

# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

## MARK SCHEME for the June 2005 question paper

|                     |                                             |
|---------------------|---------------------------------------------|
| <b>0610 BIOLOGY</b> |                                             |
| <b>0610/05</b>      | <b>Paper 5 (Practical), maximum mark 40</b> |

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*.

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

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



**Grade thresholds** for Syllabus 0610 (Biology) in the June 2005 examination.

|             | maximum<br>mark<br>available | minimum mark required for grade: |    |    |    |
|-------------|------------------------------|----------------------------------|----|----|----|
|             |                              | A                                | C  | E  | F  |
| Component 5 | 40                           | 31                               | 24 | 18 | 15 |

The threshold (minimum mark) for B is set halfway between those for Grades A and C.  
The threshold (minimum mark) for D is set halfway between those for Grades C and E.  
The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.

Grade A\* does not exist at the level of an individual component.



**JUNE 2005**

**IGCSE**

**MARK SCHEME**

**MAXIMUM MARK: 40**

**SYLLABUS/COMPONENT: 0610/05**

**BIOLOGY  
(Practical)**



| Page 1 | Mark Scheme       | Syllabus | Paper |
|--------|-------------------|----------|-------|
|        | IGCSE – June 2005 | 0610     | 5     |

- 1 (a) raw higher than boiled; **S1>S3 and S2>S4**  
raw chopped highest; **S2**  
**(A)** cm indicated in table [2]
- (b) [Refer to candidate's results in (a) if not as expected]
- Similarity  
have, froth/bubbles/reaction/increase in volume/description of potato movement;
- Difference  
**S2** more vigorous than **S1**; [2]
- (c) (**S3** has) no, reaction/froth/bubbles;  
(**S4** has) no/little, reaction/froth/bubbles;
- [Refer to candidate's results in (a) if not as expected.  
'they' or 'both' = 2  
just 'no reaction' = max 1] [2]
- (d) (i) **L** labels for axes including units; [S1 etc./description for each bar  
change in height and mm  
**(A)** cm carried over from table  
**(R)** cm if not shown in table]
- S** suitable scale;  
**D** data plotted;  
**B** bars separate and same width; [4]
- (ii) correct use of terminology; (e.g. substrate  
active site  
enzymes are proteins)
- S1 and S2**  
cutting up the cube allowed more,  
(enzyme) catalase to escape/surface area exposed;  
idea of more active sites exposed;  
(e.g. more contact between enzyme and peroxide)
- S1 and S3**  
[assume referring to **S3** unless otherwise stated. Accept reverse argument for **S1**.]  
boiling/enzyme heated;  
denatured/destroyed;  
enzyme not able to, catalyse/break down hydrogen peroxide;  
**(A)** no functioning enzyme  
**(R)** no enzyme present [max 4]

|               |                          |                 |              |
|---------------|--------------------------|-----------------|--------------|
| <b>Page 2</b> | <b>Mark Scheme</b>       | <b>Syllabus</b> | <b>Paper</b> |
|               | <b>IGCSE – June 2005</b> | <b>0610</b>     | <b>5</b>     |

- (e) use same potato;
- use range of different sized cubes;  
(to give) different surface areas;
- same/measure, mass of potato; **(A)** weight      **(R)** amount
- more accurate method of cutting; [detail = AVP]  
standardised chopping;
- boil for longer;  
boil for different times;
- set time for reaction;  
use assistant/alternative suggestion, for accurate time measurement;
- use measured volume of hydrogen peroxide;  
[x<sup>3</sup> or volume implied by apparatus]
- quantitative method of gas collection; (e.g. over water)  
means to accommodate greater quantity of foam/  
method to obtain greater difference in foam height;
- means of controlling temperature/monitor temperature and consequence;  
replicates;  
AVP;;      **[(R)** pH or other factor affecting enzyme activity that is  
not relevant to this investigation]
- [max 5]**
- [Total: 19]**

|               |                          |                 |              |
|---------------|--------------------------|-----------------|--------------|
| <b>Page 3</b> | <b>Mark Scheme</b>       | <b>Syllabus</b> | <b>Paper</b> |
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**2 (a) (i)** [If not a half flower, max 3]

Drawing - clear outline F1;  
at least 5cm in one direction;  
petals and sepals shown;  
male and female parts shown;

Labels - petal ;  
sepal/flower stalk/receptacle/other valid 'floral' label;  
carpel/stigma/style/ovary/ovule;  
stamen/filament/anther;

**[max 6]**

**(ii)** length of drawing (line) measured correctly (+/- 2mm) with units  
and clear measurement line shown;

[correct answer for their figures with no working = 2 ticks = 2 marks]  
(their) drawing length ÷ (their) specimen length;  
correct x magnification; [max 1 dp Needs 'x' or 'times']

**[3]**

**(b) (i)** add Benedicts reagent;

heat/boil;

**(A)** warmed

**(A)** even if reagent is correct for 1 mark

**[2]**

**(ii)** add iodine (solution); **[(R)** if ref. to heat/boil]

**[1]**

**(c) (i)**

| test           | observation                                                                                               |
|----------------|-----------------------------------------------------------------------------------------------------------|
| reducing sugar | (turns) orange/red;<br><b>(A)</b> green/yellow<br>[See Supervisor's report]                               |
| starch         | (stays) yellow/brown;<br><b>(A)</b> no change in <u>colour</u><br>iodine colour<br>does not go blue-black |

**[2]**

**(ii)** (reducing) sugar/no starch (present);

source of energy;

e.g. use; [for respiration/muscle contraction/flight/etc.]

immediate/soluble/no digestion needed; [converse for starch]

**[max 3]**

|               |                          |                 |              |
|---------------|--------------------------|-----------------|--------------|
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- (d) [answer should be written as ‘doing’ something]  
 using different coloured flowers (A) shades (A) petals/  
 use some coloured shape to represent flower;  
 same, species/shape/size;  
 same insect species;  
 counting insect visits; (A) ‘how many’  
 detail;  
 keep named , condition/variable, constant;  
 other, condition/variable;  
  
 repeat (whole investigation);  
 AVP;; (e.g. way of getting insects and flowers in proximity, use a  
 range of insects) [max 4]

[Total: 21]