CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0610 BIOLOGY

0610/51 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.

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Questions	Mark Scheme	Mark	Guidance
1 (a)	Benedict's reagent/solution/test; heat/boil; *Correct colour change* – blue to green/yellow/orange/red; *Safety feature* – goggles/water bath/tongs;	[4]	**A** Fehling's/copper sulphate and sodium hydroxide. **I** copper sulphate alone **I** warm/burn **A** turquoise for blue **R** if omit blue **A** hair tied back/gloves/lab coat Mark each point independently. If wrong reagent 3 max
(b)	*Observation:* blue to purple/mauve/lilac/violet; *Conclusion:* Protein present;	[2]	Check Supervisor's Report. **R** blue to purple black Need starting colour and end colour for the mark
(c)	*Observation test-tube **1**:* clear/AW; *Observation test-tube **2**:* bubbles/cloudy/lines in mixture/AW; *Conclusion*: acid damages/reacts with/denatures the albumen;	[3]	Check Supervisor's Report. **R** restating the results Ignore digest/affects/changes albumin.
(d)	control/comparison/to maintain volume in test tube;	[1]	**I** makes solution neutral/to see the effect of the acid/fair test.
(e)	cloudy/white solid/milky/white (emulsion);	[1]	**A** turbid
		[Total: 11]	

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<table>
<tr>
<td>2 (a) (i)</td>
<td>five digits/toes fingers;</td>
<td>[1]</td>
<td>A jointed legs/joints/legs have joins/legs are joined.
I skin
A folded skin
A similar proportions/shape</td>
</tr>
<tr>
<td>(ii)</td>
<td>e.g.
<table>
<tr><td>feature</td><td>animal A</td><td>animal B</td></tr>
<tr><td>Skin
or
scales</td><td>scales

present</td><td>smooth

absent</td></tr>
<tr><td>Nails/claws/talons</td><td>Yes or present</td><td>No or absent</td></tr>
<tr><td>Feet/digits
or
Digits
or
webbing</td><td>Claws/talons/nails
No webbing

absent</td><td>No
claws/talons/nails
webbed

present</td></tr>
</table>
Both features = 1 mark 2 comparisons = 2</td>
<td>[3]</td>
<td>completion of Table 2.1 for two differences based on:
naming one feature from any 2 of the 3 rows;

correct comparison for each;

A description of webbing/claws if x = correct</td>
</tr>
</table>

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(b)	**O** outline, clear, unbroken lines; **S** larger than original Fig. 2.1 and digits in proportion to each and to the rest of limb; **D1** presence of 5 digits; **D2** minimum 4 claws; **L** digit/toes/fingers/scales/join(t)/skin/claws/nails/talons	[5]	Please indicate each marking point using a tick or a cross, in order in a vertical line next to the drawing. **I** shading **R** majority of sketched/artistic lines Drawing covers more than half vertical space >60 mm but should not extend beyond the space given. Not into the printing of the following question. Label line must make contact with feature. Please indicate correct label with tick next to it.
(c)	**measurement:** length of line PQ on drawing (±1 mm); **formula:** measurement **÷ 36**; **calculation:** correct magnification;	[3]	Check drawing size given using measuring tool If not drawn, no mark. **A** ecf for 1 or 2 marks for formula and calculation. if PQ measurement is close to actual. If correct answer then award formula and calculation mark irrespective of working. If units in answer mark is lost. Incorrect rounding up or down loses mark
(d) (i)	(260 × 2 =) <u>520</u>;	[1]	No mark for correct working with incorrect answer.

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(ii)	Up to three from: overall population increases then decreases; general increase from 1992 to 1995; peak/maximum at 1995/680 people; general decrease from 1995–2001; any correct reference to figures with years;	max [3]	**A** rise in population from 1992 to early 1993/rise in population from early 1993 to 1994/rise in population from 1994 to 1995. **A** drop from 1995 to 1997/drop between 1997 to half way through 1998/drop from half way through 1998 to 1999/drop from 1999 to 2001; **A** appropriate use of figures with a minimum of two population numbers for any two year references or a calculated difference. **A** if numbers are doubled as males and females may be considered
		[Total: 16]	

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3 (a) (i)	easier to measure/**AW**;	[1]	**I** accurate/stop growing/disturbance of other onions
(ii)	(more) reliable/identify anomalies	[1]	**I** to get an average/mean/fair test/accurate/more chance of correct results
(iii)	*completion of Table 3.1:* total height for tips removed = 720 **and** total height for tips left on = 730; mean height for tips removed = 72 **and** mean height for tips left on = 73;	[2]	Both total heights must be correct for 1 mark. Both mean heights must be correct for 1 mark. **A ecf**
(iv)	mean increase in height for tips removed = 12 **and** mean increase in height for tips left on = 11;	[1]	Both mean increases must be correct for 1 mark. **A ecf**
(b) (i)	**A –** labelled axes and correct linear scale; **S –** size; **P –** plot; **C –** equal width of columns with spaces between;	[4]	**A** Bars may be horizontal or vertical **A** keys to fill more than half of grid along both axes; [from LHS to RHS and vertically] **A** ± 1 mm/½ small square to apply to the entire length of top of bar Any 1 incorrect – 0 **R** columns of different widths **R** if line graph or histogram drawn max 3 for **A S** and **P** No numbers on axis **S** and **C only**

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<table>
<tr>
<td>(ii)</td>
<td>onion – small amount of growth/little increase 1 mm/little effect/ORA

beetroot – growth stopped/a lot less growth 6 mm/ORA</td>
<td>[2]</td>
<td>Growth must be minimal/AW

Allow – if tips left on grows more than tips removed.

<table>
<tr><th colspan="2">onion</th><th colspan="2">beetroot</th></tr>
<tr><th>Tips off</th><th>Tips on</th><th>Tips off</th><th>Tips on</th></tr>
<tr><td>10</td><td>9</td><td>1</td><td>7</td></tr>
</table>
</td>
</tr>
<tr>
<td>(iii)</td>
<td>onion – below tip/further down shoot/anywhere (in shoot) other than tip/bottom to middle/AW;

beetroot – at the tip;</td>
<td>[2]</td>
<td>A top = tip shoot = stem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Total: 13]</td>
<td></td>
</tr>
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