

Cambridge International Examinations

Cambridge International General Certificate of Secondary Education

BIOLOGY 0610/63

Paper 6 Alternative to Practical

May/June 2017

MARK SCHEME
Maximum Mark: 40

Published

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Mark schemes will use these abbreviations

• ; separates marking points

/ alternatives

I ignoreR reject

• A accept (for answers correctly cued by the question, or guidance for examiners)

AW alternative wording (where responses vary more than usual)

AVP any valid point

ecf credit a correct statement / calculation that follows a previous wrong response

ora or reverse argument

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

• <u>underline</u> actual word given must be used by candidate (grammatical variants excepted)

max indicates the maximum number of marks that can be given

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Question	Answer		Marks	Guidance
1(a)	table with two columns ;		3	
	column 1 heading 'vegetable extract', with unit as cm ³ ;	column 2 headed volume of iodine and		
	correct readings from Fig 1.2;			
1(b)	to allow iodine to change colour ;		1	A as an indicator
1(c)	volume of vegetable extract ;		2	I amount
	volume / concentration of starch solution ;			R volume iodine solution
	concentration of iodine ;			
	temperature ;			
	mixing time ;			
1(d)			4	improvement must relate to given error
	source of error ;;	improvement ;;		
	contamination	washing all apparatus / use new syringes		
	overshoot of end-point / adding too much iodine / many drops	add smaller quantities of iodine		
	determination of end-point	allow sufficient time for colour to change / use colorimeter / colour standard		A subjective colour change
	change in vitamin C with time	test same time after extraction for each		
	no repeats	repeat each concentration		
	AVP e.g. difficult reading scale coloured vegetable extracts	AVP e.g. use burette		

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Question	Answer	Marks	Guidance
1(e)(i)	L : 25.00 ;	3	
	N : 62.5 ;		
	correct number of decimal places on both ;		
1(e)(ii)	axes labelled and units ;	4	
	even scale to fill more than half of the printed grid;		
	plot three / four points correctly;		ecf candidate result for 1(e)(i)
	line of best fit / trend line ;		
1(e)(iii)	mark volume of iodine used on (<i>y</i> -axis of) graph / extended horizontally and extended line vertically from plotted point to <i>x</i> -axis;	2	
	correct reading from graph on answer line ;		
1(f)	range of temperatures ;	6	minimum of three
	values for temperatures stated ; time at each temperature ;		at least one above 50
	use of water-bath / named method ;		
	description of extracting juice ;		
	detail of use of iodine drops / volume / addition of starch for end point ;;		
	at least two repeats ;		
	(controlled variables) heating time / same type of vegetable / all samples from same vegetable;		
	relevant reference to safety;		

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Question	Answer	Marks	Guidance
2(a)	any four from: drawing with clear outline; scaled to fit more than half the space; shape 5 / 6 sides for both; detail showing 3 / 4 layers with no shading and no cells;	4	
2(b)(i)	length of PQ = 80 mm ;	3	± 1mm
	(x)64 ;;		(80) ÷ 1.25
2(b)(ii)	plane of section / AW ; magnification ; number of villi different ;	2	
2(c)(i)	A: 3 B: 9 C: 11	1	A 2 instead of 3 for A 3 correct answers = 1 mark
2(c)(ii)	30 °C ; has highest rate of reaction / AW ;	2	
2(c)(iii)	it is much higher / different than trial 1 and 3 / AW;	1	
2(c)(iv)	(IV) temperature ; (DV) rate of reaction ;	2	

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