CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 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 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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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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Question	Mark Scheme	Mark	Guidance
1 (a)	Benedict's reagent / solution / test; heat / boil; *safety feature:* goggles / water bath / tongs; *correct colour change:* blue to green / yellow / orange / red; 	 [4]	**A** Bendicts / Benedicks **A** Fehlings / copper sulphate and sodium hydroxide **I** copper sulphate alone **I** warm / burn **A** hair tied back / gloves / lab coat **A** turquoise for blue **R** if omit blue Mark each point independently
(b)	blue to purple / mauve / lilac / violet;;	[1]	**R** blue to purple black Need starting colour and end colour for the mark
(c) (i)	*conclusion* – acid damages / reacts with / denatures the albumen ;	[1]	**R** restating the results
(ii)	control / comparison / to maintain volume in test tube;	[1]	**I** makes solution neutral / to see the effect of the acid

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(d)	cloudy / white solid / milky / white (emulsion) ;	[1]	**A** turbid / turpid
(e)	*variable to change:* concentration / strength of acid / pH of acid; *variable to measure: rate /* speed of change (to cloudy) / amount of white solid / degree of cloudiness ; *variable to control:* volume or amount of albumen / temperature;	[3]	**I** pH unqualified / volume or amount of acid / type of acid **A** suitable changes to albumen **I** colour change **A** same type of albumen / same egg / type of egg **I** volume of acid
		[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 / muscular legs / large legs / same sized legs
A folded skin
A similar proportions / shape</td>
</tr>
<tr>
<td>(ii)</td>
<td>
<table>
<tr><th>feature</th><th>animal A</th><th>animal B</th></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 correct</td>
</tr>
<tr>
<td>(b)</td>
<td>O: outline clear, unbroken lines;

S: larger than original Fig. 2.1 and digits in proportion to rest of limb;

D1: presence of 5 digits ;
D2: minimum 4 claws;
L: digit / toes / fingers / scales / join(t) / skin / claws / nails / talons;</td>
<td>[5]</td>
<td>Please indicate each marking point using a tick or a cross, in order in a vertical line next to the drawing.
I shading / representation of scales
R majority of sketched / artistic lines but
I minor / isolated overlaps or breaks.

Drawing to cover more than half vertical space (>60mm) but should not extend into the printing of the following question

Label line must make contact with feature.
Please indicate correct label with tick next to it.
If animal B drawn allow O, S and L [Max 3]</td>
</tr>
</table>

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(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 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 **A** answer if many correct decimal points given
(d) (i)	(260 × 2 =) 520;	[1]	No mark for correct working with incorrect answer.
(ii)	Up to three from: general increase from 1992 to 1995; peak / maximum at 1995 / 680 animals; general decrease from 1995 to 2001; idea that increases or decreases are not smooth; 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 / **AW**;	[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

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(b) (i)	**A**: labelled axes and correct linear scale; **S**: size; **P**: plot; **C**: equal width columns with spaces between;	[4]	**A** bars may be horizontal or vertical **A** keys Height axis must be 'mean increase in height / mm' Plots to fill more than half of grid along both axes **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
(ii)	*onion:* small amount of growth / little increase (1mm) / little effect / slow growth / ORA *beetroot:* growth / growth rate almost stopped / a lot less growth (6mm) / ORA	[2]	Growth must be minimal / **AW** **Description of growth for onion and beetroot must be a qualitative description**
(iii)	*onion* : below tip / further down shoot / anywhere (in shoot) other than tip / bottom to middle / **AW**; *beetroot* : at the tip;	[2]	**A** top = tip shoot = stem / plumule
		[Total: 13]	

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