

# Mark Scheme (Results)

## November 2009

IGCSE

IGCSE Biology (4325) Paper 03  
IGCSE Science (Double Award) (4437) Paper 07

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Question Number	Answer					Mark
1(a)	Substance tested for	Solution used	Colour of solution at start	Colour of solution at end	Heat required	(3)
	starch	iodine	yellow	blue / black	(no)	
	glucose	Benedict's;	blue;	red / yellow;	(yes)	

Question Number	Answer	Mark
1(b)	goggles / heat proof mat / tie hair back / water bath/beaker / tongs / point away / eq;	Max (2)

(Total 5 marks)

Question Number	Answer	Mark
2(a)(i)	stomata / stoma;	(1)

Question Number	Answer	Mark
2(a)(ii)	open; carbon dioxide in; photosynthesis; water out; transpiration / evaporation / cooling; I gas exchange	max (3)

Question Number	Answer	Mark									
2(b)	<table border="1"> <thead> <tr> <th>Feature</th> <th>Leaf A</th> <th>Leaf B</th> </tr> </thead> <tbody> <tr> <td>number of pores</td> <td>4</td> <td>7;</td> </tr> <tr> <td>shape of epidermis cells</td> <td>regular / hexagonal / straight sides / oval / round / turgid / eq;</td> <td>irregular / wavy / curvy / flaccid / plasmolysed / eq;</td> </tr> </tbody> </table>	Feature	Leaf A	Leaf B	number of pores	4	7;	shape of epidermis cells	regular / hexagonal / straight sides / oval / round / turgid / eq;	irregular / wavy / curvy / flaccid / plasmolysed / eq;	(3)
	Feature	Leaf A	Leaf B								
	number of pores	4	7;								
shape of epidermis cells	regular / hexagonal / straight sides / oval / round / turgid / eq;	irregular / wavy / curvy / flaccid / plasmolysed / eq;									

Question Number	Answer	Mark
2(c)(i)	time / clock / timer / eq; distance / ruler / height / eq; (air) bubble;	(3)

Question Number	Answer	Mark
2(c)(ii)	airtight / watertight / sealed / use petroleum jelly / cut under water / cut diagonally / tube in water / tube not blocked / eq;	(1)

Question Number	Answer	Mark
2(c)(iii)	fan / by window; no fan / fan at lower speed / away from window / no wind / eq; same plant / leaf area; control temp / light / eq;	(2)

(Total 13 marks)

Question Number	Answer	Mark
3(a)	limewater; milky; hydrogen-carbonate; yellow;	(2)

Question Number	Answer	Mark
3(b)	mass / number / eq; species / eq; moisture of seeds / age / condition / eq; volume of indicator; oxygen;	max (2)

Question Number	Answer	Mark
3(c)	10 °C and 20 °C; (number of) bubbles; minutes 1, 2, 3 and 4;  Reject graph	(3)

Question Number	Answer	Mark
3(d)	more gas / bubbles at 20 °C / eq; molecular movement / KE / eq; respiration;	(2)

Question Number	Answer	Mark
3(e)	volume / eq; measuring cylinder / eq;	(2)

Question Number	Answer	Mark
3(f)(i)	more gas / bubbles / eq; more difficult to count; effect due to pressure/kinetic energy (rather than increased respiration) / eq; overestimate / not accurate value of respiration rate / eq;	(2)

Question Number	Answer	Mark
3(f)(ii)	use control / leave tube for a while before measuring / eq;	(1)

(Total 14 marks)

Question Number	Answer	Mark
4	C two levels of CO <sub>2</sub> ; O same age of larvae / species / size / eq; R repeat / many larvae / sets of larvae; M1 measure distance / cm / use of choice chamber / eq; M2 ref. time / minutes / seconds; S1 and S2 control temperature / moisture / light / oxygen / eq;;	Max (6)

(Total 6 marks)

Question Number	Answer	Mark
5(a)	decreases / eq; rapid at start / levels off at end / eq;	(2)

Question Number	Answer	Mark
5(b)	less starch / correct ref to active site / enzyme substrate complex / eq;	(1)

Question Number	Answer	Mark
5(c)	temperature; use water bath / incubator; 1 thermometer conc./volume of enzyme; measuring cylinder / keep in excess / eq;	(2)

(Total 5 marks)

Question Number	Answer	Mark
6(a)	7;	(1)

Question Number	Answer	Mark
6(b)(i)	9;	(1)

Question Number	Answer	Mark
6(b)(ii)	key / slope + level and plants A + B; axis linear + labelled number; plot 12 and 5 for level ground;	(3)

Question Number	Answer	Mark
6(c)	less A slope / more A level ground / eq; more B slope / less B level ground / eq;	(2)

(Total 7 marks)

PAPER TOTAL: 50 MARKS



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