Cambridge Assessment International Education
Cambridge Ordinary Level

BIOLOGY **5090/61**

Paper 6 Alternative to Practical **October/November 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 (grammatical variants accepted)
+	statements on both sides of the + are needed for that mark

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Question	Answer	Marks	Guidance
1(a)(i)	distilled water 5 mm ; lactose 5 mm ; sucrose 62 mm ;	**2**	values ± 1 mm award one mark only if one error
1(a)(ii)	40 mm ;	**1**	correct units required
1(b)(i)	axes labelled with units ; size to fill at least half of grid **+** linear scale on height of froth axis **+** value at origin of height axis ; four plots correct ; all columns drawn ruled and of equal width ;	**4**	
1(b)(ii)	yeast is active in glucose / sucrose ; inactive / little / small / less activity in lactose / water **AW** ; yeast unable to use lactose / doesn't produce lactase ;	**3**	
1(c)(i)	respiration / fermentation ;	**1**	**R** aerobic respiration
1(c)(ii)	carbon dioxide ;	**1**	

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Question	Answer	Marks	Guidance
1(c)(iii)	allow equilibration of temperature / **AW** ;	**1**	**A** optimum temperature for enzymes / all test-tubes reach 40 °C
1(c)(iv)	thermometer ; add hot water or cold water / heat with Bunsen burner / cool with ice / lag or insulate water bath ;	**1**	
1(c)(v)	control / to compare sugar with no sugar / to see what happens with no sugar ; to check that bubbles are **not** produced in water / yeast is inactive in water ;	**1**	
1(d)	(sugar) not absorbed ; no enzyme to break down sugar ; yeast unable to use lactose / produce lactase ;	**1**	
1(e)	repeat experiment / replicates for each solution ; mean **OR** average / discount anomalous results ;	**2**	

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Question	Answer	Marks	Guidance
2(a)	insect **+** petals **;**	**1**	**Ig** scent **A** named insect
2(b)	**A** sepal(s) / calyx **;** **B** petal(s) / corolla **;** **C** anther(s) / stamen(s) **;** **D** stigma / style **;**	**4**	
2(c)(i)	(easier) for water / oxygen to enter **OR** be absorbed **;** (easier) for radicle / plumule / root / shoot to emerge **;**	**1**	
2(c)(ii)	some seeds cut **+** some whole / uncut **;** same number of each / actual number of each given **;** in Petri dish / suitable container **+** filter paper / cotton wool / soil **;** all given same conditions / water / temperature **;** **EITHER** measure time taken for germination / compare times for germination **;** **OR** numbers germinated counted or observed **;**	**4**	

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Question	Answer	Marks	Guidance
3(a)	cell wall ;	**1**	
3(b)	clear continuous (outer) line for grain **J** + no shading anywhere ; grain **J** at least 60 mm long + grains touching ; correct relative proportions for all three grains ;	**3**	
3(c)(i)	straight line drawn on maximum length of **J** ; measurement (± 1 mm) ;	**2**	no units required
3(c)(ii)	measurement from drawing ÷ 0.03 ; answer ;	**2**	correct answer with no working = 2 marks
3(d)	scraping from cut surface / thin section **OR** slice ; drop of iodine solution / iodine in potassium iodide solution ; to stain ; cover slip ; prevent **OR** remove air bubbles ; excess stain mopped up / removed / washed off ;	**4**	

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