CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

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

Mark schemes will use these abbreviations

- ; separates marking points
- / alternatives
- **R** reject
- **A** accept (for answers correctly cued by the question)
- **I** ignore as irrelevant
- **ecf** error carried forward
- **AW** alternative wording (where responses vary more than usual)
- **AVP** alternative valid point
- Underline actual word given must be used by candidate (grammatical variants excepted)
- ( ) the word / phrase in brackets is not required but sets the context
- **D, L, T, Q** quality of: drawing / labelling / table / detail as indicated
- max indicates the maximum number of marks.

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<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Guidance for Examiners</th></tr>
<tr><td>1 (a)</td><td>
<table>
<tr><th></th><th>lentil</th><th>chickpea</th><th>soya bean</th></tr>
<tr><td>shape of seed</td><td>round / circular / disc-like / biconvex / flat and round AW</td><td>round / circular / spherical / irregular / pointed / tear shaped AW</td><td>elongate / oval AW</td></tr>
<tr><td>appearance of seed coat</td><td>varied / speckled / patterned</td><td>uneven / ridged / rough transparent</td><td>even / smooth / uniform / transparent</td></tr>
</table>
</td><td>[3]</td><td>Any two boxes correctly completed = 1 mark

Ignore colour / size</td></tr>
<tr><td>(b) (i)</td><td>Protein test

add biuret solution /
biuret A and B /
biuret 1 and 2 /
copper sulphate and potassium / sodium hydroxide;

<u>blue</u> to purple / mauve / lilac AW;</td><td>[2]</td><td>A other correct tests e.g.
Xanthoproteic – yellow to orange
Millons – flesh to reddish brown
use of albustix – Yellow to green

A correct chemical symbols
Ignore Copper sulphate or potassium hydroxide / sodium alone.

R if heated / boil</td></tr>
<tr><td>(ii)</td><td>Fat test

add alcohol / ethanol;
pour / add to water;
white / cloudy / emulsion formed / AW;</td><td>[3]</td><td>Max [2] if describe grease spot test.</td></tr>
</table>

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(c)	*carry out starch test* *observation* – (changes from brown / orange) to blue / purple / black; *conclusion* – starch is present;	[2]	If soya bean is not black / darker – max [1] as not left long enough.
(d) (i)	*Plotting bar chart* **A –** label axes and even scale; **S –** plots to fill half or more on both axes; **P –** plot; **C –** columns do not touch; **K –** key or label (protein / fat);	[5]	**A** vertical or horizontal bars. Line graph – max 3 – A, S and K x-axis: names of beans y-axis: %. Do not award if columns exceed printed grid. If no scale or no seeds labelled, P = 0. Accurate to +/– 0.5 of grid square. **P** no more than 2 errors **A** protein and fat columns touching if space between different seed columns.
(ii)	soya (bean);	[1]	

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(e)	*measure* :- starting and final temperature / change in temperature; *control:* mass of sample / volume of water; one safety measure; e.g. fume cupboard / tongs AW / lab coat / goggles / correct ref. to hair / ties	[3]	**A** weight / amount, of sample / amount of water **Ignore** gloves
		[Total: 27]	
2 (a)	drawing of shape; position and label green outer layer;	[2]	Max [1] if shape is shown without a green layer drawn and labelled.
(b)	drawing of shape in E – more curved; draw and label green outer layer; drawing of shape in W – more straight; draw and label green outer layer	[4]	Compare with the shapes in **(a)** Table 2.1. If W shows a straighter shape allow.
(c)	three from solution E strong(er) / (more) concentrated / less water / lower water potential / AW; water moved by osmosis; no water movement in, outer / dark green tissue OR water moves out of, inner / light green tissue; inner / pale green, cells flaccid / plasmolysed;	[max 3]	**A** tissue

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(d)	*Any two from:-* *Source of error:* e.g. slice cut too thick / cut unevenly / pieces not submerged with liquid AW / pieces placed in solutions at different times / only one piece tested in each solution / kept in different temperatures; *Any two from:-* *Improvement;* e.g. use of sharper cutting tool AW / cut halves accurately / both pieces must be submerged / pieces placed in solutions at same time / repeat / keep at same temperature;	[4]	**Ignore** range of solutions Improvement must be linked to source of error.
		[Total: 9]	
3 (a) (i)	*Two similar visible features from* : tentacles; foot; unsegmented body / no segments;	[max 2]	**Ignore** sense organs / eyes **Ignore** antennae / anthers **Ignore** shape of body **Ignore** slimy / mucus / soft **Ignore** no legs
(ii)	*One difference*: Shell;	[1]	**A** darker **A** different number tentacles **A** shiny

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(b) (i)	*Drawing of mollusc shell – gastropod* **O –** outline; **S –** size; **D –** detail – lip of shell / feature of shell; **L –** one label;	[4]	See Supervisor's report. Clear unbroken line and no shading; minimum – 6 cm Label can vary as to type of shell provided. **Ignore** Shell
(ii)	protection / prevent desiccation / camouflage;	[1]	
		[Total: 4]	

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