Location Entry Codes

www.tiremepapers.com As part of CIE's continual commitment to maintaining best practice in assessment, CIE has begun to use different variants of some question papers for our most popular assessments with extremely large and widespread candidature, The question papers are closely related and the relationships between them have been thoroughly established using our assessment expertise. All versions of the paper give assessment of equal standard.

UNIVERSITY of

International Exa

The content assessed by the examination papers and the type of questions are unchanged.

This change means that for this component there are now two variant Question Papers. Mark Schemes and Principal Examiner's Reports where previously there was only one. For any individual country, it is intended that only one variant is used. This document contains both variants which will give all Centres access to even more past examination material than is usually the case.

The diagram shows the relationship between the Question Papers, Mark Schemes and Principal Examiner's Reports.

Mark Scheme **Question Paper** Principal Examiner's Report Introduction Introduction Introduction First variant Question Paper First variant Mark Scheme First variant Principal Examiner's Report Second variant Question Paper Second variant Mark Scheme Second variant Principal Examiner's Report

Who can I contact for further information on these changes?

Please direct any questions about this to CIE's Customer Services team at: international@cie.org.uk

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0610 BIOLOGY

0610/31

Paper 31 (Extended Theory), maximum raw mark 80

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.

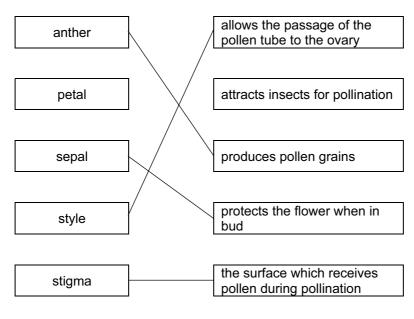
CIE is publishing the mark schemes for the May/June 2008 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



UNIVERSITY of CAMBRIDGE International Examinations

Page 2	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0610	31

(a) reject lines to or from the same box, e.g. anther and petal to produce pollen grains
 A if lines do not touch box but meaning is clear



[4]

(b) assume answer is about stigma of wind-pollinated flower unless told otherwise, accept **ora**, 2 max for differences, 1 or 2 for significance

wind-pollinated stigma,

feathery / hairy ; **R** branched *ignore not sticky* large(r) ; **A** large surface area outside flower / AW ; **A** pendulous / exposed *ignore long and short* insect-pollinated stigma

not, feathery / hairy ; *ignore sticky* small(er) ; **A** small surface area inside flower / AW ;

explanation

to catch pollen / AW (in the wind) ; **A** for pollen to attach (to stigma) or make pollination more likely / easier increase chance of pollination ;

'more likely to catch pollen' = 2 marks

- (c) 1 little / less / AW / no, <u>variation</u>; R cloning
 - 2 ref to becoming homozygous ; *ignore ref to gene*
 - **3** e.g. of consequence 'good' or 'bad';
 - e.g. less chance of adapting to changing conditions / less ability to evolve / may become extinct / adapted variety spreads / AW ;

[2 max]

- 4 greater chance of pollination / ensures pollination occurs ; A reproduction / fertilisation
- **5** useful if no other plants (of same species) nearby ;
- 6 less wastage of pollen ; A gametes
- 7 not dependent on (named) agent of pollination ;

[max 3]

[max 3]

[Total: 10]

-	3	Mark Scheme	Syllabus	Paper
		IGCSE – May/June 2008	0610	31
(a) (i)	eats	/ consumes / feeds on, animals / meat / flesh ;		[´
(ii)	exte man	hair / whiskers / vibrissae ; rnal ear(s) / pinna(e) ; nmary glands / breasts / nipple / glands that produc R milk unqualified by external structure	ce milk / AW;	[max ´
(b) (i)	hunt shor shor pred loss char pollu	ase / parasite(s) / (named) pathogen(s) ; ing (by farmers) ; R poaching tage of, food / antelopes ; A idea of fewer tage of water / drought ; ation (by lions) ; A more lions of habitat / AW e.g. territory ; R space unqualified age of climate / AW ; ition ; ; e.g. shortage of mates / small populations do no		
		R competition unqualified		[max 2
(ii)	extir	iction / become endangered / become rare / inbree	eding;	[´

<u>grass</u>	antelope		lion
producer	primary consumer / herbivore	secondary consumer / carnivore	tertiary consumer / top carnivore / top predator /

1 mark for minimum of two arrows in correct direction;

1 mark for all organisms named and all in correct order as a chain ; ignore sun / decomposers / parasites

2 marks for labelling the trophic levels -

either producer, primary, secondary + tertiary consumer or 1st, 2nd, 3rd, 4th ;;

if one or two labels incorrect award 1 mark

[4]

Page	4	Mark Scheme	Syllabus	Paper
		IGCSE – May/June 2008	0610	31
(d) (i)	of, h 'mał One for fi enco	ntenance / protection / preservation / 'caring for' / habitat / ecosystem / community / species / (name king a habitat' = 1 mark e of the following for a max 1 mark uture generations / prevent extinction ; burage breeding (in wild or in captivity) ; o, biodiversity / genetic resources / AW ;		rces; [max 2
(11)	(nati rang ensi legis cont educ capt reint	vent destruction of, grassland / habitat ; A prese ure) reserve / wild life park / AW ; gers / wardens ; ure good supply of, food / antelopes / prey / AW ; slation / AW ; e.g. refs to poaching / wild life trade trol of, predators / lions ; A 'kill lions' / 'drive lions away' / 'provide food for cation of local population ; tive <i>breeding</i> / <i>breed</i> in a zoo / <i>breeding</i> program troduction to the wild ; P ; e.g. further detail of any of the above points	e lions'	[max 3
	earking (eato excr dung deca proto deau amn nitrit nitrif	efs to nitrogen fixation / denitrification points 7 + 8 must be in the correct context en / digested by) (named) scavenger(s) / hyaena retion / urine / egestion / faeces / AW ; g beetles / detritivores / maggots ; ay / decomposition / rotting, by, bacteria / fungi / n ein \rightarrow amino acids ; mination / amino acids \rightarrow ammonia ; \int A protein nonia \rightarrow nitrite ; te \rightarrow nitrate ; \int A ammonia \rightarrow nitrate fication / nitrifying bacteria ; psomonas / Nitrobacter in correct context of nitrifi	named decomposer ; n \rightarrow ammonia	
10 11		osomonas / Nitrobacter in correct context of nitrifi its absorb, <u>nitrate</u> / <u>ammonia</u> ;	cation;	

[Total: 19]

	Page 5 Mark Scheme Syllabus		6	Mark Scheme	Syllabus	Paper
				IGCSE – May/June 2008	0610	31
3	(a)	(i)	<u>excr</u>	etion;		[1]
		(ii)	cata	ogical; A made by, cells / organisms lyst / described; de of) protein / AW;		
			bio-o	catalyst = 2 marks		[max 2]
	(b)	(i)	pH;	A ph / PH / Ph		[1]
		(ii)		perature; R heat <i>ignore</i> room / mass / quantity / amount / surface area / type, of p	potato ;	
				me of hydrogen peroxide ; centration of hydrogen peroxide ;		
				mount' with respect to hydrogen peroxide fs to catalase / enzyme		[max 2]
	(c)	bel if n	ow th o ans	vo marks if correct answer (0.56 / 0.57 / 0.58) is giv e table wer or incorrect answer award one mark for correct 0.6 award one mark	-	te space
		10	divide	ed by 17.4		
		0.5	6 / 0.8	57 / 0.58 ;;		[2]
	(d)	gra 1 2 3 4	<i>x-ax</i> <i>y-ax</i> rate poin	<i>is labelled</i> pH ; <i>is labelled – must have units</i> (of oxygen production / of reaction), cm ³ min ⁻¹ / cm ³ ts all correct ; use the overlay, but A <i>ecf from</i> (c)	•	through
		4	all th	inuous and clear line , which may be either a curve ne points or straight lines between points line goes beyond plotted points	e which may hot go	[4]
	(e)	(i)		ease in rate to (pH) 6 then decrease / reaches a pearate given as a data quote, with cm³ min⁻¹ / cm³ p e		[2]
		(ii)	pH 6	6 is, optimum / when enzyme 'works best' ;		
			ref to	wing points may refer to optimum or sub-optimum o shape of enzyme ; o active site ;		
			ref to	o denaturation ; A destroyed R 'killed' o substrate / hydrogen peroxide, fitting into, enzyme	e / active site ;	[max 3]
						[Total: 17]

First variant Mark Scheme

	Pag	ge 6	;	Mark Scheme	Syllabus	Paper
				IGCSE – May/June 2008	0610	31
4	(a)	mat bre	te tog ed tog	te them together, failure = suggests differ ether, no offspring = suggests different sp gether and see if any offspring are, sterile . / examine chromosomes ;	pecies;	[max 1]
	(b)	(i)	cont	inuous; A discrete		[1]
		(ii)	Equ	us grevyi ; A grevyi		[1]
	(c)	(i)	phei	notype ; A close phonetic spellings		[1]
		(ii)	<i>in D</i> char in, D	e two points are linked – 'change' unquali NA' gets 2 marks age / AW ; e.g. substitution / deletion / erro NA / gene(s) / chromosome(s) ; age in genotype / 'genetic, structure / gene	or in meiosis	it 'change [2]
	(d)	(i)	segr	keleton / external skeleton ; nented / jointed, limbs / legs / appendage nented body ;	s;	[max 1]
		(ii)	wing	e parts to the body / head + thorax + abdo A sections / R segments s ; <i>ignore numbers of wings if given</i> pairs of, legs ;	omen;	[max 2]
	(e)	(i)	less	es (on head and neck), become / are, hor attractive to (tsetse), flies / insects; A A mouflage in grass ;		[2]
		(ii)	2 3 4 5 6	ref to mutation and number of stripes ; ref to number of stripes and likelihood of l ref to, disease / death ; survivors breed ; ref to offspring ; (fewer stripes = less / mo passing on advantageous, alleles / genes natural selection / survival of fittest ;	pre stripes = more)	
				R artificial selection		[max 3]

[Total: 14]

	Page 7	Mark Scheme	Syllabus	Paper
	luger	IGCSE – May/June 2008	0610	31
5	provide provide A n A c in corre	· •	; A substances	
	R 'balar	nced' as it is in the question		[max 2]
	(b) (i) <u>live</u>	<u>r</u> ;		[1]
	(ii) <u>glu</u>	cose ; R if two compounds are given		[1]
	(iii) <u>aer</u> car	<u>obic</u> ; oon dioxide / water / no lactic acid, produced ;		
	ana	erobic = 0 for the whole of (iii)		[2]
	(c) dissolve in plasn	ed / in solution / soluble ; na ;		[2]

(d) mark name and function independently

read the functions of **A** and **B** together before awarding marks

part	name of part	function
Α	glomerulus ; A knot of capillaries R capillaries	filtration / filtering (blood) ; A increase in (blood) pressure / ref to high pressure A 'substances forced out' R diffusion
В	capsule ; R cup	collects filtrate / allows filtration ;
C	tubule ; <i>distal is neutal</i> R nephron / tube	(selective) <u>re</u> absorption ; reabsorbs, water / glucose / salts / minerals / ions / amino acids ; <i>ignore</i> nutrients A description of reabsorption, e.g. active uptake of glucose absorption back into blood
D	collecting duct ;	(re)absorbs water / passes urine to pelvis <i>or</i> ureter ; R urea unless with water A waste substances

[8]

Page 8	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0610	31

(e) (i) award two marks if correct answer (1699 / 1699.2 / 1700) is given award one mark if no answer or incorrect answer but correct working is shown

1.18 × 60 × 24 / 1.18 × 1440

1699 / 1699.2 / 1700 (dm³) ;;

- (ii) award two marks if
 - correct answer (0.1) is given
 - allow ecf from (e)(i) so check calculation

if no answer or incorrect answer award one mark for dividing 1.7 by something and multiplied by 100

1.7 / 1700 × 100

0.1 (%);;

[2]

[2]

[Total: 20]

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0610 BIOLOGY

0610/32

Paper 32 (Extended Theory), maximum raw mark 80

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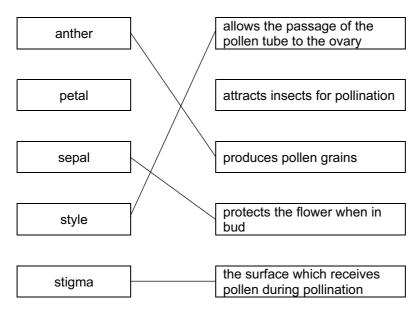


UNIVERSITY of CAMBRIDGE International Examinations

Second variant Mark Scheme

Page 2	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0610	32

(a) reject lines to or from the same box, e.g. anther and petal to produce pollen grains
 A if lines do not touch box but meaning is clear



[4]

(b) assume answer is about stigma of wind-pollinated flower unless told otherwise, accept **ora**, 2 max for differences, 1 or 2 for significance

wind-pollinated stigma,

feathery / hairy ; **R** branched *ignore not sticky* large(r) ; **A** large surface area outside flower / AW ; **A** pendulous / exposed *ignore long and short* insect-pollinated stigma

not, feathery / hairy ; *ignore sticky* small(er) ; **A** small surface area inside flower / AW ;

explanation

to catch pollen / AW ; **A** for pollen to attach (to stigma) increase chance of pollination *or* make pollination more likely / easier

'more likely to catch pollen' = 2 marks

- (c) 1 little / less / AW / no, variation ; R cloning
 - 2 ref to becoming homozygous ; *ignore ref to gene*
 - e.g. of consequence 'good' or 'bad';
 e.g. less chance of adapting to changing conditions / less ability to evolve / may become extinct / adapted variety spreads / AW;

[2 max]

- 4 greater chance of pollination / ensures pollination occurs ;
 - A reproduction / fertilisation
- 5 useful if no other plants (of same species) nearby;
- 6 less wastage of pollen ; A gametes
- 7 not dependent on (named) agent of pollination;

[max 3]

[max 3]

[Total: 10]

Second variant Mark Scheme

Baga					
	Page 3	3	Mark Scheme	Syllabus	Paper
			IGCSE – May/June 2008	0610	32
2	(a) (i)	man inter	munity / (all) organism <u>s</u> / animal <u>s</u> and plant <u>s</u> / (all) components, (living together) in same, area / place by habitat <u>s</u> ; racting / interdependent / AW ; A description of food ether with / interacting with)	/ environment; R h	
			abiotic / physical / non-living, factors / features;		[max 2]
	(ii)		(native) animals in Namibia eat it ; vs uncontrollably / AW; R reproduce quickly		
		(S. r	molesta has) flat leaves that grow over surface of wa	ater	
		less plan aero less less dest	ess light penetrates to plants below ; / no, photosynthesis ; its die and are decomposed by bacteria ; obic bacteria / bacteria use oxygen ; oxygen for, animals ; A organisms / ref to BOD R p <i>must be linked to less photosynthesis / bacteria use</i> food for, animals / herbivores ; truction of, food chains / food web ; P ; e.g. bacteria produce toxins		[max 4]
	(b) (i)	cons <i>idea</i> herb	bicides (may), kill / harm, all / other, plants ; R organ sumer / beetle, will not eat all plants / specific to <i>S. r</i> <i>a that</i> herbicides will disrupt, food chain / community bicides accumulate in food chain ; its may develop resistance to herbicides ;	nolesta ;	[max 2]
	(ii)	may (incr com <i>idea</i>	tralian beetle may have no (natural) predator ; e eat other, plants / organisms ; rease in numbers and) cause damage to, crops / AV pete with other plant eaters ; a that beetles disrupt, food chain / community / ecosy parison with any other example, e.g. cane toad ;		[max 2]
	(c) (i)		naped curve ; ignore start at the origin / ignore death stationary phase may show fluctuations	n phase	[1]
	(ii)	each	h label must be in correct place on curve		
		•	; / exponential ; le / stationary / constant; A plateau / fluctuating / o	scillating	[3]
	(iii)	spac	ce / grazing / (eaten by) beetles / (eaten by) herbivo	res / C. saliniae ;	[1]

Page 4	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0610	32

if c	nagnesium and nitrate may score 2 marks each accept other named ions and correct reasons f candidate gives minerals and magnesium or nitrate - mark to max 2 competition must be qualified by one of these factors R 'limit growth' as in the question – A 'less growth' in correct context
	<pre>space ; A water in context of space (if not in (c)(iii)) so more wetlands to grow over / nowhere for new leaves to grow / competition for raw materials or light / AW ; A less growth</pre>
	razing / eaten by herbivores (<i>if not given in (c)(iii))</i> ; educes leaf area for photosynthesis / removes products of photosynthesis / AW ;
	ght intensity ; A amount of light / less light / limited light R light unqualified ess energy trapped / for photosynthesis / AW ;
	arbon dioxide, concentration / level ; A amount of $CO_2 \ R \ CO_2$ unqualified or photosynthesis ;
	emperature ; ef to, enzymes / growth / photosynthesis / rate of chemical reactions ;
	vater ; A any appropriate function of water ; e.g. turgidity / transport / photosynthesis / growth
	ninerals / nutrients / salts / ions ; ef to less growth ; R growth unqualified
	nagnesium (ions) ; <i>dea that</i> lack restricts formation of <u>chlorophyll</u> ;
	iitrate (ions) / ammonium ions / ammonia ; R nitrogen ef to less for making, amino acids / proteins / DNA / RNA / nucleic acids ;
	ron (ions) ; or making <u>chlorophyll</u> ;
	ealt; <i>as in increasing salinity of irrigated land</i> educe water potential / make it difficult to absorb water ;
	lisease ; emoves products of photosynthesis / less (material for) growth / less reproduction / AW ; A plants die' [max 4]
	[Total: 19]

	Page 5				Syllabus	Paper	
				IGCSE – May/June 2008	0610	32	
3 (a) (i) <u>excretion</u> ;			excr	retion;		[1]	
		 (ii) biological; A made by, cells / organisms catalyst / described; (made of) protein / AW; 					
			bio-o	catalyst = 2 marks		[max 2]	
	(b)	(i)	pH;			[1]	
		 (ii) temperature ; R heat <i>ignore</i> room size / mass / quantity / amount / surface area / type, of potato ; 					
				me of hydrogen peroxide ; centration of hydrogen peroxide ;			
				mount' with respect to hydrogen peroxide fs to catalase / enzyme		[max 2]	
	(c)) award two marks if correct answer (0.56 / 0.57 / 0.58) is given – may be in white spa below the table if no answer or incorrect answer award one mark for correct working if 0.5 or 0.6 award one mark				te space	
		10 divided by 17.4					
		0.5	6 / 0.	57 / 0.58 ;;		[2]	
	(d)	 (d) graph 1 x-axis labelled pH ; 2 y-axis labelled – must have units rate (of oxygen production / of reaction), cm³ min⁻¹ / cm³ per min ; 					
•			cont all th	tinuous and clear line which may be either a curve ne points or straight lines between points	e which may not go	through [4]	
	(e)	(i)		ease in rate to (pH) 6 then decrease / reaches a pea rate given as a data quote, with cm³ min⁻¹ or cm ³		[2]	
		(ii)	pH 6	6 is, optimum / when enzyme 'works best' ;			
			ref to	wing points may refer to optimum or sub-optimum o shape of enzyme ; o active site ;			
			ref to	o denaturation ; A destroyed R 'killed' o substrate / hydrogen peroxide, fitting into, enzyme	e / active site ;	[max 3]	
						[Total: 17]	

Second variant Mark Scheme

Page 6		Mark Scheme	Syllabus	Paper			
		IGCSE – May/June 2008	0610	32			
ma bre	 (a) try to mate them together, failure = suggests different species ; mate together, no offspring = suggests different species ; breed together and see if any offspring are, sterile / infertile ; test DNA / examine chromosomes ; 						
(b) (i)	cont	inuous; A discrete		[1			
(ii)	Equ	us grevyi ; A grevyi		[1			
(c) (i)	pher	notype; A close phonetic spellings		[1			
(ii)	<i>in Di</i> char in, D	e two points are linked – change unqualified does NA gets 2 marks nge / AW ; e.g. substitution / deletion / error in meio NA / gene(s) / chromosome(s) ; nge in genotype / genetic, structure / 'genetic make-	sis	it change [2			
(d) (i)	segr	skeleton / external skeleton ; nented / jointed, limbs / legs / appendages ; nented body ;		[max 1			
(ii)	wing	e parts to the body / head + thorax + abdomen ; A sections / R segments is ; <i>ignore numbers of wings if given</i> pairs of, legs ;		[max 2			
(e) (i)	less	es (on head and neck), become / are, horizontal (w attractive to (tsetse), flies / insects ; amouflage in grass ;	hen feeding) ;	[2			
(ii)	2 3 4 5 6	ref to mutation and number of stripes ; ref to number of stripes and likelihood of being bitter ref to, disease / death ; survivors breed ; ref to offspring ; (fewer stripes = less / more stripes passing on advantageous, alleles / genes (for more natural selection / survival of fittest ;	= more)				
		R artificial selection		[max 3			

[Total: 14]

	Page 7	Mark Scheme	Syllabus	Paper
		IGCSE – May/June 2008	0610	32
5	 (a) balanced diet <pre>provides, sufficient energy / energy for needs; provides, molecules / materials, for metabolism / equivalent; A substances provides, nutrients / named nutrients; CPFVM H₂O fibre A minimum of any three named nutrients A contains (all the) food, groups / types / classes R 'substances' in correct / right, quantities / proportions / amounts; A adequate / sufficient R 'equal'</pre> 			
	R 'bal	anced' as it is in the question		[max 2
	(b) (i) <u>liv</u>	' <u>er</u> ;		[1
	(ii) <u>q</u>	ucose ; R if two compounds are given		[1
	(iii) <u>a</u> ca	erobic ; arbon dioxide / water / no lactic acid, produced ;		
	a	naerobic = 0 for the whole of (iii)		[2
	(c) dissol in plas	ved / in solution / soluble ; ma ;		[2]

(d) mark name and function independently

read the functions of **A** and **B** together before awarding marks

part	name of part	function
A	glomerulus ; A knot / bundle, of capillaries R capillaries	filtration / filtering (blood) ; A increase in (blood) pressure / ref to high pressure A 'substances forced out' R diffusion
Bcapsule ;collects filtrate / allows filtration ;R cupcup		collects filtrate / allows filtration ;
C	tubule ; <i>distal is neutal</i> R nephron / tube	(selective) <u>re</u> absorption ; reabsorbs, water / glucose / salts / minerals / ions / amino acids ; <i>ignore</i> nutrients A description of reabsorption, e.g. active uptake of glucose absorption back into blood
D	collecting duct ;	(re)absorbs water / passes urine to pelvis <i>or</i> ureter ; R urea unless with water A waste substances

[8]

Page 8	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0610	32

(e) (i) award two marks if correct answer (1699 / 1699.2 / 1700) is given award one mark if no answer or incorrect answer but correct working is shown

1.18 × 60 × 24 / 1.18 × 1440

1699 / 1699.2 / 1700 (dm³) ;;

- (ii) award two marks if
 - correct answer (0.1) is given
 - allow ecf from (e)(i) so check calculation

if no answer or incorrect answer award one mark for dividing 1.7 by something and multiplied by 100

1.7 / 1700 × 100

0.1 (%) ;;

[2]

[2]

[Total: 20]