

**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.

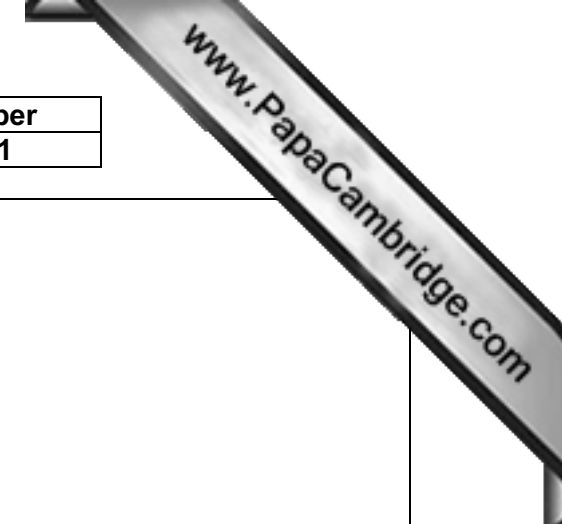
Cambridge is publishing the mark schemes for the May/June 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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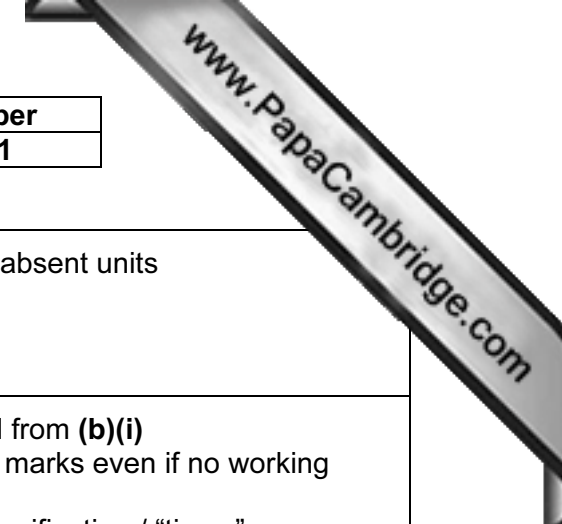
Question	Mark scheme	Mark	Guidance / comments
1 (a)	Blue / blue black / black;	[1]	<b>Ignore</b> purple / mauve / brown
(b)	(Change in colour ) to white / yellow / <b>paler</b> blue / <b>paler</b> blue black / <b>paler</b> black;	[1]	<b>Accept</b> grey / colourless / brown / yellow orange / blue black weakened <b>Ignore</b> 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)	<b>O</b> – Orientation; <b>A</b> – Axes labels; <b>S</b> – Scale; <b>P</b> – Plots; <b>L</b> – Line;	[5]	<b>O</b> '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 <b>A</b> <b>S</b> plots to fill at least ½ the grid in both dimensions <b>P</b> accept +/- 0.5 mm (½ a small square). <b>L</b> points joined by ruled lines point to point or a smooth curve Do not allow extrapolation or double/thick lines
(iii)	<b>Two marks from:</b> age difference / gender difference / different types of goat / genetic difference / health of goat / concentration of enzyme (in saliva) / diet / hunger level / AVP;;	<b>MAX [2]</b>	<b>Ignore</b> references to pH and temperature <b>Ignore</b> references to paper starch levels

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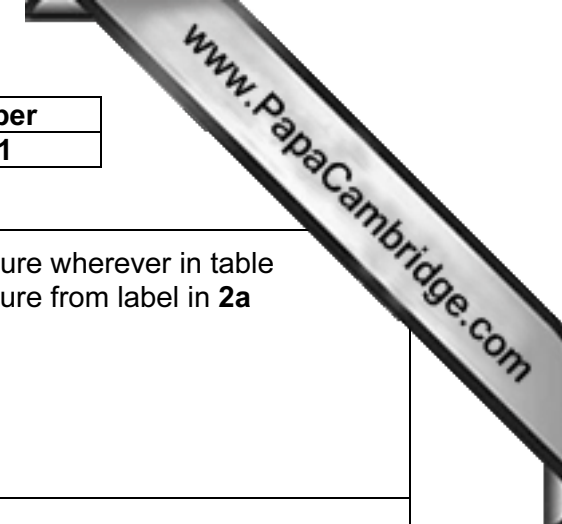
(d)	<p><b>Three marks from:</b></p> <ol style="list-style-type: none"> <li>longer final time period;</li> <li>more frequent readings;</li> <li>do a control or description of boil and cool the saliva or use water;</li> <li><b>One</b> control variable ( paper, pH, temperature, saliva amount, same volume of sample, type of goat etc);</li> <li>repeats or replicates;</li> <li>calculate mean / average;</li> <li>more precise timing device;</li> <li>AVP;</li> </ol>	MAX [3]	
		[Total: 14]	
2 (a)	<p><b>Drawing:</b></p> <p><b>O</b> Clear lines and no shading;  <b>S</b> Larger than photograph;  <b>D</b> Hairs drawn precisely;  <b>P</b> Seed area drawn with regard to shape;  <b>Labels:</b> attachment / position of seed / hairs;</p>	[5]	<p>4 drawing marks</p> <p>Hairs to be attached to the top end of fruit – not matted  Hairs shown as straight, single lines  <b>Ignore</b> ornamentation on seed.  <b>Ignore</b> incorrect labels  <b>Accept</b> alternative wording for hairs  <b>Ignore</b> words which describe other biological features</p>

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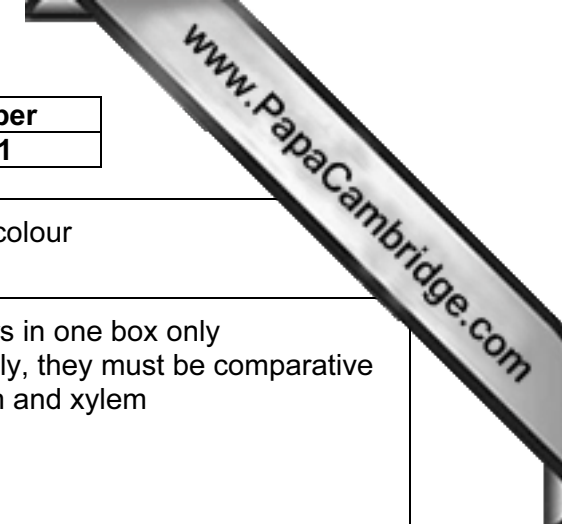
(b) (i)	Length of fruit in Fig. 2.1 in mm / cm 73 +/- 2 mm / 7.3 +/- 0.2 cm; Length of fruit in drawing in mm / cm (+/- 2 mm or +/- 0.2 cm);	[2]	penalise once for incorrect / absent units
(ii)	Correct magnification and X;;	[2]	<b>Accept</b> error carried forward from (b)(i) <b>Accept</b> correct answer for 2 marks even if no working shown <b>Accept</b> 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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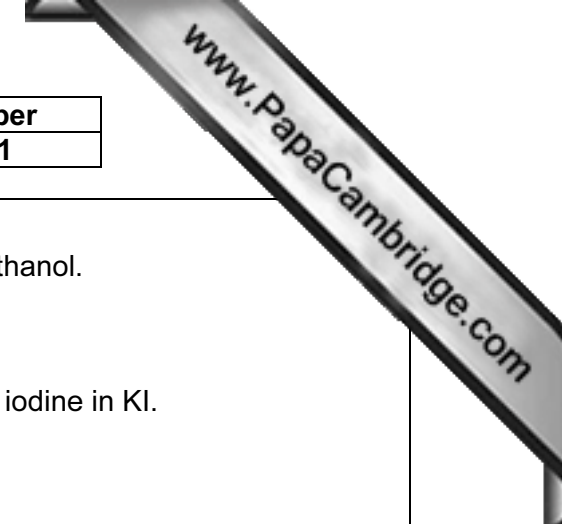
(c) (i)	feature	Dry fruit [Fig. 2.2]	Damp fruit [Fig. 2.3]	[2]	One mark for identifying feature wherever in table Error carried forward for feature from label in 2a  2 <sup>nd</sup> mark for description
	Hairs / parachute / pappus / AW;	Wide spread / AW  <b>AND</b>	Closed / close / AW;		
(ii)	<b>Five marks from:</b>  <b>dispersal:</b> 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;  <b>germination:</b> 6. wet / damp soil / place / humid; 7. enzyme activation / working / respiration ORA; 8. warmer; 9. AVP;			Max [5]	<b>Ignore</b> pollen / spores dispersed by wind  4. must be linked to dispersal not just germinating in new habitat
				[Total: 16]	

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3 (a) (i)	Possession of outer layer / skin / rind / bark / have layers / 'roundish' shape / cortex;	[1]	Ignore references to cells / colour																					
(ii)	<p><b>Three</b> differences from:</p> <table border="1" data-bbox="371 347 1081 1002"> <thead> <tr> <th data-bbox="371 347 607 419">difference</th> <th data-bbox="618 347 779 419">ginger stem</th> <th data-bbox="790 347 1081 419">lotus stem</th> </tr> </thead> <tbody> <tr> <td data-bbox="371 427 607 555">shape</td> <td data-bbox="618 427 779 555">irregular / oval / random / AW</td> <td data-bbox="790 427 1081 555">round / circular / cylindrical / symmetrical / AW;</td> </tr> <tr> <td data-bbox="371 563 607 691">cavities / holes / gaps / pores / pipes / air spaces</td> <td data-bbox="618 563 779 691">none / compact</td> <td data-bbox="790 563 1081 691">cavities present / arranged in circle / porous / AW;</td> </tr> <tr> <td data-bbox="371 699 607 794">inner layer</td> <td data-bbox="618 699 779 794">fibrous / fibres / hair like</td> <td data-bbox="790 699 1081 794">holes / gaps present / AW;</td> </tr> <tr> <td data-bbox="371 802 607 898">outer layer / bark / skin / wall</td> <td data-bbox="618 802 779 898">dark / thick / rough</td> <td data-bbox="790 802 1081 898">light / thin / smooth / not visible / AW;</td> </tr> <tr> <td data-bbox="371 906 607 970">colour</td> <td data-bbox="618 906 779 970">more uniform</td> <td data-bbox="790 906 1081 970">dark patches / AW;</td> </tr> <tr> <td data-bbox="371 978 607 1002">AW;</td> <td data-bbox="618 978 779 1002"></td> <td data-bbox="790 978 1081 1002"></td> </tr> </tbody> </table>	difference	ginger stem	lotus stem	shape	irregular / oval / random / AW	round / circular / cylindrical / symmetrical / AW;	cavities / holes / gaps / pores / pipes / air spaces	none / compact	cavities present / arranged in circle / porous / AW;	inner layer	fibrous / fibres / hair like	holes / gaps present / AW;	outer layer / bark / skin / wall	dark / thick / rough	light / thin / smooth / not visible / AW;	colour	more uniform	dark patches / AW;	AW;			[3]	<p><b>Accept</b> comparative answers in one box only  If answers are in one box only, they must be comparative  <b>Ignore</b> references to phloem and xylem</p>
difference	ginger stem	lotus stem																						
shape	irregular / oval / random / AW	round / circular / cylindrical / symmetrical / AW;																						
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colour	more uniform	dark patches / AW;																						
AW;																								
(b)	<p>Feature [1] + linked explanation [1]</p> <table border="1" data-bbox="371 1074 1081 1321"> <tbody> <tr> <td data-bbox="371 1074 723 1153">holes / vessels / tubes / AW;</td> <td data-bbox="734 1074 1081 1153">floatation / buoyancy / gas filled / gas exchange/ AW;</td> </tr> <tr> <td data-bbox="371 1161 723 1241">cylindrical / bends / flexibility;</td> <td data-bbox="734 1161 1081 1241">resist currents / prevents damage;</td> </tr> <tr> <td data-bbox="371 1249 723 1321">smooth / surface area less;</td> <td data-bbox="734 1249 1081 1321">Less pressure from water;</td> </tr> </tbody> </table>	holes / vessels / tubes / AW;	floatation / buoyancy / gas filled / gas exchange/ AW;	cylindrical / bends / flexibility;	resist currents / prevents damage;	smooth / surface area less;	Less pressure from water;	Max [2]	'Gas filled holes helps them to float' = 2 marks															
holes / vessels / tubes / AW;	floatation / buoyancy / gas filled / gas exchange/ AW;																							
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(c)	<p><b>Four marks from:</b></p> <ol style="list-style-type: none"> <li>1. cut (thin) section / piece of lotus root / grind / dissect / blend / mash / rub / layer of cells;</li> <li>2. place on microscope slide / glass slide / slide / glass / slab;</li> <li>3. stain with iodine <u>solution</u>;</li> <li>4. cover slip used / AW;</li> <li>5. look for blue / black stained grains / granules / spots / areas;</li> <li>6. AVP;</li> </ol>	<p><b>MAX [4]</b></p>	<p><b>Ignore</b> heating and use of ethanol.</p> <p><b>3. Accept</b> drops of iodine or iodine in KI.</p> <p><b>5. Accept</b> 'darker' for 'black'</p> <p><b>6.</b> e.g. use blotting paper to mop up excess liquid</p>
		<p><b>[Total: 10]</b></p>	