UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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Mark schemes will use these abbreviations:

- **;** separates marking points
- / alternatives
- R reject
- A accept (for answers correctly cued by the question, or guidance for examiners)
- AW alternative wording (where responses vary more than usual)
- underline actual word given must be used by candidate (grammatical variants excepted)
- D, L, T, Q quality of drawing / labelling / table / writing as indicated by mark scheme
- max indicates the maximum number of marks that can be given

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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>osmosis ; [1]

accept any two boxes from the table. [2]

<table>
<tr><td>point</td><td>water</td><td>salt solution</td><td>air</td></tr>
<tr><td>direction of water movement</td><td>into</td><td>out of</td><td>out of</td></tr>
<tr><td>reason for water movement</td><td>cell contents solution is more concentrated</td><td>cell contents solution is less concentrated</td><td>cell contents have more water than air</td></tr>
<tr><td>result of water movement</td><td>cells swell / turgid</td><td>cells shrink / flaccid / plasmolysis</td><td>cells shrink / flaccid</td></tr>
<tr><td>additional explanation</td><td>cuticle / leaf curves because inside is different / AW</td><td>cell sap lost</td><td>evaporation / transpiration</td></tr>
</table>
; ;</td><td>Max [3]</td><td></td></tr>
<tr><td>(ii)</td><td>more leaf pieces / samples / repeats ;
leave for longer time ;
reference to controls – eg same type / age / species / thickness ;
determination of mass / weight ;</td><td>Max [2]</td><td></td></tr>
</table>

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(b) (i)	mesophyll cell – label **A ;** xylem vessel – label **B ;** an epidermal cell – label **C ;**	[3]	End of line must be in contact with cell.
(ii)	ring round stoma **;**	[1]	
(c)	*Measurement of diam from Fig. 1.3 [external]:* [7.1 – 6.0 **cm** or 71 – 60 **mm**] Units need to be given. *Formula:* show ÷ of measurement by 0. 5 / 5 **;** *Mag* 14.2 – 12 **;**	[3]	
(d) (i)	preparation of sample e.g. cut / grind make into solution **;** add Benedict's [solution] **;** heat **;** safety aspect, e.g. goggles / tongs / lab. coat ;	Max [3]	
(ii)	(if absent) stays / turns blue **;** (if low concentration) changes to green / yellow **;** (if high concentration) changes to orange / red **;**	[3]	

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(e)	**stage 1** – break cell walls / denature enzymes / or suitable description **;** **stage 2** – remove chlorophyll / decolourise leaf / or suitable description **;** **stage 3** – to soften it / or suitable description **;** **stage 4** – to show colour change (white tile)/ (iodine solution) to test for starch / or suitable description **;**	[4]	
		[Total: 22]	
2 (a) (i)	**C** **;**	[1]	
(ii)	any **two** from small(er)**;** smooth surface **;** **no** segments **no** chaetae **;**	Max [2]	
(iii)	annelid(s) / annelida / segmented worm **;**	[1]	**B** annelid but **A** is a myriapod [1] ignore ref to myriapod.
(b)	**Outline:** use of single clear lines for drawing **;** **Size:** larger than photograph **;** **Detail:** segments / saddle **;** **Label:** 1 label mark only **;** **one** from: segments / saddle / chaetae or bristles / clitellum **;**	[4]	

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(c) (i)

One in each range to **;;**

worm	range / cm
D	8.2–8.6
C	10.8–11.3
A	11.4–11.9
B	12.2–12.6
E	13.6–13.9

[2]

(worms identified clockwise A to E)

(ii)

range of length / cm	tally	frequency
5.0–6.9		3
7.0–8.9	+1	9
9.0–10.9	+1 or 0 [if worm C is , 11.0]	7 or 6
11.0–12.9	+2 or +3 [if worm C is › 11.0]	10 or 11
13.0–14.9	+1	8
15.0–16.9		3

tally **method** correct **;**

frequencies correct **; ;**

[3]

ecf from **(c)(i)**

Worm C may fall into either of 2 categories.

Tally should show the 5 bars correctly i.e. '5 bar gate'.

(iii)

A – axes label and scale **;**

S – size to fill at least ½ of grid **;**

P – plot **;**

C – columns touching and equal in width **;**

[4]

+/– 1 mm

(iv)

any suitable suggestion, e.g. sexes are different lengths / different ages **;**

Max [1]

[Total: 18]

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