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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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Question	Mark scheme	Mark	Guidance / comments
1 (a)	Blue / blue black / black;	[1]	**Ignore** purple / mauve / brown
(b)	(Change in colour) to white / yellow / **paler** blue / **paler** blue black / **paler** black;	[1]	**Accept** grey / colourless / brown / yellow orange / blue black weakened **Ignore** reference to ''change in colour'' only / black colour disappears / bleach
(c) (i)	72; 78;	[2]	Correct answers = 2 Mark independently If both incorrect allow 1 mark for correct working
(ii)	**O** – Orientation; **A** – Axes labels; **S** – Scale; **P** – Plots; **L** – Line;	[5]	**O** *'**x**'* axis – time in mins and *'**y**'* axis – number of new areas or total areas (where there had been a reaction) If total number plotted (wrong curve) = max 4 do not award **A** **S** plots to fill at least ½ the grid in both dimensions **P** accept +/- 0.5 mm (½ a small square). **L** points joined by ruled lines point to point or a smooth curve Do not allow extrapolation or double/thick lines
(iii)	**Two marks from:** age difference / gender difference / different types of goat / genetic difference / health of goat / concentration of enzyme (in saliva) / diet / hunger level / AVP;;	MAX [2]	**Ignore** references to pH and temperature **Ignore** references to paper starch levels

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(d)	**Three marks from:** **1**. longer final time period; **2**. more frequent readings; **3.** do a control or description of boil and cool the saliva or use water; **4.** **One** control variable (paper, pH, temperature, saliva amount, same volume of sample, type of goat etc); **5.** repeats or replicates; **6.** calculate mean / average; **7.** more precise timing device; **8.** AVP;	**MAX [3]**	
		[Total: 14]	
2 (a)	**Drawing:** **O** Clear lines and no shading; **S** Larger than photograph; **D** Hairs drawn precisely; **P** Seed area drawn with regard to shape; **Labels**: attachment / position of seed / hairs;	**[5]**	**4** drawing marks Hairs to be attached to the top end of fruit – not matted Hairs shown as straight, single lines **Ignore** ornamentation on seed. **Ignore** incorrect labels **Accept** alternative wording for hairs **Ignore** words which describe other biological features

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(b) (i)	Length of fruit in Fig. 2.1 in mm / cm 73 +/– 2 mm / 7.3 +/– 0.2 cm; Length of fruit in drawing in mm / cm (+/– 2 mm or +/– 0.2 cm);	**[2]**	penalise once for incorrect / absent units
(ii)	Correct magnification and X;;	**[2]**	**Accept** error carried forward from **(b)(i)** **Accept** correct answer for 2 marks even if no working shown **Accept** X before or after magnification / "times" If answer incorrect allow max 1 for correct working e.g. length of drawing / length of image – in words or figures

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<table>
<tr>
<td>(c) (i)</td>
<td>
<table>
<tr><th>feature</th><th>Dry fruit [Fig. 2.2]</th><th>Damp fruit [Fig. 2.3]</th></tr>
<tr><td>Hairs / parachute / pappus / AW;</td><td>Wide spread / AW
AND</td><td>Closed / close / AW;</td></tr>
</table>
</td>
<td>[2]</td>
<td>One mark for identifying feature wherever in table
Error carried forward for feature from label in 2a

2nd mark for description</td>
</tr>
<tr>
<td>(ii)</td>
<td>Five marks from:

dispersal:
1. dry / windy – seeds blown away;
2. increase of surface area / bigger to 'catch' the wind / breeze / air currents in the dry;
3. wet – drop to the ground / are not dispersed;
4. to spread away from parent plant / to new place / habitat;
5. avoids competition with parent plant / each other / avoids overcrowding / more space;

germination:
6. wet / damp soil / place / humid;
7. enzyme activation / working / respiration ORA;
8. warmer;
9. AVP;</td>
<td>Max [5]</td>
<td>Ignore pollen / spores dispersed by wind

4. must be linked to dispersal not just germinating in new habitat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Total: 16]</td>
<td></td>
</tr>
</table>

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<table>
<tr>
<td>3 (a) (i)</td>
<td>Possession of outer layer / skin / rind / bark / have layers / 'roundish' shape / cortex;</td>
<td>[1]</td>
<td>Ignore references to cells / colour</td>
</tr>
<tr>
<td>(ii)</td>
<td>Three differences from:
<table>
<tr><th>difference</th><th>ginger stem</th><th>lotus stem</th></tr>
<tr><td>shape</td><td>irregular / oval / random / AW</td><td>round / circular/ cylindrical / symmetrical / AW;</td></tr>
<tr><td>cavities / holes / gaps / pores / pipes / air spaces</td><td>none / compact</td><td>cavities present / arranged in circle / porous / AW;</td></tr>
<tr><td>inner layer</td><td>fibrous / fibres / hair like</td><td>holes / gaps present / AW;</td></tr>
<tr><td>outer layer / bark / skin / wall</td><td>dark / thick / rough</td><td>light / thin / smooth / not visible / AW;</td></tr>
<tr><td>colour</td><td>more uniform</td><td>dark patches / AW;</td></tr>
<tr><td>AW;</td><td></td><td></td></tr>
</table>
</td>
<td>[3]</td>
<td>Accept comparative answers in one box only
If answers are in one box only, they must be comparative
Ignore references to phloem and xylem</td>
</tr>
<tr>
<td>(b)</td>
<td>Feature [1] + linked explanation [1]
<table>
<tr><td>holes / vessels / tubes / AW;</td><td>floatation / buoyancy / gas filled / gas exchange/ AW;</td></tr>
<tr><td>cylindrical / bends / flexibility;</td><td>resist currents / prevents damage;</td></tr>
<tr><td>smooth / surface area less;</td><td>Less pressure from water;</td></tr>
</table>
</td>
<td>Max [2]</td>
<td>'Gas filled holes helps them to float' = 2 marks</td>
</tr>
</table>

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(c)	**Four marks from:** **1.** cut (thin) section / piece of lotus root / grind / dissect / blend / mash / rub / layer of cells; **2.** place on microscope slide / glass slide / slide / glass / slab; **3.** stain with iodine <u>solution</u>; **4.** cover slip used / AW; **5.** look for blue / black stained grains / granules / spots / areas; **6.** AVP;	**MAX [4]**	**Ignore** heating and use of ethanol. **3. Accept** drops of iodine or iodine in KI. **5. Accept** 'darker' for 'black' **6.** e.g. use blotting paper to mop up excess liquid
		[Total: 10]	

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