## 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

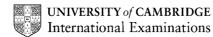
This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking 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** 

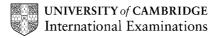
GCE O Level

MARK SCHEME

MAXIMUM MARK: 40

## SYLLABUS/COMPONENT: 5090/06

BIOLOGY Paper 6 (Alternative to Practical)



	Page 1	Mark Scheme	Syllabus	Paper
		O LEVEL – NOVEMBER 2004	5090	6
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 <u>water;</u>		up to 4
	(b) (i)	water and ions/minerals/salts/NO <sub>3</sub> ;		
		<u>xylem;</u>		
		take first from: transpiration, turgor, photosynthesis/gr formation/hydrolysis/cooling;	rowth/CHO or	protein <b>3</b>
		R: food/support references		
	(ii)	sucrose/sugar/aas.; <b>R</b> glucose		
		<u>phloem;</u>		
		(storage as, formation of etc) starch;		
		R list – starch, protein fat etc.		
		A protein formation/growth if ass. carried		
		respiration/oxidation; <b>R</b> : energy reference, espec	• •	on' u <b>p to 3</b>
	(c) (i)	asexual/vegetative;		1
	(ii)	all have identical/alike (genotypes)/clone;		1
			т	otal 14
2	(a) A =	cornea <b>B</b> = lens		
	<b>C</b> =	iris <b>D</b> = optic nerve		

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

	Page	e 2	Mark Scheme	Syllabus	Paper
			O LEVEL – NOVEMBER 2004	5090	6
	(b)	iris ar	nd pupil size related;		
		refere	ence radial and circular muscles;		
		corre	ct reference effect on pupil of one of the muscles;		
		<b>A</b> : ide	entification by letter		up to 2
			less/more convex; (i.e. qualified change in shape) nt etc.	– ignore	context
		R shorter, bigger, stretched etc.			
	l	refere	ence ciliary muscles/susp. ligaments;		2
	İ	if <b>C</b> ic	lentified as susp. ligs allow 1 for correct lens effect		
	(c)	blind	spot correct and clearly labelled <b>Y</b> ;		
		fovea	correct and clearly labelled Z;		2
	i	if no d	crosses – 1 max if both correct		
					Total 9
3	[see	e grap	h]		
	(a)	graph	n marks:		4
	1	<b>1</b> go	ood size, clear plots		
			kes labelled and numbered regularly emp °C, oxygen/arbitrary units)		
		<b>3</b> ao	ccurate plotting, all points		
		<b>4</b> w	ell ruled between points/good curve		
		Axes	reversed – allow 1 and 4		
	,	Bar/c	olumn graph – allow 2, 3 and 4 – if reversed – allow <b>4</b>	only	
	(b)	readii	ng: in range 0 - 10 (a) u. oxygen (evolved);		
	I	reaso	n: enzyme <u>denatured/inactivated;</u>		
		<b>R</b> kille	ed, destroyed		2

Page 3	Mark Scheme	Syllabus	Paper		
	O LEVEL – NOVEMBER 2004	5090	6		
	t using smaller intervals;				
within	within range $30 - 50$ but either side of $40^{\circ}$ ;				
replic	replication and calculation of mean;		up to 2		
			Fotal 8		
<b>(a)</b> Draw	a) Drawing marks:		D.3		
	1 necessary parts included, at least 6 cm, clear, clean and realistic, mostly double lines				
<b>2</b> st	2 stigma and style clearly differentiated from stamens, correctly situated				
<b>3</b> 6	- 8 stamens clear				
labels	: style and stigma;				
	anther and filament/stamen;		2		
	b) length of anther on Figure (e.g. 6 mm or 0.6 cm) and clear indication when measured;				
equiv	equivalent dimension on drawing, expressed over above (A if not anther);				
allowa	allowance for x 2 reproduction of Figure 4.1;				
corre	correctly calculated and correctly expressed magnification;		4		
up to	2 decimal places <b>R</b> rounding above 0.2				
			Total 9		
	Maxi	mum for pa	per 40		