UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2007 question paper

9700 BIOLOGY

9700/31

Paper 31 (Advanced Practical Skills 1), 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.

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 discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Page 2	Mark Scheme	Syllabus	Paper
	GCE A/AS LEVEL – May/June 2007	9700	31
(all) st	rom: rellow/orange/orange brown; arch broken down/hydrolysed; d nitrate to inhibit enzyme;		[max. 2
A C C A A	ix from: Il data recorded in table; oncentration of lead nitrate in first column/top row; olumn headings include concentration with percentage a t least three dilutions; t least two readings for each solution; stimate of degree of blackness/differences in colour descented in reaction with increasing lead nitrate/colour ye	cribed;	to blue/black; [max. 6
(ii) Le	ead nitrate slows down the reaction/lead nitrate is an inhi	ibitor;	[1
(c) (i) B	uffer/named example;		[1
) D D O	wo from: ifficulty in judging colour; ifficulty in having same time; ne example of inaccuracies in equipment/syringe; accuracies in preparing serial dilution;		[max. 2
. , . ,	eading should have been lower/AVP; ccept reading anomalous/not reliable unqualified		[′
• • •	0+21+18)/3= 19.66666666etc. hould be 20 as only 2 sig. figs		[1
` '	/A orientation and axes labels ansmission/arbitrary units on y-axis, lead nitrate/% on x-a	axis;	[′
R	scale data spans half of grid width and height, appropria awkward scales such as 3:10, 7:10, 8:10 scales not starting at 0	ate 1:10, 1:5, 1:2;	[1
	L accurate plots within 1mm/half square, using cross pints joined with straight ruled lines OR fine curve drawn		
R	any extrapolation beyond first or last point, line of best fi	it	
(e) As lea	d nitrate concentration increases the activity of amylase	decreases;	[′
` '	that data does not support the student's hypothesis; of enzyme becoming gradually denatured as lead nitrate	concentration in	creases; [´
	t improvements that would enhance the reliability or accin outline or one or two explained??	uracy	
keep a	from: ure volumes accurately; using pipette? is excuse at same pH, using buffer; ore replicates/repeat more times at each concentration;		
	ider range of concentrations/particular %'s suggested;		[max. 3

[Total: 22]

Page 3	Mark Scheme	Syllabus	Paper
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2 (a) (i) Ligustrum leaf

Two from:

correct section recognisably drawn with correct orientation i.e. stomata at bottom; proportions of layers correct i.e. palisade and mesophyll about 8/10 and epidermal layer less than 1/10;

vascular bundles shown;

[max. 2]

(ii) Correct measurement of line shown on drawing to + or – 1 mm AND measurement of thickness of specimen 1 mm or less; [1]

Working shows measurement from drawing divided by measurement from slide; [1]

(iii) Their measurement from (ii) \pm 0.2 and 0.5 mm;

[1]

(iv) One from:

User not viewing at right angles;

Thickness of ruler lines;

Difficult to focus both ruler and specimen at same time;

[max. 1]

2 (b) (i) Four at least:

At least half of area of available space used;

Two guard cells plus two epidermal cells;

Cuticle shown on epidermal cells;

Cells include cell walls;

Clear outline drawings, sharp pencil, no shading;

[4. max]

(ii) Cells wider;

Cells deeper; [2]

(c) (i) Table used to present data;

R comparative lists

	T1	Fig 2.2
Location	Lower surface,	Lower surface;
	None on upper surface,	None on upper surface;
Stomata	Closed,	Open;
Guard cells	Shape box-like,	
	Level/below epidermis;	Come above epidermis;
Air space	different shape,	Same shape;
spacing	More epidermal cells	Next to each other/fewer
	between stomata,	epidermal cells between
		stomata;
Midrib/vein	No stomata,	No stomata;
position	Not in grooves/leaf flat/not	In grooves/inside rolled
	sunk;	leaf/sunken?;

[max. 4]

(ii) Stomata inside rolled leaf;

Hairs;

Leaf rolled;

Thick upper cuticle;

[max. 2]

[Total: 18]