## **CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education** 

## MARK SCHEME for the October/November 2014 series

## 0610 BIOLOGY

0610/53

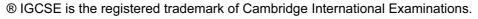
Paper 5 (Practical Test), maximum raw mark 40

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2014 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.





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## Abbreviations used in the Mark Scheme

• ; separates marking points

• / separates alternatives within a marking point

• R reject

• I ignore (mark as if this material was not present)

A accept (a less than ideal answer which should be marked correct)

AW alternative wording

underline words underlined must be present

max indicates the maximum number of marks that can be awarded
 mark independently the second mark may be given even if the first mark is wrong

• A, S, P, L Axes, Size, Plots and Line for graphs

O, S, D, L
 Outline, Size, Detail and Label for drawings

(n)ecf (no) error carried forward

• () the word / phrase in brackets is not required, but sets the context

ora or reverse argument.AVP any valid point

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Question	Answer	Marks	Additional Guidance
1 (a)	table with six cells for observations;		A 3 columns & 2 rows or 2 columns & 3 rows
	appropriate column/row headings;		
	observations recorded before and after sticks are placed in liquids;		
	same observation for all sticks <u>before</u> being placed in the liquids;		Donat and and it if a solt
	stick <b>A</b> slimier / floppier / breaks easier than <b>B</b> or <b>C</b> ;		compare to Supervisor's Report and credit if results match
(b) (i)	distilled water B		
	dilute sugar solution C		
	concentrated sugar solution A		
	one correct = 1 mark all correct = 2 marks	2	
(b) (ii)	in strong sugar solution/A: potato feels floppy / cells are plasmolysed <b>and</b> water moves out of the potato / AW;		descriptions of osmosis must be clearly linked to results  A ecf
	in water/B: potato feels firm / cells are turgid <b>and</b> water molecules move into the potato;		
	in weak sugar solution/C: potato feels the same (as the start) and no (net) movement of water / AW;	3	

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(c)	idea that one chip may not have behaved as expected / makes results more reliable / more likely to see appropriate trend / reduces impact of anomalies;			1	R accurate / precise
(d)	1 2 3 4 5	change leave for longer than 15 minutes  measure length or mass before and after / change in length  increase the range of sugar solutions control temperature idea of controlling other variables	explanation  more likely to see the change  more precise / quantitative results  can see the trend more easily  temperature affects the rate of osmosis ensures that results are only due to the difference in solutions		
				max 4 [Total: 15]	

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2	(a)	measurement of <b>AB</b> : 43 ± 1 (mm);		
		formula: magnification = AB ÷ actual diameter or 43/4.3;		A ecf from measurement A words or figures
		magnification: = ( × ) 10;		I units given for magnification
			3	A if formula uses their measured diameter and actual length incorrectly in either a multiplication or inverted division then no marks for formula but allow 1 for correct calculation
	(b)	decrease in diameter: 4.3 ( <b>AB</b> ) – 2.0 ( <b>CD</b> ) = 2.3 (mm);		
		formula: 2.3 / 4.3 × 100; calculation: 53/54 (%);	3	I units whole number answer required
			[Total: 6]	

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difference	E	F		
shape / outline / projections	blades / wings / aerodynamic shape / smooth / 2 projections / AW	spines / thorns / spikes / hooks / branched / uneven / many or 5+ projections /AW;;		A AW throughout  differences must be comparative or contrasting fo both fruits
symmetry	regular	irregular;		
point of attachment	visible	not visible;		
seed position/ seed	at one end / two	not visible / one / number not known (seeds/cores/parts);;		
any two;;	l		max 2	

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(b) (i)	A – axes labelled and scaled evenly;		x-axis: wind speed/ms <sup>-1</sup> y-axis: average distance/m I orientation
	S – size;		if no '0' on an axis then scale can begin at any number but if '0' on an axis then scale must be even or have discontinuity mark
	P – points plotted accurately ±½ small square;		plots to fill half, or more than half, of grid along both axes  A 1 plotting error
	L – line E or F correct;		lines should be point to point ±½ small square  A ruled lines or smooth unbroken line  R double lines / sketchy lines / broad lines > ½ small square
	K – labelling of both lines / key;		R extrapolation > ½ small square
		5	other graphs (e.g. histogram / bar chart) = max 4 (no L)
(b) (ii)	distance travelled by <b>E</b> increases with wind speed / positive correlation between the two / AW;	1	
(c)	O – outline is single clear line (and no shading anywhere);		I minor overlaps or breaks
	S – size is larger than photograph;		drawing larger than 60 mm (length from top of plumule to tip of radicle)  R if drawing touches / extends into printed words
	D – detail;		minimum detail of seed with radicle below seed equal to or longer than the seed, tapering at the tip.
	L – one label from testa / seed coat / radicle / plumule / cotyledon / hypocotyl;	4	

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(d) (i)	temperature;	1	
(d) (ii)	how many germinate / rate of germination / % germinated / time taken (to germinate);	1	A number that grow
(d) (iii)	volume of water; concentration / percentage of oxygen; seed type / species / age / size / AW;	max 2	A amount of moisture I pH / light / soil type / minerals / humidity
(e) (i)	prepare seed; test with Biuret reagent;	2	A cut / chop / crush / grind / AW A use a piece of seed A add to water / form a solution  A alternative tests e.g. Millon's / xanthoproteic /
(e) (ii)	blue to lilac / mauve / purple;	1	A colour changes for alternative tests: Millon's – clear to brick red xanthoproteic – yellow to orange albustix – yellow to green
		[Total: 19]	