

**MARK SCHEME for the May/June 2012 question paper**  
**for the guidance of teachers**

**0438 BIOLOGY**

**0438/53**

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 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.

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<b>Question</b>	<b>Mark scheme</b>	<b>Mark</b>													
<b>1 (a) (i)</b>	brown / darkened / AW;	[1]													
<b>(ii)</b>	<table border="1"> <tr> <td colspan="2">Dish 1</td><td colspan="2">Dish 2</td></tr> <tr> <td>broken</td><td>cut</td><td>broken</td><td>cut</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </table> <p>Results in each column;  ; ; ; ;</p>	Dish 1		Dish 2		broken	cut	broken	cut					[4]	check supervisor's report
Dish 1		Dish 2													
broken	cut	broken	cut												
<b>(b)</b>	broken surface lighter / cut surface darker OR faster change;	[1]													
<b>(c)</b>	<i>Change:</i> to pink / red; <i>Explanation:</i> acid / low pH;	[2]													
<b>(d) (i)</b>	no colour change / less colour in dish 2;	[1]													
<b>(ii)</b>	lemon juice is acidic; denature enzymes; browning doesn't happen;	[3]													
<b>(e)</b>	cells separated <b>and</b> contents remain intact / AW;	[1]													
<b>(f)</b>	boiling water denatures enzymes; apple did not turn brown / change colour;	[2]													
		<b>[Total: 15]</b>													

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2 (a)	<p><b>Outline:</b> use of single clear lines for drawing;</p> <p><b>Size:</b> head larger than head in photograph at least half of space available;</p> <p><b>Detail:</b> pair of antennae / pair eyes in correct position / pair of mandibles;</p> <p><b>Label</b> 1 label mark only:  <b>one</b> from:  eye / antenna / jaw or mouth or mandibles AW;</p>	[4]	R shading / cross hatching(including eyes)
(b) (i)	<p>Use of reducing sugar and starch test reagents <b>only</b> ;</p> <p><i>reducing sugar test:</i>  crush / mix with water / AW ;  add Benedict's solution;  heat;</p> <p><i>starch test:</i>  add iodine solution;</p> <p><i>Safety feature:</i> – goggles / lab. coat AW / tongs / heat in water bath;</p>	[6]	

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<b>(ii)</b>	<p><i>Observation for reducing sugar test:</i> to green / yellow / orange / red;  <i>Conclusion:</i> reducing sugar is present;</p> <p><i>Observation for starch test :</i> to blue / black;  <i>Conclusion:</i> starch present;</p>	[4]	
<b>(c)</b>	<p><i>Method:</i>  two containers – one with banana, one with plantain / AW;  OR  one container / choice chamber containing banana AND plantain / AW;</p> <p><i>controlled variable:</i>  idea of same time period / same mass fruit ;</p> <p><i>collecting results:</i>  record number flies seen / find change in mass of banana and plantain AW;</p> <p><i>conclusion:</i>  if more flies in banana than plantain it is preferred fruit and vice versa / AW / larger loss in mass is preferred fruit and vice versa;</p>	Max [3]	
		<b>[Total: 17]</b>	

<b>Page 5</b>	<b>Mark Scheme: Teachers' version</b>	<b>Syllabus</b>	<b>Paper</b>
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<b>3 (a) (i)</b>	<b>A</b> filament; <b>B</b> anther; <b>C</b> style; <b>D</b> stigma;	[4]	
<b>(ii)</b>	<b>B</b> ;	[1]	
<b>(iii)</b>	<b>D</b> ;	[1]	
<b>(b)</b>	<b>20</b> ; actual length = $\frac{\text{length of pollen grain in diagram}}{\text{magnification}}$  actual length = <b>0.1</b> ;	[2]	
		<b>[Total: 8]</b>	