



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/53

Paper 5 Practical Test

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MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **6** printed pages.

Mark schemes will use these abbreviations

- ; separates marking points
- / alternatives
- I ignore
- R 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
- underline actual word given must be used by candidate (grammatical variants excepted)
- max indicates the maximum number of marks that can be given

Question	Answer	Marks	Guidance										
1(a)(i)	three named fruits <u>and</u> three volumes;	1											
1(a)(ii)	table drawn with (ruled) lines, appropriate columns and (heading) underlined ; suitable headings ; six colours recorded ; colour change recorded for at least one fruit ;	4											
1(a)(iii)	Benedict's (reagent) ;	1											
1(a)(iv)	fruit(s) that show colour change from table in 1(a)(ii) ;	1											
1(a)(v)	idea of looking for colour change (as the starting colour may not be blue) ;	1											
1(b)	<table><tr><td><i>variable</i></td><td><i>controlled by</i></td></tr><tr><td>volume of fruit juice</td><td>measuring 2 cm³ for all</td></tr><tr><td>volume of Benedict's</td><td>measuring 2 cm³ for all</td></tr><tr><td>time in water-bath</td><td>five minutes in water-bath</td></tr><tr><td>;</td><td>;</td></tr></table>	<i>variable</i>	<i>controlled by</i>	volume of fruit juice	measuring 2 cm ³ for all	volume of Benedict's	measuring 2 cm ³ for all	time in water-bath	five minutes in water-bath	;	;	2	one mark for the variable, one mark for method of controlling which must related
<i>variable</i>	<i>controlled by</i>												
volume of fruit juice	measuring 2 cm ³ for all												
volume of Benedict's	measuring 2 cm ³ for all												
time in water-bath	five minutes in water-bath												
;	;												

Question	Answer	Marks	Guidance																
1(c)	<table><tr><td>error</td><td>improvement</td></tr><tr><td>temperature of water-bath</td><td>any method of keeping the temperature the same</td></tr><tr><td>judging colour by eye</td><td>colour standard / colorimeter</td></tr><tr><td>idea of age of fruit differs</td><td>use fruit of the same age / ripeness</td></tr><tr><td>Benedict's and juice mixed at different times</td><td>test each fruit separately</td></tr><tr><td>no replicates / repeats</td><td>at least <u>two</u> more, replicates / repeats, needed</td></tr><tr><td>method of extraction</td><td>use blender / juicer</td></tr><tr><td>more than one fruit used</td><td>use only one fruit</td></tr></table> ;;;	error	improvement	temperature of water-bath	any method of keeping the temperature the same	judging colour by eye	colour standard / colorimeter	idea of age of fruit differs	use fruit of the same age / ripeness	Benedict's and juice mixed at different times	test each fruit separately	no replicates / repeats	at least <u>two</u> more, replicates / repeats, needed	method of extraction	use blender / juicer	more than one fruit used	use only one fruit	4	one mark for error, one mark for improvement which must match
error	improvement																		
temperature of water-bath	any method of keeping the temperature the same																		
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method of extraction	use blender / juicer																		
more than one fruit used	use only one fruit																		
1(d)	add biuret ; (blue) to lilac / mauve / purple / violet for positive test ;	2																	
1(e)	<i>any six from:</i> 1 at least two temperatures / or stated temperatures ; 2 use of water-bath ; 3 same volume juice ; 4 same fruit used ; 5 same time / stated time ; 6 add DCPIP ; 7 measure number of drops of DCPIP ; 8 control (no vitamin C / water) ; 9 repeats ; 10 safety ;	6	A iodine titration method if independent variable is time heated: 1 stated temperature > 80°C 2 use of water-bath ; 3 time intervals (at least two) ; 4 same volume juice ; 5 same fruit used ; 6 add DCPIP ; 7 measure number of drops of DCPIP ; 8 control (no vitamin C / water) ; 9 repeats ; 10 safety ;																

Question	Answer	Marks	Guidance
1(f)	O single clear lines with no shading ; S at least 80 mm in diameter ; D1 inner star shape shown ; D2 8–16 segments shown ;	4	

Question	Answer	Marks	Guidance
2(a)(i)	18.4 ;;	2	working $\frac{18 + 17 + 19 + 20 + 18}{5} / \frac{92}{5} = 1$ mark
2(a)(ii)	5 circled on Table 2.1 ; 12.8 ;	2	ecf if incorrect result circled A 12.7
2(a)(iii)	A (xes) – labelled with units ; S (cale) – even scales on both axes; P (lot) – all points plotted accurately $\pm$ half a small square ; L (ines) – line ;	4	
2(a)(iv)	low concentrations increase root growth ; high concentrations decrease root growth ; 0.4% identified as the concentration that produces longest root growth ; correct data quote with units ;	3	ecf for incorrect graph

Question	Answer	Marks	Guidance
2(b)	(length of MN) 30 ± 1 mm ; 0.25 mm ;;	3	ecf for incorrect measurement