CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0610 BIOLOGY

0610/53 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.

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 October/November 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

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

Question	Mark scheme	Mark	Guidance
1 (a) (i)	Biuret ;	[1]	
(ii)	blue to purple (means protein is present) ;	[1]	**A** stays blue linked to protein absent
(iii)	wear a lab coat / use a test-tube rack / wear gloves ;	[1]	**ignore** goggles
(b)	correct conversion of minutes to seconds ;	[1]	check from candidates results
(c)	table with suitable number of columns and rows ; column or row headings solution (added) / test-tube **and** time / s ; observations recorded for X1, X2 and no X in seconds ; expected trend (X1 faster than X2) ; two results faster than that recorded with no X ;	[5]	**R** if units in body of table
(d)	chemical X speeds up (the clotting process) ; X1 faster than X2 / sequence described / X1 fastest / XO slowest ; comparative use of processed data ;	[3]	**A** ecf for consistent description of candidate results XO > X1> X2 **ora** data used must match candidate's results table. **ignore** raw data
(e)	volume of substrate (milk) would affect the rate of reaction AW ;	[1]	**A**: controlled variable **R** a control

(f)	*any 2 from:* water cools during the experiment ; cooler temperatures slow enzyme activity down ; if temperature is different for each test the results are less valid / reliable / AW ; **ora**	[2]	**ignore** references to optimum temperature **A** idea of changing two variables
(g) (i)	(pH) 10 ;	[1]	
(ii)	pepsin ;	[1]	**A** gastric protease / protease in stomach
		[Total: 17]	
2 (a)	drawing of outer edge, midrib and main veins uses single clear unbroken lines with no shading anywhere ; size larger than half available space ; detail ; *any 2 from:* correct shape of leaf appearance of leaf edge (smooth or serrated) venation pattern petiole	[3]	**R** if does not resemble Centre specimen
(b) (i)	$0.7 \div 4.2 \times 100$ 16.7 ;;	[2]	two marks for correct answer with no working
(ii)	leaves have different starting masses ; means that results (for different leaves) can be compared / AW **ora** ;	[2]	**ignore** to make the results more fair / more reliable / more valid / accurate / precise

(iii)	axes labelled and with an even scale on y-axis, *x-axis* leaf and letter and *y-axis* percentage decrease in mass ; size bars to fill at least half of the grid in both directions ; plots all accurate ±½ *small square ;* bars **ruled,** of same width**,** not touching, and spaces between bars, same width as each other ;	[4]	**A** ecf from 2(b)(i)
(iv)	lower surface – because less water loss when it is covered **ora** / **Q** loses more than **R** or when lower surface is exposed / **R** loses less than **Q** or when the lower surface is covered /AW ;	[1]	**R** lower surface unqualified
(c)	*independent variable:* temperature ; *control* variable*: **two from***: leaf type / species / similar size / similar surface area humidity AW / wind speed AW / light (intensity) / time / carbon dioxide concentration ;; *dependent variable:* mass / change or decrease in mass ;	[4]	**R** temperature and mass **A** distance moved by bubble / coloured water (in the context of a photosynthometer) **ignore** rate of transpiration / water loss **R** dry mass
		[Total: 16]	

<table>
<tr>
<td>3 (a)</td>
<td>any 2 features with matching comparisons:
<table>
<tr><th>feature</th><th>human red blood cell</th><th>frog red blood cell</th></tr>
<tr><td>shape</td><td>round / disc / AW</td><td>oval / AW</td></tr>
<tr><td>nucleus / black spot / AW</td><td>absent / not visible</td><td>present / visible</td></tr>
<tr><td>size</td><td>small</td><td>large</td></tr>
<tr><td>number of cells

concentration / density of cells</td><td>more

higher</td><td>fewer

lower</td></tr>
</table>
;;;</td>
<td>[3]</td>
<td>award one mark for the features (vertical column)
award other two marks for each row</td>
</tr>
<tr>
<td>(b)</td>
<td>measurement mark : = 80 ;

formula mark: 80 ÷ 2 ;
calculation mark: × 40 ;</td>
<td>[3]</td>
<td>A ± 1mm

ecf if original measurement incorrect
two marks for correct answer with no working</td>
</tr>
<tr>
<td>(c)</td>
<td>mitosis / make proteins / control cell activity /
keep cell alive longer / AVP ;</td>
<td>[1]</td>
<td>R meiosis / binary fission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Total: 7]</td>
<td></td>
</tr>
</table>