Cambridge O Level

Cambridge International Examinations
Cambridge Ordinary Level

BIOLOGY **5090/31**

Paper 3 Practical Test **May/June 2017**

MARK SCHEME

Maximum Mark: 40

Published

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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	Answer	Marks	Additional guidance
1(a)(i)	2 X marks drawn on grid **;** labels S1 and S2 **;** S1 mark higher than S2 **;**	**3**	
1(a)(ii)	S1: less flexible / firm / turgid / hard / **AW ;** S2: more flexible / soft / flaccid / **AW ;**	**2**	
1(a)(iii)	strips cut to same size / dimensions / surface area / length / width / volume **;** strips fully submerged / covered (by solutions) **;** (left for) same time / 20 minutes **;** standard blotting procedure **AW ;** aligned on corking same way **AW ;** strips cut from same potato (species) **;**	**2**	
1(a)(iv)	reference to movement of <u>water</u> **;** <u>osmosis</u> **;** from solution into S1 / (water) taken up by S1 / extra water makes S1 firmer / **AW ;** out of S2 into solution / (water) lost by S2 / water loss makes S2 softer / **AW ;**	**4**	**Ig** diffusion **R** if osmosis and active transport in same answer

Question	Answer	Marks	Additional guidance
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
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>, % plasmolysed 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	Answer	Marks	Additional guidance
2(a)	cell **P** at least 80 mm long **+** correct 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**	
2(b)	measurement 48 – 51 **;** measurement ÷ 200 **;** correct value **;** mm **;**	**4**	
2(c)	chloroplasts **;** (cell) wall **;**	**2**	**R** chlorophyll **Ig** vacuole (not visible)
	Total:	**10**	

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