**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

**0610/51** 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 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.

| Question | Mark scheme | Mark | comments A = accept R = reject I = ignore<br>AW = alternative wording to convey the same meaning<br>ecf = error carried forward ORA = or reverse argument |
|---|---|---|---|
| **1 (a)** | Complete table with all cells neatly drawn;<br><br>Headings – [top or left] concentrations of amylase; observation;<br><br>All result cells completed – 3 observations;<br><br>Observations in order of concentrations / match **R3** > **R2** > **R1**; | **[5]** | **A R1**, **R2** and **R3** for concentrations of amylase |
| **(b)** | Into maltose / glucose / sugar;<br><br>No / little starch left to stain (with iodine solution); (explanation for colour change)<br><br>**R1** no enzyme / enzyme destroyed / denatured / control / AW; | **[3]** | **A** starch is broken down / AW<br><br>**A** colour of iodine solution / brown / pale / white<br><br>**A R2 / R3** if this is higher<br>**R** enzyme 'killed' |
| **(c)** | **Four marks from:**<br>**One** enzyme concentration / **R3** best / greatest result;<br>One starch concentration;<br>Paper soaked in enzyme (plus pH solution) ;<br>Explanation – how pH might be varied;<br>Indication of range of pH used;<br>Repeat;<br>Control temperature;<br>AVP; | **MAX [4]** | |

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| | | | |
|---|---|---|---|
| **(d) (i)** | 72;<br><br>78; | **[2]** | Correct answers = 2<br>If both incorrect allow 1 mark for correct working |
| **(ii)** | **O** – Orientation;<br><br>**A** – Axes labels;<br><br>**S** – Scale;<br><br>**P** – Plots;<br><br>**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)<br><br>If total number plotted (wrong curve) do not award **Axes**<br><br>**S** plots to fill at least ½ the grid in both dimensions<br><br>**P** accept +/- 0.5 mm (½ a small square)<br><br>**L** points joined by ruled lines point to point or a smooth curve.<br>Do not allow extrapolation or double/thick lines |
| **(iii)** | **Two marks from:**<br>age difference / gender difference / different types of goat / genetic difference / health of goat / concentration of enzyme (in saliva) / diet / hunger level / AVP;; | **MAX [2]** | **I** references to pH and temperature<br>**I** references to paper starch levels |

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| | | | |
|---|---|---|---|
| **(e)** | **Three marks from:**<br>**1.** longer final time period;<br>**2.** more frequent readings;<br>**3.** do a control or description of boil and cool the saliva or use water;<br>**4.** **One** control variable ( paper, pH, temperature, saliva amount, same volume of sample, type of goat etc);<br>**5.** repeats or replicates;<br>**6.** calculate mean / average;<br>**7.** use more precise timing device;<br>**8.** AVP; | **MAX [3]** | |
| | | **[Total: 24]** | |

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| | | | |
|---|---|---|---|
| **2 (a)** | **Drawing:**<br>**O** Clear lines and no shading;<br>**S** Larger than photograph;<br>**D** Hairs drawn carefully;<br><br>**P** Seed area drawn with regard to shape;<br><br>**Labels**: attachment / position of seed / hairs; | **[5]** | **4** drawing marks<br><br>Hairs to be attached to the top end of fruit – not matted<br>Hairs shown as straight, single lines not double<br>**I** ornamentation on seed<br><br>**I** incorrect labels<br>**A** alternative wording for hairs<br>**I** words which describe other biological structures |
| **(b) (i)** | Length of fruit in Fig. 2.1 in mm / cm 73 +/– 2 mm / 7.3 +/– 0.2 cm;<br>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]** | **A** ecf from **(b)(i)**<br>**A** correct answer for 2 marks even if no working shown<br>**A** 'X' before or after magnification / "times"<br><br>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><td>feature</td><td>Dry fruit<br>[Fig. 2.2]</td><td>Damp fruit<br>[Fig. 2.3]</td></tr>
<tr><td>Hairs / parachute / pappus / AW;</td><td>Wide spread / AW<br>AND</td><td>Closed / close / AW ;</td></tr>
</table>
</td>
<td>[2]</td>
<td>One mark for identifying feature wherever in table<br>ecf feature from label in 2a<br>2nd mark for description</td>
</tr>
<tr>
<td>(ii)</td>
<td>Five marks from:<br><br>dispersal:<br>1. dry / windy – (seeds blown away);<br>2. increase of surface area / bigger to 'catch' the wind / breeze / air currents in the dry; ORA<br>3. wet – drop to the ground / are not dispersed;<br>4. to spread away from parent plant / to new place / habitat;<br>5. avoids competition with parent plant / each other / avoids overcrowding / more space;<br><br>germination:<br>6. wet / damp soil / place / humid;<br>7. enzyme activation / working / respiration ORA;<br>8. warmer / warm;<br>9. AVP;</td>
<td>Max [5]</td>
<td>I pollen / spores dispersed by wind<br><br>4. must be linked to dispersal not just germinating in new habitat</td>
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<td></td>
<td>[Total: 16]</td>
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