UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

## Wany, Dana Cambridge, com MARK SCHEME for the October/November 2009 question paper

## for the guidance of teachers

## 0610 BIOLOGY

0610/02

Paper 2 (Core 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, which would have considered the acceptability of alternative answers.

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 October/November 2009 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

	2       Mark Scheme: Teachers' version       Syllabus         2       Mark Scheme: Teachers' version       Syllabus         IGCSE – October/November 2009       0610         otes       otes         seed in mark scheme and guidance notes.         separates alternatives for a marking point
Page 2	2 Mark Scheme: Teachers' version Syllabus er
	IGCSE – October/November 2009 0610
General no	tes annue
Symbols us	ed in mark scheme and guidance notes.
/	separates alternatives for a marking point
- 3	separates points for the award of a mark
MP	mark point – used in guidance notes when referring to numbered marking points
А	accept – as a correct response
R	reject – this is marked with a cross and any following correct statements do not gain any marks
I	ignore/irrelevant/inadequate – this response gains no mark, but any following correct answers can gain marks.
( )	the word/phrase in brackets is not required to gain marks but sets context of response for credit. e.g. (waxy) cuticle. Waxy not needed but if it was described as a cellulose cuticle then no mark.
<u>Small</u>	underlined words – this word only/must be spelled correctly
OWTTE	or words to that effect
ORA	or reverse argument/answer

ref./refs. answer makes appropriate reference to

Syllabus er

Page 3       Mark Scheme: Teachers' version       Syllabus       er         IGCSE – October/November 2009       0610         k Scheme Instructions       Guidance         reptiles;       A – singular forms of terms         birds;       A – reptilia, aves, mammalia, amphib         mammals;       [4]         amphibians;       [4]         [Total: 4]       A – nixed use of common and scienti names         R – two or more responses in an answer space unless both correct       I – named individual examples         (a) 1 cell wall added and labelled;       A – nuclear membrane label         3 vacuole added and labelled;       A – vacuole membrane / tonoplast lal         4 cytoplasm labelled;       A – vacuole membrane / tonoplast lal         1 abelled;       Any four – 1 mark each       [4]
[Total: 4]       R – two or more responses in an answer space unless both correct I – named individual examples         (a) 1 cell wall added and labelled;       1 – named individual examples         (a) 1 cell wall added and labelled;       A – nuclear membrane label         3 vacuole added and labelled;       A – nuclear membrane label         4 cytoplasm labelled;       A – vacuole membrane / tonoplast labelled;         5 mitochondria / mitochondrion added and labelled;       I – any shading or stippling to represe cytoplasm / nucleus / vacuole
[Total: 4]       R – two or more responses in an answer space unless both correct I – named individual examples         (a) 1 cell wall added and labelled;       1 – named individual examples         (a) 1 cell wall added and labelled;       A – nuclear membrane label         3 vacuole added and labelled;       A – nuclear membrane label         4 cytoplasm labelled;       A – vacuole membrane / tonoplast labelled;         5 mitochondria / mitochondrion added and labelled;       I – any shading or stippling to represe cytoplasm / nucleus / vacuole
<ul> <li>2 nucleus added and labelled;</li> <li>3 vacuole added and labelled;</li> <li>4 cytoplasm labelled;</li> <li>5 mitochondria / mitochondrion added and labelled;</li> <li>I – any shading or stippling to represent cytoplasm / nucleus / vacuole</li> </ul>
<ul> <li>(b) 1 in leaves;</li> <li>2 near upper surface / upper mesophyll layer / above the spongy mesophyll / just below (upper) epidermis;</li> <li>[2]</li> <li>I – refs. to stem</li> <li>A – MP shown on candidate's labelle diagram if attempted</li> </ul>
[Total: 6]
(a) micronutrient deficiency symptom Award marks on basis of lines leaving the micronutrient
vitamin C; rickets
vitamin D; scurvy iron; I – multiple lines that arrive at a deficiency symptom
For each correct link – 1 mark [4]
<ul> <li>(b) 1 (iron) used to make / part of haemoglobin;</li> <li>2 present in red blood cells;</li> <li>3 used to carry / transport / hold oxygen;</li> <li>4 component of myoglobin / some enzymes / electron carriers;</li> <li>5 (myoglobin) present in muscle cells</li> </ul>
Any three – 1 mark each [3]
[Total: 7]

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	Pa	ige 4	L	Mark S	cheme: Teach	ers' versio	on	Syllabus	2.0	er
	1 490		•		– October/Nov		0610	20		
									- %	3
4	(a)	<i>(fat</i> pro sta	ítein; rch;	e enzyme lipase; (protease) amylase; rect insertion – 1	<i>product</i> ( <i>glycerol</i> +) fat amino acids; ( <i>maltose</i> ) mark	ty acids; [6]	I – qualifica	e responses ations of am pancreatic		mone
	(b)	(i)	plasr	na;		[1]				
		(ii)	respi	ration;		[1]	l – any qua tissue / ana	alifications s aerobic	uch as cellu	ular /
		(iii)	glycc	<u>ogen;</u>		[1]	I – starch			
		(iv)	liver;			[1]	I – muscle	S		
	(v) adrenaline / <u>glucagon</u>				<u>ı;</u>	[1]	A – epinep	hrine		
					ני	Fotal: 11]				
5	(a)	(i)	D;			[1]				
		(ii)	<b>A</b> , <b>C</b>	/ <b>A</b> and <b>C</b> ;		[1]	R – A–C / A to C / any ref to B			
	(b)	(i) (ii)	2 (ple 3 (ple 4 lac Any 1 1 ins	enty of) food / wa enty of) space; enty of) mates; k / few predators two – 1 mark eac ufficient food ava	s; ch ailable / compet	[2] ition /	or 4 then a born than o A – sensib	arks gained ward 1 marl die le named ex al ref to sea	k for ref. to kample	more
			2 arr	ercrowding (for fo ival of a predator break of disease	r / increase in p		A – hunting	le named ex g (by human le named ex	is)	
			Any	two – 1 mark ead	ch	[2]	A – 1 logic	al ref. to sea	isonal char	iges
						[Total: 6]				

Page 5	Mark Scheme: Teachers' version	on	Syllabus "A er			
	IGCSE – October/November 20		0610 2030			
g 2	produce / release ova / egg cells / female ametes; produce oestrogen; progesterone;	ion SyllabusionSyllabus0090610A – eggs1 – refs. to storingA – female hormones for 1 mark if neither hormone namedI – hormones unqualified				
	my two – 1 mark each [2]					
(ii) fe	eed / provide oxygen / protect fetus / mbryo; [1]		implantation / placenta / evelopment / growth or fetus			
• •	eceive sperm / semen / intercourse / act as irth canal; [1]	A – exit for	menstrual flow			
(b) 1 dev OWT	elop / release new ovum (each cycle) / TE;					
2 prep	pares new uterus lining (prior to ovulation);	A – descrip lining of wo A – endom				
embry 4 she	ntains lining if zygote / fertilised ovum / yo implants / pregnancy; ds lining (if ovum is not fertilised / no ancy);	A – ref. to ( vascularise	(lining) thickening / d / OWTTE menstruation / period			
Any th	hree – 1 mark each [3]					
	[Total: 7]					

Page	6	Mark Scheme: Teachers' vers			Syllabus	er er
		IGCSE – October/November 2	2009		0610	Dan
(a) (i)	ivy -	weed → aphids → wrens → kestrels;; → aphids → wrens → kestrels;;			must start with p	
		tree → aphids → wrens → kestrels;; tree → caterpillars → wrens → kestrels;		ramid forr	nat – <b>MAX</b> 1 mar	k
	orga	one food chain – 1 mark for four nisms in the correct sequence and ark for indicating direction of energy flow [	[2]			
(ii)		rbivore eats only plant material / ucers / OWTTE;				
	2 na	med example from food web;	cat	terpillars	les / goldfinches / ood examples	/ aphids /
		rnivore eats animal material / meat / sumers;				
		med example from food web;			kestrels / fleas ood examples	
	Any	three – 1 mark each [3			·	
(iii)	fleas	s; [1	1]			
(b) <u>wr</u> e						
2 s	ame f	rs down; ood as ladybirds / competition; t of aphids drop / less food for wrens;	A -	– eat more	mbers stay the sa e caterpillars	
	<u>nk vol</u> umbe		ava	ailable / a	iterpillars as more phids eat less oa ive approaches th	k tree
6 f	ewer k	s have fewer wrens to feed on; cestrels survive to eat bank voles;	ap	hids, hog	food web and inv weed, goldfinche	s, grass
	numbe	rs down; s have fewer wrens to feed on;			oles. This can be fall in bank voles	argued for
9 k	estrel	s eat more bank voles as alternative; rom one version of bank vole or one				

version of wren prediction)

[4] Any four - 1 mark each [Total: 10]

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Pa	ge 7	Mark Scheme: Tea			Syllabus	er er
		IGCSE – October/N	lovember 20	09	0610	Day 1
(a)	1 inspire ORA;	d air has more oxygen (than e	expired air) /	R – no oxy	gen in expired air	ambr
	expired a 3 inspire air) / OR	d air has less carbon dioxide air) / ORA; d air is (normally) colder (thar A; d air is (normally) drier (than e	n expired	R – no car	bon dioxide in insp	and an
	Any	three – 1 mark each	[3]	inspired air I – refs. to	alified responses a r dust, pollen, nisms, other gases	
(b)	thin wall	face area; / OWTTE; d supply / OWTTE;			o counter current ac / wet surface	ction
	Any three	e – 1 mark each	[3]			
			[Total: 6]			

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	Ра	ge 8		Mark Scheme: Teachers' vers		Syllabus of er
				IGCSE – October/November 2	2009	0610
9	(a)	(i)	2 fro lowe	ovement / diffusion of water; om a high (water) concentration to a low / er one; rough a partially permeable membrane;[3	Syllabus 0610 a concentration gradient entially / selectively / semi- e membrane s for through ative terminology e.g. water f correctly used	
		(ii)	ions 2 pa	iffusion) is movement of other particles / / molecules / not just water; artially permeable membrane not essary / OWTTE; [2	A – semi-r	d examples permeable membrane
	(b)	(i)	2 lov 3 ce	ater concentration (in root hair cell); wer than that in soil / soil water; Il membrane is partially permeable; two – 1 mark each [2	A – for MF A – vacuo A – alterna	cytoplasm / vacuole P1 and 2 ORA le membrane / tonoplast ative terminology as per <b>(a)</b>
		(ii)	conc 2 be OW 3 ce 4 wa exos 5 pla 6 ref	ow) soil water has lower water centration; cause of more salts in sea water / TTE; Il has lower salt concentration; ater flows out of cell / plant / into soil / smosis; ant wilts / dies; f. to roots waterlogged / anaerobic ditions;	A – MP2 a	salt being toxic and 3 responses in terms of centration / water potential
			Any	four – 1 mark each [4	.]	
				[Total: 11	]	

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	Pa	age 9	)					eacher			on Syllabus 20 er			
					<b>JCSE</b>	<u>– Oci</u>	tobe	r/Nove	mber 2	200	09	0610	"ac	
10	(a)	(i)	short (	wing);					[	1]			sinb.	
		(ii)	1 (phe	nenotypes) long (winged) short (winged);							R – use of A – alterna	mark each line independently R – use of X and Y as alleles A – alternative symbols if clear as to meaning with MAX 4		
			2 (gen	otypes)	RR;			<b>rr</b> ;				<b>IB</b> 2 marks for	this line	
			3 (gan	netes)	R	R	r	<b>r</b> ;			A - ECF fr (2 <sup>nd</sup> row) to	om Rr erroneo o 3 <sup>rd</sup> row	us genotype	
			4 (gen	otypes)	Rr	Rr	Rr	<b>Rr Rr</b> ; [5]						
		(iii)	464 / 4	4;							A – If answ			
			116;					[2]		2]	shown then award 2 marks, A – If answer wrong but correct working shown then award first mark only			1
	(b)	1 (p	ohenoty	pes)	short (fema			long wii (offsprir	-		No ECF fro A – Punne	om <b>(a) (ii)</b> t's Square app	roach	
			2 (gen	otypes)	types) ri			rr Rr;			<b>NB</b> 1 mark this line			
			3 (gan	ietes)		r		R	<b>r</b> ;		A – r	r R r		
			4 (gen	otypes)	Rr	r	r	Rr	rr;		∧ 50 · 50			
			5 (phe wings;	notypes) half with long, half with short							A – 50 : 50			
			Any fo	ur – 1 m	ur – 1 mark each [4]					4]				
								[Τς	otal: 12	2]				