

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

International General Certificate of Secondary Education

**MARK SCHEME for the November 2004 question paper**

**0610 BIOLOGY**

**0610/06**

**Paper 6 (Alternative to Practical), maximum 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*.

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

CIE is publishing the mark schemes for the November 2004 question papers for most IGCSE and GCE Advanced Level syllabuses.

**Grade thresholds** taken for Syllabus 0610 (Biology) in the November 2004 examination

	maximum mark available	minimum mark required for grade:			
		A	C	E	F
Component 6	40	25	17	11	9

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.

**NOVEMBER 2004**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK: 40**

**SYLLABUS/COMPONENT: 0610/06**

**BIOLOGY  
Paper 6 (Alternative to Practical)**

1 (a) (i) correct answer + unit

0.1 to 0.11 cm OR 1.0 to 1.1 mm

Incorrect units – one mark only

If answer is not correct check

length of Figure 1.1, 15.5 to 16.0 cm OR 155 to 160 mm

OR

working

[2]

(ii) correct answer + times/x for range 160 to 200;; accept correct ratio.

If answer is not correct check

length 18.0 to 20.0 cm OR 180 to 200 mm

OR

working  $\frac{\text{length of worm B}}{\text{length of worm A}}$ ;

[2]

(b)

	worm shown in Figure 1.1	worm shown in Figure 1.2
<b>differences 2 and 3</b> <u>two from:</u>	no 'saddle', clitellum or band;	no saddle or band present;
	transparent;	not transparent/opaque;
	intestine visible;	intestine not visible;
	no segments/sections/rings/bands;	segmented/sections/rings/bands;
	no bristles/hairs/chaetae; ignore reference to legs/feet. Size given so ignore width and length.	bristles/hairs/chaetae present;
		<b>max [2]</b>
<b>similarity</b>	body long/cylindrical/thin/pointed at both ends or same at both ends/same shape/bilateral;  do not accept negatives or they are both invertebrates	
		<b>[1]</b>

(c) classification group - Figure 1.1 nematode and Figure 1.2 annelid;

N.B. BOTH NAMES = 1 MARK

[1]

[Total 8]

2 (a)

spots per leaflet	number of leaflets from polluted area	number of leaflets from non-polluted area
<del>no spots</del>	1111 1111 1 [11]	1111 [4]
1 spot	<del>↑↑↑↑</del> [4]	1111 1 [6]
2 spots	<del>↑↑↑↑</del> [5]	1111 11 [7]
3 spots	<del>↑↑↑</del> [3]	1111 [5]
4 spots	11 [2]	111 [3]

[2]

(b) A axes labelled - number of leaves or leaflets [y] and number of spots [x];

S scale evenly spaced and numbers for spots to be placed on axis centrally for columns;

P plotted correctly;

L lines ruled and columns of equal width BUT not touching;

K key or labelled to distinguish two sets of data;

[5]

(c)

feature	polluted area	non-polluted area	comment
leaflets with spots	14	21	more leaflets with spots in non-polluted area or <i>vice versa</i> ;
leaflets without spots	11	4	less leaflets without any spots in non-polluted area or <i>vice versa</i> ;
total number of spots	31	47	more spots on leaflets in non-polluted areas or <i>vice versa</i> ;
size of spots	smaller	larger	spots are larger in non-polluted areas or <i>vice versa</i> ;

MAX [2]

[Total 9]

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**3 (a) evidence - and explanation – consider together**

**evidence**

- 1 coloured products formed on exposure to oxygen/when oxidised/reference to oxidation/reacts with oxygen in air;
- 2 coloured products not formed when heated/cooked/temperature raised/AW;
- 3 pH lowered/acid conditions;

**explanation**

- 4 enzymes involved;
- 5 heat destroys/denatures enzymes;
- 6 heat kills cells; AW;
- 7 enzymes not working/denatured in acid conditions;
- 8 link enzyme involvement with oxidation;

**MAX [6]**

- (b)**
- 1 same size of apple;
  - 2 cut from same apple;
  - 3 same treatment – e.g. temperature/volume of pH solution/AW;
  - 4 vary pH [minimum 3 different];
  - 5 explanation of how pH is to be controlled; – use of buffers/dilute acid and dilute alkali and water;
  - 6 time colour formed to standard colour density or compare colours after set time period;
  - 7 repetition;
  - 8 plot graph/use of table/display results in some acceptable way;
  - 9 pH solution added over surface of apple NOT to immerse apple in solution;
  - 10 specified control; [using cooked apple or inert material]

**MAX [5]**

**[Total 11]**

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- 4 (a) (i) **Drawing:** **S** single drawing + larger than Figure 4.1 + accurate proportions  
**T** 2 leaflets only and stipules;  
**O** clear outline;  
**D** accurate detail of veins; [4]

**Labels:** 2 from:  
 Leaflet/midrib or main vein/petiole, leaf stem or leaf stalk/veins or network of veins/stipules/blade or lamina;; [2]

- (ii) 2 from:  
 network of veins/branched veins;  
 leaf stalk/midrib;  
 wide/broad leaf; MAX [2]

- (b) (i) 3 labels:  
 (upper or lower) epidermis;  
 palisade ;  
 spongy (mesophyll);  
 label to any one cell or bracket around layer [3]

(ii) [X] and [Y] label to indicate palisade AND spongy mesophyll [either order]; [1]

BOTH needed = ONE mark.

**[Total 12]**