half the space ; D1 – no cells and only the sector drawn ; D2 – detail ;	[4]	
(ii)	108 ± 1 mm ;	[1]	
(iii)	(x)14 ;	[1]	**A** 15 if (ii) 109 mm ecf for incorrect measurement in **(h) (ii)** **R** if units included with the magnification
		[Total: 21]	

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