MARK SCHEME for the October/November 2015 series

0610 BIOLOGY

0610/53   Paper 5 (Practical Test), maximum raw mark 40

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)
- <u>underline</u>   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)	Biuret ;	[1]	
		(ii)	blue to purple (means protein is present) ;	[1]	**A** stays blue linked to protein absent
		(iii)	wear a lab coat / use a test-tube rack / wear gloves ;	[1]	**ignore** goggles
	(b)		correct conversion of minutes to seconds ;	[1]	check from candidates results
	(c)		table with suitable number of columns and rows ; column or row headings solution (added) / test-tube **and** time / s ; observations recorded for X1, X2 and no X <u>in seconds</u> ; expected trend (X1 faster than X2) ; two results faster than that recorded with no X ;	[5]	**R** if units in body of table
	(d)		chemical X speeds up (the clotting process) ; X1 faster than X2 / sequence described / X1 fastest / XO slowest ; comparative use of processed data ;	[3]	**A** ecf for consistent description of candidate results XO > X1 > X2 **ora** data used must match candidate's results table. **ignore** raw data
	(e)		volume of substrate (milk) would affect the rate of reaction AW ;	[1]	**A**: controlled variable **R** a control

(f)	*any 2 from:* water cools during the experiment ; cooler temperatures slow enzyme activity down ; if temperature is different for each test the results are less valid / reliable / AW ; **ora**	[2]	**ignore** references to optimum temperature **A** idea of changing two variables	
(g) (i)	(pH) <u>10</u> ;	[1]		
(ii)	<u>pepsin</u> ;	[1]	**A** gastric protease / protease in stomach	
		[Total: 17]		

2 (a)	drawing of outer edge, midrib and main veins uses single clear unbroken lines with no shading anywhere ;
	
	size larger than half available space ;
	
	detail ;
	any 2 from:
	    correct shape of leaf
	    appearance of leaf edge (smooth or serrated)
	    venation pattern
	    petiole
		[3]	**R** if does not resemble Centre specimen	

(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]		

3	(a)	*any 2 features with matching comparisons:*	[3]	*award one mark for the features (vertical column)* *award other two marks for each row*

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

; ;;

	(b)	*measurement mark* : = 80 ; *formula mark*: 80 ÷ 2 ; *calculation mark:* × 40 ;	[3]	**A** ± 1mm 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]	