CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0610 BIOLOGY

0610/52 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.

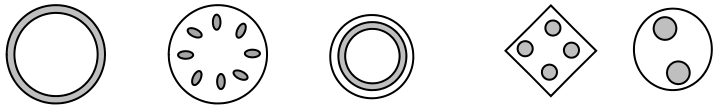
Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

CAMBRIDGE
International Examinations

Mark schemes will use these abbreviations:

- ; separates marking points
- / alternatives
- Ⓡ reject
- Ⓐ accept (for answers correctly cued by the question, or guidance for examiners)
- ecf error carried forward
- 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

Question	Mark scheme	Mark	Guidance
1 (a) (i)	To prevent / stop the evaporation (of water from the surface) / AW;	[1]	**A** escape of water **I** any ref. to gases / gas exchange
(ii)	*Height of water in:* Test-tube without leaves (mm) Test-tube with leaves (mm);	[1]	Check Supervisor's report. If not recorded in the supervisor report check the distances are consistent with question **R** any number less than 30 mm **R** measurements in cm unless units are changed
(iii)	*Description*: (test tube) with leaves is less / without leaves is more ; *Explanation* : transpiration / evaporation (of water from the leaves);	[2]	*Read the whole answer and give marks where they appear* **A** with leaves has lost more water/ without leaves has lost less water description should match results **(ii)** explanation should relate to their description A ecf from **(ii)**
(b) (i)	estimation of distance for both shoots; shoot with leaves has greater distance;	[3]	*Check Supervisor's report, but allow any distance that is consistent with that expected.* **A** values < 5 mm **R** values > 200 mm unless in supervisors report **A** 1 mark for two values in cm, units not changed

(ii)	Cross / transverse section drawn; label to coloured part towards outside edge; 	[2]	*Check supervisor's report. No supervisor report, check centre for consistency.* **R** 3-D drawings or longitudinal sections **A** as a single band or circle of vascular bundles. **R** labels on diagrams from text books
(iii)	(yes) as (more) water taken up in shoot with leaves / less water taken up by leaves; (so) the water in the test tube is lower / water in the test-tube is higher; AW;	[2]	*Award both marks if the explanation implies both ideas.1st mark applies to the stem, 2nd mark to the test-tube* If NO –**R** 1st mp, but ecf for explanation if correctly linked. If candidates results in **(a)(ii)** and **(b)(ii)** support NO, then allow both marks

(c) (i)	**A**(xes) – labelled with units and suitable scale ; **S**(ize) – occupies at least half the grid ; **P**(lot) – points plotted accurately ±½ square; **L**(ine) – connecting all plot points ±½ square;	[4]	x axis: time (of day) , y axis: mass lost / g **A** x axis start at 10. If start at 0 on x axis **mus**t show broken line before 10. **A** time/ h for label of x axis **A** scale in hours (10, 16, 22, 28, 34, 40,4 6, 52, 58) **or** (0, 6, 12, 1, 8, 24, 30, 42, 48,) **R** Axes incorrect orientation. ecf for S, P and L **A** 1 error in plots. Plot points must not be larger than ½ square Plots should be in the correct sequence **A** line drawn point to point / smooth curve. **R** lines that are curved up or down unevenly between the points and thick lines / extrapolation more than 1 small square /bar charts / histograms / line of best fit
(ii)	*description* – mass / weight loss occurs during the day / light **or** decreases / stops / no mass loss at night / dark; *explanation* – transpiration / water loss during the day / light / ref to time, ora; correct ref. to stomata opening / closing;	[3]	*Read through all the answer and award marks wherever they appear.1 mark for description, 1mark explanation, 1 mark for reason*. **A** correct ref. to time from graph **A** evaporation. **I** ref. to photosynthesis / respiration / growth / absorption or use of water.
(d)	G: epidermal cell; H: guard cell;	[2]	**A** epidermis / cuticle **A** phonetic spelling

(e) (i)	12;	[1]	**A** 11
(ii)	0.4 (mm) ;	[1]	Ignore working.
(iii)	0.4 x 0.4; 0.16 (mm^2) ;	 [2]	**A** ecf from **(ii)** **A** both marks for correct answer, no working
(iv)	$\frac{12}{0.16}$ or $\frac{1}{0.16}$ x 12; 75;	 [2]	Any answer **must be a whole number** **A** both marks for a correct answer without any working **A** ecf from **(iii)** – i.e. answer in **(i)** divided by answer in **(iii)** **A**11 stomata from **(i)** = 69 **R** 68.75
(v)	675000;	 [1]	allow ecf from **(iv)** – check answers from the candidate's figures 621000 for 11 stomata (618750 if use 68.75)
		[Total: 27]	

Question	Mark scheme	Mark	Guidance
2 (a)	**O**utline – clear unbroken lines and no shading ; **S**ize – occupies at least half the space up to [4] mark allocation ; **D**etail – nail, hair, cuticle, wrinkle, joint ; **L**abel – any one of detail features ;	[4]	*If drawing is of a thumb, palm view or uncertain which view, allow S, D and L to max. 3* **I** extra part fingers or hand minimum size 63 mm **A** scars, blood vessels, freckles, blemishes, mole at least 2 of these shown in diagram. **A** fingerprint for palm view **I** incorrect labels **A** nail bed as AW cuticle
(b) (i)	*Similarity* – *(*both) 5 digits or fingers / nail(s) or claw(s) ;	[1]	**A** 4 fingers and a thumb

<table>
<tr>
<td>(ii)</td>
<td>
<table>
<tr><td>Feature</td><td>mole hand</td><td>your hand</td></tr>
<tr><td>Shape
and
Size</td><td>fat / thick
wide / broad
round / circular /

small / 18–20 mm

large in proportion to body

short / small fingers</td><td>thin
long / narrow / thin
oval / rectangular ;

large /140–200 mm ;

small in proportion to body;

long / large fingers;</td></tr>
</table>
</td>
<td>max [2]</td>
<td>Mark whole table together, allow both marks for any two comparisons. Ignore incorrect answers. If one box completed with comparative term e.g. broader accept
A any two differences

A measurements in cm of whole hand.

I fat fingers
A any idea that proportionally the mole fingers are short in relation to palm of hand ORA</td>
</tr>
<tr><td>(c) (i)</td><td>mammals / mammalia;</td><td>[1]</td><td></td></tr>
<tr><td>(ii)</td><td>hairs / fur / whiskers / AW;</td><td>[1]</td><td>I incorrect features. Must be a visible feature</td></tr>
<tr><td></td><td></td><td>[Total: 9]</td><td></td></tr>
</table>

Question	Mark scheme	Mark	Guidance
3 (a) (i)	<table><tr><td></td><td>*total number of flies*</td><td>*mean number of flies*</td></tr><tr><td>*purple*</td><td>8</td><td>4</td></tr><tr><td>*green*</td><td>15;</td><td>5;</td></tr></table>	[2]	*Mark per column* 1 mark totals 1 mark means
(ii)	2 of: (repeat) more lilies (of each type); same / equal number (of both types) / one more purple; collect lilies from a number of different habitats; method of preventing flies escaping;	max [2]	Use 10 purple and 10 green lilies = 2 marks **A** amount **I** control variables e.g. size / mass / growing conditions e.g. open inside a (plastic) bag
		[Total: 4]	