UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2009 question paper for the guidance of teachers

0610 BIOLOGY

0610/05 Paper 5 (Practical test), 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, 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.

General notes

Symbols used in mark scheme and guidance notes.

/	separates alternatives for a marking point
;	separates points for the award of a mark
A	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
ref./refs.	answer makes appropriate reference to
AVP	additional valid point (e.g. in additional guidance)

© UCLES 2009

Question			Expected Answers	Mark	Additional Guidance
1	(a)	(i)	table construction; neat with ruled lines **and** 2 or 5 columns and headings (depending on orientation) **and** 2 or 5 rows and headings (depending on orientation)	[1]	**Ignore** number / letter of test tube **Ignore** time (same time for each pH, max 2 minutes) as a column / row **R** awarded if time stated is different for each pH
		(ii)	result recorded for pH3 **;**	[1]	Must be > 0 (unless 0 on supervisor's report)
		(iii)	result recorded for pH4; result recorded for pH5; result recorded for pH7; result recorded for pH8;	[4]	Each result must be > 0 (unless 0 on supervisor's report)
	(b)	(i)	axes orientated correctly **and** informative labels; axes scaled appropriately; points plotted correctly; line;	[4]	pH on *x* axis no. of bubbles on *y* axis each axis scaled in even increments, including start point scaled to cover 2 / 3 of the grid in at least 1 direction all points correct (from their data) allow correctly plotted bars for this point smooth curve / ruled line, passing through plotted points
		(ii)	increase then a decrease / description of their results; optimum pH value stated (from graph); comparative figs in support; AVP;	[2 max]	2 *x* and, 2 *y* values / *y* values manipulated e.g. ref. to denaturing when little activity

© UCLES 2009

Question			Expected Answers	Mark	Additional Guidance
	(c)		1 repeats / obtain average / obtain mean; 2 control temperature / carry out at constant temperature; 3 equal volume of , buffer / pH , solution; 4 more sophisticated timer; 5 grind up / grate , the potato tissue (to increase surface area); 6 divide consistent method of chopping (to provide a more uniform surface area); 7 volume of oxygen / volume of froth / height of froth , measured; 8 same / equal **,** mass of potato; 9 size of apparatus; 10 greater range of / intermediate / other, pH; 11 (count bubbles for a) longer period of time; 12 AVP;	**[4 max]**	**Ignore...** (because in the question) same volume of H_2O_2 **or** same time e.g. mixing / shaking , test tube contents help to avoid loss of gas
	(d)		1 (carry out at) one pH ; 2 equilibrate each tube in a different water bath ; 3 equilibrate tubes for 5 min ; 4 keep tubes in water bath(s) for duration of experiment / keep temperature constant ; 5 suitable range of temperatures suggested in ^{o}C ; 6 same volume of hydrogen peroxide used in each tube; 7 same concentration of hydrogen peroxide used in each tube; 8 repeats (at one / each temperature) ; 9 AVP;	**[6 max]**	minimum 3 different temps **Ignore** 0°C e.g. detail
				[Total: 22]	

© UCLES 2009

Question			Expected Answers	Mark	Additional Guidance

2	(a)		***Drawing***
			large size and accurate proportions;
			clear lines and no shading;
			
			Labels *[label lines to touch structure(s)]*
			stamen(s) / anther **and** filament;
			
			stigma;
			style;
			petal(s);
			sepal(s);
				[6 max]	should resemble what it is meant to be
					
					stamen label line should indicate anther and filament if not separately labelled

	(b)		***Drawing*** large size and accurate proportions; clear lines and no shading; ***Labels*** *[label lines to touch structure(s)]* placenta / central support; fruit wall / pericarp / ovary wall; (developing) seed(s);	**[4 max]**	should resemble what it is meant to be
	(c)		***Annotations*** anther , exposed / outside bracts / outside petals / large / long / articulated; filament(s) , long / flexible; stigma , feathery / exposed / large / hairy; no petals / small petals;	**[3 max]**	**Ignore** stamen
	(d)	(i)	stamens / anthers (to produce pollen); stigma (to collect pollen);	**[1 max]**	**Ignore** qualification **Ignore** qualification

© UCLES 2009

Question			Expected Answers		Mark	Additional Guidance
	(d)	(ii)	***W1*** colourful petals / large petals / honey guides / scent / nectar / nectary / conspicuous flower reproductive structure(s) / anther / stamen / stigma , enclosed / inside petals **;** anthers small **or** short / erect , filament stigma, smaller surface / not hairy / not feathery pollen grains **,** larger / heavy / sticky / covered with hooks / fewer in number	***W2*** dull petals / small petals / not present / inconspicuous flower reproductive structure(s) / anther / stamen / stigma , exposed / outside petals anthers large **or** long / flexible , filament stigma , larger surface / hairy / feathery **;** pollen grains **,** smaller / light / not sticky smooth / more numerous	**[4 max]**	Comparative statements about a feature must be made on the same line. Feature being referred to must be clearly stated. **Ignore** refs. to style **R** carpel
					[Total: 18]	

© UCLES 2009