CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0610 BIOLOGY

0610/61 Paper 6 (Alternative to Practical), 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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Question	Mark Scheme	Marks	Comments
1 (a)	Iodine solution or reagent / iodine in KI; brown / orange / yellow to blue / purple / black / AW	[2]	
(b)	safety – water bath / AW ; Benedict's (solution) ; heat / boil; blue / to green / yellow / orange / red;	max [3]	**A** brick red
(c)	enzyme works best / optimum temperature / AW;	[1]	

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<table>
<tr>
<td>(d) (i)</td>
<td>
<table>
<tr><td>sample</td><td>Time / min</td><td>observations</td><td>conclusions</td></tr>
<tr><td>1</td><td>0</td><td>blue ;</td><td>none</td></tr>
<tr><td>2</td><td>10</td><td>green</td><td>very little present</td></tr>
<tr><td>3</td><td>20</td><td>yellow</td><td>some present</td></tr>
<tr><td>4</td><td>30</td><td>orange;</td><td>more sugar present</td></tr>
<tr><td>5</td><td>40</td><td>red / brick red / reddish brown;</td><td>larger amount present</td></tr>
</table>
</td>
<td>max [3]</td>
<td>A for samples 2, 3 and 4 intermediate colours must all be present and in correct order</td>
</tr>
<tr>
<td>(ii)</td>
<td>no starch present (in the water / outside tubing) / starch had not passed out / AW (of tubing);</td>
<td>[1]</td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>(idea of break-down of) starch to (reducing / simple) sugar ;

(idea of) sugars move through walls of tubing / out (into water);

diffusion (of sugars);

starch too large / sugars small enough (to pass through) / AW;

(membrane is) partially / permeable / AW;</td>
<td>max [4]</td>
<td></td>
</tr>
</table>

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(f) (i)	to remove contents / starch / enzyme (from outside of tube) / AW;	[1]	
(ii)	to see colour change **easily** or **clearly** / AW;	[1]	
(g) (i)	small intestine / ileum / villus; selectively permeable walls / idea of where absorption / diffusion takes place / AW;	 [2]	
(ii)	amyl**ase** / carbohydr**ase** / malt**ase**;	[1]	
(h) (i)	**A** – axis labelled and scaled <u>evenly</u>; **S –** size – plots for 'time' must use half or more of the axis; **P –** all points plotted accurately; **L –** line through all points;	 [4]	 Accurate to ± 0.5 of small square.
(ii)	pH 7(.0);	[1]	

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(iii)	*below optimum / pH 7 or neutral* as pH increases the activity increases / time decreases / AW; *above optimum / pH 7 or neutral* as pH increases the activity decreases / time increases / AW; credit use of figures; decreased activity / increased time occurs more rapidly / has steeper curve above pH 7;	max [3]	To gain credit a comparison between two data points with a calculation should be shown.
(iv)	water to replace the enzyme / boiled enzyme;	[1]	
		[Total 28]	
2 (a)	(line and) label / (i) to xylem of gorse; (line and) label / (ii) to phloem of gorse;	[2]	
(b)	in / from / via xylem (of gorse);	[1]	
(c)	measurement of **MN** : **9** ± 1 [mm]; formula : length ÷ 50; calculation : **0.18**[mm];	[3]	**A** ecf for calculation

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(d) (i)	**O –** outline **–** clear unbroken line and no shading; **S –** size; **D –** detail; **L** – one correct label from: leg / limb / cephalothorax / mouth part;	[4]	Drawing larger than 70 mm at widest point between the legs. **A** evidence of jointed leg(s) **and** mouth parts
(ii)	Arachnid(a) ; 4 pairs or 8 legs / 2 parts to body;	[2]	
		[Total: 12]	

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