
BIOLOGY**0610/53**

Paper 5 Practical Test

October/November 2017

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 border="1"> <thead> <tr> <th><i>variable</i></th> <th><i>controlled by</i></th> </tr> </thead> <tbody> <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> </tbody> </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 border="1"> <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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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)	<p><i>any six from:</i></p> <ol style="list-style-type: none"> 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	<p>A iodine titration method if independent variable is time heated:</p> <ol style="list-style-type: none"> 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)	<p>O single clear lines with no shading ;</p> <p>S at least 80 mm in diameter ;</p> <p>D1 inner star shape shown ;</p> <p>D2 8–16 segments shown ;</p>	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)	<p>5 circled on Table 2.1 ;</p> <p>12.8 ;</p>	2	<p>ecf if incorrect result circled</p> <p>A 12.7</p>
2(a)(iii)	<p>A(xes) – labelled with units ;</p> <p>S(cale) – even scales on both axes;</p> <p>P(lot) – all points plotted accurately \pm half a small square ;</p> <p>L(ines) – line ;</p>	4	
2(a)(iv)	<p>low concentrations increase root growth ;</p> <p>high concentrations decrease root growth ;</p> <p>0.4% identified as the concentration that produces longest root growth ;</p> <p>correct data quote with units ;</p>	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