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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0610 BIOLOGY

0610/62 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.

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Abbreviations used in the Mark Scheme

- ; separates marking points
- / separates alternatives within a marking point
- R reject
- I ignore (mark as if this material was not present)
- A accept (a less than ideal answer which should be marked correct)
- AW alternative wording
- <u>underline</u> words underlined 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
- A, S, P, L Axes, Size, Plots and Line for graphs
- O, S, D, L Outline, Size, Detail and Label for drawings
- (n)ecf (no) error carried forward
- ( ) the word / phrase in brackets is not required, but sets the context
- ora or reverse argument.
- AVP any valid point

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<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Additional Guidance</th></tr>
<tr><td>1 (a)</td><td>
<table>
<tr><td></td><td>red</td><td>green</td></tr>
<tr><td>total time</td><td>115</td><td>197</td></tr>
<tr><td>mean time</td><td>38</td><td>66</td></tr>
</table>
one mark per row;;
</td><td>2</td><td>A ecf for means</td></tr>
<tr><td>(b)</td><td>supports statement / ripe fruits do produce more catalase;

(paper from) red / ripe fruit are faster (to rise) / takes less time (to rise); ora

faster speed / less time linked to more catalase (in red / ripe fruit); ora

(more) catalase causes more oxygen / gas / bubbles to be released; ora

correct use of manipulated figures;</td><td>max 3</td><td>A (mean for) red (fruit) is 28 s less / green filter paper 1 takes 25 s longer / ripe fruits take 82 s less than unripe fruits</td></tr>
</table>

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(c)	mass of fruit / extract; volume of water (suspending fruit); size / SA filter paper / AW; volume / concentration of hydrogen peroxide; tube size / depth (of hydrogen peroxide); temperature; any other correct controlled condition;	**max 2**	**A** size / amount / weight of extracts **A** amount of hydrogen peroxide e.g. time to soak filter paper in extract **I** pH / light
(d)	method to prepare extracts of pepper; Benedict's (reagent / solution); heat / boil; colour change from <u>blue</u> / turquoise to green / yellow / orange / red; safety factor – water-bath / AW;	**5**	**A** cut / chop / crush / grind / AW **A** add to water **/** form a solution **A** Fehling's / copper sulfate and sodium hydroxide **A** Clinistix **A** 70 °C or more **A** goggles / tongs / lab coat / tie hair back / tuck tie in
(e) (i)	A – axes labelled **and** scaled evenly; S – size; P – all bars plotted accurately ±½ small square; B – bars not touching, of equal width and equally spaced;	**4**	*x*-axis: name of fruit *y*-axis: sugar content / g per 100 g **I** orientation plots to fill half, or more than half, of grid along both axes **A** points for line graphs **I** distance between origin and first bar other graphs (e.g. histogram / line graph) = max 3 (**A**, **S** and **P** only)

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(ii)	15 ÷ 2.7; 6 (times);	**2**	**A.** answer to the nearest whole number correct answer = 2 if no working shown. **I**. units e.g. g **I.** 15 – 2.7 = 12.3 g
		[Total: 18]	

2 (a)	**O** – outline is single clear line (and no shading anywhere); **S** – size; **D** – detail of layers and proportion; **L** – label the site of attachment for leaves;	**4**	**I** minor overlaps or breaks drawing larger than 90 mm (length from top of shoot to tip) **R** If drawing touches / extends into printed words minimum detail is two layers, central core and outer layer label line must make contact with structure
(b)	iodine in KI solution / iodine solution or reagent (to cut surface); (If starch present) brown / orange / yellow to blue / black / AW;	**2**	**A** drops of iodine

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(c)	measurement of **ST**: 13 ±1 (mm); actual width: 1.3 ±0.1 (mm); formula: magnification = **ST** ÷ width / 13 ÷ 1.3; magnification calculation: ×10;	**4**	**A** if answer is recorded in cm with matching unit whole number answer required
(d) (i)	light has no or little effect on germination (of carrot seeds) / AW;	**1**	**A** light is not a limiting factor for germination **A** light is not needed for germination
(ii)	repeat; use more seeds; use seeds from same source or species; both sets of seeds received water or kept moist after soaking / AW; cover uncovered dish with transparent paper / AW; count the number of seeds that germinated; both sets kept at same temperature; same humidity; both in same air or amount of oxygen; AVP;	**max 1**	**I**
		[Total: 12]	

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<table>
<tr>
<td>3 (a)</td>
<td>
<table>
<tr><th>feature</th><th>male</th><th>female</th></tr>
<tr><td rowspan="3">(end of) abdomen / body /AW</td><td>rounded / blunt / AW</td><td>pointed / AW;</td></tr>
<tr><td>black / dark / AW</td><td>white / light / AW;</td></tr>
<tr><td>short / AW</td><td>long / AW;</td></tr>
<tr><td rowspan="3">bands / stripes (on abdomen / body) /AW</td><td>wide / AW</td><td>thin / AW;</td></tr>
<tr><td>three or four / less</td><td>six or five / more;</td></tr>
<tr><td>dark / black / AW</td><td>white / light /grey / AW;</td></tr>
</table>
<u>two</u> correct features in first column;
correct descriptions in each row, one mark each for any two descriptions;;
</td>
<td>max 3</td>
<td>A. comparative answers / presence or absence of features
A. round vs oval</td>
</tr>
<tr>
<td>(b)</td>
<td><u>one pair</u> of antennae;

wings;</td>
<td>2</td>
<td>A compound eyes</td>
</tr>
</table>

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(c)	independent variable: different colours (of flowers / paper / AW); controlled variables: (max 2) similar flowers for shape / size / AW; same type of attraction mechanism / scent / honey guides / nectar / same plant species; same area (in open) / same number of bees and flies (if in enclosed chamber) / AW; same time / period; method: count / observe / video / film / record the number of visits / AW; repeats / AW; handling of data: calculate average / tally chart / graph / table / AW; AVP; e.g. a safety point with reference to bees	**max 5**	**A** only two different colours / named colours **A** same paper flowers /shapes
		[Total: 10]	

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