

**MARK SCHEME for the October/November 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.

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|---------------|---------------------------------------|-----------------|--------------|
| Page 2 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0610 | 51 |

| Question | Mark scheme | | Guidance A = accept, R = reject I = ignore AW = alternative wording |
|------------------|---|-----|--|
| 1 (a) (i) | results for cube 1 in Table 1.1 for bubbles ; for froth ; | [2] | one mark for each observation |
| (ii) | results for cube 2 in Table 1.1 for bubbles ; for froth ; | [2] | one mark for each observation |
| (iii) | results for cut up cube – bubbles ; results for cut up cube – froth ; | [2] | one mark for each observation |
| (b) | calculate average / repeat if very different / may miss reaction / improve reliability of data ; | [1] | |
| (c) (i) | cut up cube results in larger or more bubbles / at increased rate / faster ; more froth / greater depth / changes rate of activity ; | [2] | |
| (ii) | greater surface area / more contact with H ₂ O ₂ ; freshly cut surface ; | [2] | |

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|---------------|---------------------------------------|-----------------|--------------|
| Page 3 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0610 | 51 |

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| (d) | <p>difficulty cutting / longer or shorter ; more or less bubbles / froth ;</p> <p>tube gets hot / reaction gives off heat / is exothermic ; bubbles get larger ; inaccurate timing ; because size of bubbles varies ; bubbles join / too fast ;</p> <p>difficulty counting bubbles ; bubbles evolving too fast to count ;</p> <p>foam collapses as bubbles burst / AW ; cannot measure depth ;</p> <p>AVP ; and explanation ;</p> | [max 2] | <p>A ref to temperature</p> <p>loss of gas / oxygen when opening bung</p> |
| (e) | <p>diagram of apparatus ;</p> <p>collect the oxygen and measure volume with measuring cylinder or gas syringe instead of counting bubbles ; bubbles vary in size ; rate of bubbling too high to count ; hands free ;</p> <p>use syringe connected to tube A ; to add H₂O₂ to tube A ; without removing the bung ; not to let gas out ;</p> <p>water bath ; maintain / control (low) temperature ; stop overheating ; not denature enzyme ; same rate of activity of enzyme ; volume of gas not altered by temperature ;</p> | | |

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|---------------|---------------------------------------|-----------------|--------------|
| Page 4 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0610 | 51 |

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| | <p>graduated tube for foam ; measure foam in situ AW ; before it collapses ; instead of ruler ; which moves against tube ;</p> <p>repeats ; average ; same size cubes ; same conditions generally / same apparatus ; measurement of volume of hydrogen peroxide ; use accurate measurement from burette / AW ;</p> <p>stopwatch / automatic system / monitoring system / computerised ; alarm ; support apparatus ; better view ; hands free ; tissue settles on bottom of flask ; stirring device / shaking or all not shaken ;</p> | [max 5] | |
| | | [Total: 18] | |

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| Page 5 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0610 | 51 |

| Question | Mark scheme | Mark | Guidance A = accept, R = reject I = ignore AW = alternative wording |
|-----------|---|---------|--|
| 2 (a) (i) | ruled, neat table ; 4 columns with units ; 6 rows (with units) ; | [3] | |
| (ii) | completed table ; ; ; | [3] | one mark for each column of the table |
| (iii) | A labelled axes with units and orientation ; S scale to fill half grid ; K key ; P accurate plot ; L line ; | [5] | |
| (iv) | <i>description</i> starting temperature (in degrees C) / same / different ; which tube lost most heat ; which tube lost least ; <i>explanation</i> heat trapped / insulation ; (still) air = good insulation ; linked to own results ; uncovered tube loses most heat / not insulated / naked ; | [max 5] | paper or foil |

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|---------------|---------------------------------------|-----------------|--------------|
| Page 6 | Mark Scheme: Teachers' version | Syllabus | Paper |
| | IGCSE – October/November 2011 | 0610 | 51 |

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|-----------------|--|--------------------|---|
| (b) (i) | <i>drawing:</i> 5 cm + ; details barbs / down ; point of attachment ; <i>label:</i> attachment / filament / AVP ; | [4] | A portion of the feather downy Credit a suitable shape even if unlabelled A quill |
| (b) (ii) | W1 insulating ; trap heat ; W2 flight / fly / flying / shape / air resistance ; | [2] | A keep bird warm AW / reference to trapped air / / maintain bird's temperature A reference to pushing against air / strong / stiff |
| | | [Total: 22] | |