

# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

## MARK SCHEME for the November 2005 question paper

### 5090 BIOLOGY

5090/06

Paper 6 (Alternative to Practical)

maximum raw mark 40

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



| Page 1 | Mark Scheme                 | Syllabus | Paper |
|--------|-----------------------------|----------|-------|
|        | GCE O LEVEL – November 2005 | 5090     | 6     |

|                  |   |            |
|------------------|---|------------|
| <b>1 (a) (i)</b> | To kill / soften / inactivate enzymes / render permeable ;  | 1          |
| <b>(ii)</b>      | In ethanol ;<br>heat over water-bath / prolonged soak ;<br>ref. inflammable solvent ;                                 | up to 2    |
| <b>(iii)</b>     | From green to white / loss of colour ;<br>ref. hardening ;  | 2          |
| <b>(iv)</b>      | (Discs dipped) in water (to soften) ;<br>laid on white tile / dish ;<br>iodine (solution) added ;                     | 3          |
| <b>(b) A:</b>    | given ample light ;<br>and carbon dioxide ;   |            |
| <b>B:</b>        | kept in dark (cupboard) etc / no light / no CO <sub>2</sub> ;<br>for at least 48 hrs ;                                | 3          |
| <b>(c)</b>       | (Some) used in respiration ;<br>translocated out of leaf AW ;   | 2          |
|                  |   | Total : 13 |
| <b>2 (a) (i)</b> | Accurately indicated and labelled <b>X</b> ;  | 1          |
| <b>(ii)</b>      | Ref. (inserted) longitudinally / LS v TS AW ;<br>entire cell in Fig. 2.1 ;<br>greater mag. in Fig. 2.1                | up to 2    |
| <b>(iii)</b>     | Drawing marks <b>re. stele only</b>   | D.3        |
|                  | 1. At least 6 cm. diam clear, clean, relevant.<br>2. Tetrarch, as in Fig. 2.2.<br>3. Accurate proportions of tissues. |            |
| Labels:          | xylem ; phloem ;  | 2          |
| <b>(iv)</b>      | <u>root</u> ;   | 1          |

|               |                                    |                 |              |
|---------------|------------------------------------|-----------------|--------------|
| <b>Page 2</b> | <b>Mark Scheme</b>                 | <b>Syllabus</b> | <b>Paper</b> |
|               | <b>GCE O LEVEL – November 2005</b> | <b>5090</b>     | <b>6</b>     |

Three from:

no living contents / nucleus / cytoplasm ;

lignified ;

. thickening on walls ;

pierced ends ;

pointed ends ;

surface pattern / pits ;

3

**(c) (i) & (ii)** Accurately recorded to 1 mm ( 0.1 cm), both with units ;

size of drawing over equivalent on Fig, calculated ;

allowance for x 100 mag. of Fig. 2.2 ;

correctly expressed result ;

4

Total : 16

**3 (a) (i)**

Graph marks: *[See graph on p.3]*

5

1. Uniform x axis labelled 'environmental temp / °C' .

2 y axis labelled 'body temp / °C'.

3 points clearly & accurately plotted.

4 well joined, ruled or best fit curves.

5 three components drawn and distinguished.

Axes reversed – allow 4 & 5

Bar graph – allow 1 & 2.

**(ii)** Two from: cat constant – spiny anteater varies ;

spiny anteater rises with ambient increase ;

spiny anteater always lower than cat ;

2

**(iii)** Two from: lizard goes lower ;

greater range in lizard ;

increases in direct proportion to ambient ;

spiny anteater higher throughout range ;

2

|        |                             |          |       |
|--------|-----------------------------|----------|-------|
| Page 3 | Mark Scheme                 | Syllabus | Paper |
|        | GCE O LEVEL – November 2005 | 5090     | 6     |

- (b) Ref enzymes in constant (internal) temp. of cat ;  
 fur / hair / insulation for cat ;  
 optimum temp. (of enzymes) ;  
 allows high rate of metabolism ;  
 energy release generates heat ;  
 ref. homeostatic effect / component ;

up to 2

Total :11

Graph for 3 (a)

