Cambridge Assessment International Education
Cambridge Ordinary Level

BIOLOGY **5090/62**

Paper 6 Alternative to Practical **October/November 2017**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

Mark schemes will use these abbreviations:

;	separates marking points
/	alternatives
()	contents of brackets are not required but should be implied
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
Ig	ignore (for incorrect but irrelevant responses)
AW	alternative wording (where responses vary more than usual)
AVP	alternative valid point (where a greater than usual variety of responses is expected)
ORA	or reverse argument
underline	actual word underlined must be used by candidate
+	statements on both sides of the + are needed for that mark

Question	Answer	Marks	Guidance
1(a)	Benedict's solution **+** potato **;** heat / warm **;** water bath / goggles or glasses / eye protection / don't heat directly **;**	**3**	
1(b)(i)	<u>blue</u> **;**	**1**	
1(b)(ii)	control / to show the colour (of Benedict's) when no (reducing) sugar / glucose present **;**	**1**	
1(c)	volume of (glucose) solutions **;** volume / number of drops / concentration of Benedict's **;** temperature **;**	**3**	
1(d)(i)	between 0.3 and 0.4 **;**	**1**	**A** any value between 0.3 and 0.4
1(d)(ii)	use dilutions of glucose between 0.3% and 0.4% **;** test each dilution with Benedict's **;** compare colour of solution **X** with these colours **;**	**2**	

Question	Answer	Marks	Guidance
1(e)	**EITHER** 2.5 cm^3 of glucose solution **;** same volume / 2.5 cm^3 of water **;** add / mix / shake / stir **;** **OR** known / measured / stated volume of glucose solution **;** same volume of water **;** measure 5 cm^3 of diluted solution **;**	**3**	
1(f)	filter **;** residue / solid dried **+** mass measured **;**	**2**	

Question	Answer	Marks	Guidance
2(a)(i)	at least 55 mm diameter and ± circular **;** outline drawn with sharp pencil **+** continuous line **+** no shading anywhere **;** vascular tissue delimited **+** inner darker area on photo indicated **;** central vascular tissue correctly labelled **;**	**4**	
2(a)(ii)	39 ±1 mm **+** measurement of drawing (± 1 mm) **;** line drawn on drawing **;** correct working for magnification **;** correct calculation **;**	**4**	
2(b)(i)	axes fully labelled **;** linear scale for vitamin C content **+** at least half of grid used in both directions **;** four data values plotted correctly **;** all bars ruled and of equal width **;**	**4**	
2(b)(ii)	boiling / cooking decreases vitamin C **OR** more vitamin C in uncooked / fresh than boiled **ORA** **;** freezing decreases vitamin C **OR** more vitamin C in fresh than frozen **ORA** **;**	**2**	

Question	Answer	Marks	Guidance
2(b)(iii)	carrots of same age or type or species / same carrot ; same mass / volume of carrots used ; both cooking methods (oven, boiling) used ; same temperature / for same time / until ready to eat ; vitamin C test used / content determined after cooking ; expressed as mg per 100 g of carrot ; repeat and calculate mean / average ;	**4**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(a)</td><td>
<table>
<tr><td></td><td>normal</td><td>abnormal</td></tr>
<tr><td>number</td><td>6 ;</td><td>–</td></tr>
<tr><td>shape</td><td>biconcave / disc-shaped / circular ;</td><td>elongated / flat / long / pointed ;</td></tr>
<tr><td>size</td><td>small / short</td><td>large / long ;</td></tr>
</table>
</td><td>4</td><td></td></tr>
<tr><td>3(b)</td><td>abnormal cells cannot squeeze through / travel through / enter / get stuck in capillaries ;

abnormal cells can cause blockages / stops or reduces or slows blood flow / damage capillaries / cause internal bleeding / increase blood pressure ;

less oxygen transported ;</td><td>2</td><td></td></tr>
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