



**Cambridge Assessment International Education**  
Cambridge Ordinary Level

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**BIOLOGY**

**5090/31**

Paper 3 Practical Test

**October/November 2017**

MARK SCHEME

Maximum Mark: 40

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**Published**

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Mark schemes will use these abbreviations:

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

Question	Answer	Marks	Guidance
1(a)	all boxes completed with values ; glucose and sucrose (height) greater than water and lactose ; glucose and sucrose (height) increases from 5 to 10 minutes ; no / small amount of froth with water and lactose ;	<b>4</b>	
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 ;	<b>4</b>	
1(b)(ii)	yeast is active in glucose / sucrose ; inactive / little / small / less activity in lactose / water <b>AW</b> ; yeast unable to use lactose / doesn't produce lactase ;	<b>3</b>	
1(c)(i)	respiration / fermentation ;	<b>1</b>	<b>R</b> aerobic respiration
1(c)(ii)	carbon dioxide ;	<b>1</b>	

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

Question	Answer	Marks	Guidance
2(a)	insect + petals ;	1	Ig scent A named insect
2(b)	<b>A</b> sepal(s) / calyx ; <b>B</b> petal(s) / corolla ; <b>C</b> anther(s) / stamen(s) ; <b>D</b> stigma / style ;	4	
2(c)(i)	(easier) for water / oxygen to enter <b>OR</b> 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 ; <b>EITHER</b> measure time taken for germination / compare times for germination ; <b>OR</b> numbers germinated counted or observed ;	4	

Question	Answer	Marks	Guidance
3(a)	<u>cell wall</u> ;	1	
3(b)	clear continuous (outer) line for grain <b>J</b> + no shading anywhere ; grain <b>J</b> 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 <b>J</b> ; measurement ( $\pm 1$ mm) ;	2	no units required
3(c)(ii)	measurement from drawing $\div 0.03$ ; answer ;	2	correct answer with no working = 2 marks
3(d)	scraping from cut surface / thin section <b>OR</b> slice ; drop of iodine solution / iodine in potassium iodide solution ; to stain ; cover slip ; prevent <b>OR</b> remove air bubbles ; excess stain mopped up / removed / washed off ;	4	