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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0610 BIOLOGY

0610/63 Paper 6 (Alternative to Practical), maximum raw mark 40

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Abbreviations used in the Mark Scheme

- **;** separates marking points
- **/** separates alternatives within a marking point
- **R** reject
- **ignore** mark as if this material was not present
- **A** accept (a less than ideal answer which should be marked correct)
- AW alternative wording (accept other ways of expressing the same idea)
- underline words underlined (or grammatical variants of them) 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
- ecf credit a correct statement that follows a previous wrong response
- ( ) 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	Mark scheme	Mark	Guidance
1 (a) (i)	add water / cut egg white / AW ; (addition of) biuret (solution) ;	 [2]	 **R** if heated / acid added
(ii)	blue to purple (means protein is present) ; stays blue / no change means protein is absent ;	 [2]	**ignore** goes purple alone – needs to be a change of colour
(iii)	wear a lab coat / use a test-tube rack / wear gloves ;	[1]	**ignore** goggles
(b) (i)	test-tube **B**: 432 (seconds) **and** test-tube **C**: 266 (seconds);	[1]	
(ii)	table with at least two columns and four rows ; column headings test-tube or volume of enzyme / cm^3 **and** time taken / s ; observations recorded for three tests ;	 [3]	 ecf 1(b)(i)

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(c)	*any two from:* more enzyme / higher concentration of enzyme means faster change / AW **ora** ; calculated figures from table ; test-tube **A** does not / may not change / took the longest time, because no enzyme is present / AW ;	 max [2]	answer must refer to enzyme e.g. **C** / 10 cm^3 enzyme takes 166 second less than **B** / 5 cm^3 enzyme **ignore** figures just quoted from the table
(d)	(idea of) control / for comparison / AW ;	[1]	
(e)	*two from:* temperature affects enzyme activity / specific reference to an effect e.g. high temperatures denature / warmer temperatures speed up the activity / more activity / cooler temperatures slow activity down or there is less activity ; temperature is a controlled variable (and must not vary) / AW ; if temperature is different in each test-tube, results are less valid / less reliable / AW **ora** ;	 max [2]	**ignore** references to optimum temperature **R** enzymes killed
(f)	**surface area** would alter the rate of enzyme activity / AW ;	[1]	
(g) (i)	(pH)10 ;	[1]	
(ii)	pepsin ;	[1]	**A** gastric protease / protease in stomach
		[Total: 16]	

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2 (a)	drawing of outer edge, midrib and main veins uses single clear unbroken lines with no shading anywhere ; drawing is larger than the photograph ; <u>two</u> correct details ; e.g. - pointed tip with correct shape of tip and leaf (width approximately half the length) - veins off the midrib alternate (not paired), extending to outer edge and curving - petiole drawn with narrow double line and indent at base	[3]	
(b) (i)	$0.7 \div 4.2 \times 100$ 16.7 ;;	[2]	two marks for correct answer with no working
(ii)	leaves have different starting masses ; means that results (for different leaves) can be compared / AW **ora** ;	[2]	**ignore** to make the results more fair / more reliable / more valid / accurate / precise

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(iii)	axes labelled and with an even scale on y-axis, *x-axis* leaf and letter and *y-axis* percentage decrease in mass ; size bars to fill at least half of the grid in both directions ; plots all accurate ±½ *small square ;* bars **ruled,** of same width**,** not touching, and spaces between bars, same width as each other ;	[4]	**A** ecf from 2(b)(i)
(iv)	lower surface – because less water loss when it is covered **ora** / **Q** loses more than **R** or when lower surface is exposed / **R** loses less than **Q** or when the lower surface is covered /AW;	[1]	**R** lower surface unqualified
(c)	*independent variable:* temperature; *control* variable*: **two from***: leaf type / species / similar size / similar surface area humidity AW / wind speed AW / light (intensity) / time / carbon dioxide concentration ;; *dependent variable:* mass / change or decrease in mass ;	[4]	**R** temperature and mass **A** distance moved by bubble / coloured water (in the context of a photosynthometer) **ignore** rate of transpiration / water loss **R** dry mass
		[Total: 16]	

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3 (a)

any two features with matching comparisons:

feature	human red blood cell	frog red blood cell
shape	round / disc / AW	oval / AW
nucleus	absent / not visible	present / visible
size	small	large
number / concentration / density, of cells	more higher	fewer lower

one mark for two features (vertical column) ;

one mark for each correct row ;; [3]

(b)

measurement mark: 80 (mm) ;

formula mark: 80 ÷ 2
*calculation mark: (*x) 40 ;; [3]

A ± 1 (mm)

ecf if original measurement incorrect
two marks for correct answer with no working

(c)

mitosis / make proteins / control cell activity / keep cell alive longer / AVP; [1]

R meiosis / binary fission

[Total: 7]

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