Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

BIOLOGY **5090/62**

Paper 6 Alternative to Practical **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

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

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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

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Question	Answers	Marks	Guidance
1(a)(i)	**A** 0.3 **B** 0.1 **C** - 0.2 **D** - 0.4 **; ;** negative signs / decrease for **C** and **D** only **;**	**3**	4 correct values 2 marks 3 correct values 1 mark 2 or fewer 0 marks **Ig** units included in table e.g. 0.3 g
1(a)(ii)	reference to movement of <u>water</u> **;** <u>osmosis</u> **;** into **A** / taken up by **A** **;** out of **D** / lost by **D** **;**	**4**	 **Ig** diffusion **R** If osmosis and active transport in same answer
1(a)(iii)	to remove surface / excess solution **;** so that excess solution is not included in the mass of the strip / so that only the mass of the strip is measured / **AW** **;**	**1**	**A** water
1(a)(iv)	to remove variable / so that sucrose solution concentration is the only variable **;** to make comparison valid / increase validity **;** same (surface) area of potato in contact with solution **;**	**2**	
1(a) (v)	add 50 cm^3 <u>water</u> / add equal volume of <u>water</u> / make volume up to 100 cm^3 with <u>water</u> **;**	**1**	
1(b)(i)	(plasmolysed cells) 7 (non-plasmolysed cells) 21 **;**	**1**	
1(b)(ii)	25.0 **; ;**	**2**	correct answer with no working shown gains both marks **A** one mark for correct working if answer incorrect

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Question	Answers	Marks	Guidance
1(c)(i)	both axes fully labelled: 'concentration of sucrose solution / mol per dm^{3}' 'percentage of plasmolysed cells' **;** sucrose concentration <u>on x-axis</u>, % cells <u>on y-axis</u> **+** linear scales **+** 0 at origin **+** at least half grid used **;** all 5 points visibly plotted correctly **;** plotted points joined with <u>ruled</u> lines **+** not extrapolated beyond 0.8 / 100 plot **;**	**4**	
1(c)(ii)	working shown on graph **;** value read correctly from candidate's working **+** mol per dm^{3} **;**	**2**	 tolerance ± half small square
	Total:	**20**	

Question	Answers	Marks	Guidance
2(a)(i)	add iodine (solution) **;** yellow to black (blue-black) **;**	**2**	
2(a)(ii)	add Benedict's solution **;** heat **;** blue to green / yellow / orange / red **;**	**3**	
2(b)(i)	as fat (content) increases energy increases / **ORA ;**	**1**	**R** reference to 'proportional'
2(b)(ii)	62.5 **; ;**	**2**	correct answer with no working shown gains both marks **A** one mark for correct working if answer incorrect
2(b)(iii)	500 **; ;**	**2**	correct answer with no working shown gains both marks **A** one mark for correct working if answer incorrect
	Total:	**10**	

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Question	Answers	Marks	Guidance
3(a)	cell **P** at least 80 mm long **+** good proportions **;** line clear, clean, and continuous drawn with a sharp pencil **+** no shading / stippling / cross-hatching anywhere **;** cell wall indicated with a double line **;** chloroplasts shown in acceptable numbers **+** all drawn with complete outlines **;**	**4**	
3(b)	measurement 48–51 **;** measurement ÷ 200 **;** correct value **;** mm **;**	**4**	
3(c)	chloroplasts **;** (cell) wall **;**	**2**	**R** chlorophyll **Ig** vacuole (not visible)
	Total:	**10**	

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