Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/52**

Paper 5 Practical Test **May/June 2016**

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.

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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	Mark	Guidance
1 (a) (i)	larger number of drops for P & R than Q ; P and R both have vitamin C **and** Q has none ;	[2]	
(ii)	using drops of / a dropper for iodine solution ; each drop will be a different volume / amount ; **OR** drops dribble down side of test-tube ; not all reaches liquid in bottom ;	[2]	
(b) (i)	all cells completed ; time to colour change in R less than P ; **OR** two positive results of very similar time ; more than 180 recorded for Q ;	[3]	*max 2 if units in the table*
(ii)	Benedict's (solution / reagent) ;	[1]	

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<table>
<tr><th></th><th>Mark scheme</th><th>Mark</th><th>Guidance</th></tr>
<tr><td>(c)</td><td>
<table>
<tr><th>Source of error</th><th>Improvement</th></tr>
<tr><td>idea of difficult to be sure of colour change ;</td><td>white or black background / compare with standard / compare with a control ;</td></tr>
<tr><td>cannot add all tubes to hot water simultaneously/cannot monitor colour change in three tubes simultaneously ;</td><td>do tubes separately ;</td></tr>
</table>
</td><td>[max 2]</td><td>one error and one matching improvement

I reference to repetition</td></tr>
<tr><td>(d) (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>[2]</td><td>rows P and R correct – 1 mark

row Q correct – 1 mark</td></tr>
</table>

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Question	Mark scheme	Mark	Guidance
(e) (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**;	[max 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 additional air movement, e.g. windows open ; humidity ;	[max 2]	

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	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 = 2.9 ;	 [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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