#### UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education O Level

## MARK SCHEME for the November 2004 question paper

### **5090 BIOLOGY**

5090/06 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.

### **NOVEMBER 2004**

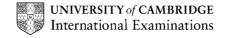
# GCE O Level

## MARK SCHEME

MAXIMUM MARK: 40

**SYLLABUS/COMPONENT: 5090/06** 

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



Page 1	Mark Scheme	Syllabus	Paper
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1 (a) (i) crush/cut/sample (piece of storage organ);

add iodine; 2

(ii) into boiling/hot (water);

decolourise/remove chlorophyll;

in (hot) ethanol;

water bath/safety feature;

(soften) in water;

(b) (i) water and ions/minerals/salts/NO<sub>3</sub>;

### xylem;

take first from: transpiration, turgor, photosynthesis/growth/CHO or protein formation/hydrolysis/cooling;

R: food/support references

(ii) sucrose/sugar/aas.; R glucose

### phloem;

(storage as, formation of etc) starch;

**R** list – starch, protein fat etc.

A protein formation/growth if ass. carried

respiration/oxidation; R: energy reference, especially 'production'

up to 3

up to 4

(c) (i) asexual/vegetative;

1

(ii) all have identical/alike (genotypes)/clone;

Total 14

2 (a) A = cornea B = lens

C = iris D = optic nerve

2 correct = 1, 3 correct = 2, all correct = 3

	Page 2	2	Mark Scheme	Syllabus	Paper		
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	(b) iris and pupil size related;						
	re	reference radial and circular muscles;					
	cc	rrec	et reference effect on pupil of one of the muscles;				
	A	ide	ntification by letter		up to 2		
			ess/more convex; (i.e. qualified change in shape) t etc.	– ignore	context		
	R	sho	rter, bigger, stretched etc.				
	re	fere	nce ciliary muscles/susp. ligaments;		2		
	if(	<b>C</b> id	entified as susp. ligs allow 1 for correct lens effect				
	(c) bli	ind s	spot correct and clearly labelled <b>Y</b> ;				
	fo	fovea correct and clearly labelled <b>Z</b> ;					
	if	no c	rosses – 1 max if both correct				
					Total 9		
3	[see g	ee graph]					
	<b>(a)</b> gr	a) graph marks:					
	1	go	od size, clear plots				
	2		es labelled and numbered regularly emp °C, oxygen/arbitrary units)				
	3	ac	curate plotting, all points				
	4	we	ell ruled between points/good curve				
	A	kes i	reversed – allow 1 and 4				
	Ва	Bar/column graph – allow 2, 3 and 4 – if reversed – allow <b>4</b> only					
	<b>(b)</b> re	(b) reading: in range 0 - 10 (a) u. oxygen (evolved);					
	re	reason: enzyme <u>denatured</u> / <u>inactivated</u> ;					
	R	kille	d, destroyed		2		

Page 3	Mark Scheme	Syllabus	Paper
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(c) repeat using smaller intervals;

within range 30 - 50 but either side of  $40^{\circ}$ ;

replication and calculation of mean;

up to 2

Total 8

4 (a) Drawing marks:

**D.3** 

- 1 necessary parts included, at least 6 cm, clear, clean and realistic, mostly double lines
- 2 stigma and style clearly differentiated from stamens, correctly situated
- 3 6 8 stamens clear

labels: style and stigma;

anther and filament/stamen;

2

**(b)** <u>length of anther</u> on Figure (e.g. 6 mm or 0.6 cm) and <u>clear indication where measured;</u>

equivalent dimension on drawing, expressed over above (A if not anther);

allowance for x 2 reproduction of Figure 4.1;

correctly calculated and correctly expressed magnification;

4

up to 2 decimal places R rounding above 0.2

Total 9

Maximum for paper 40