

## MARK SCHEME for the October/November 2013 series

## **5090 BIOLOGY**

5090/62

Paper 6 (Alternative to Practical), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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

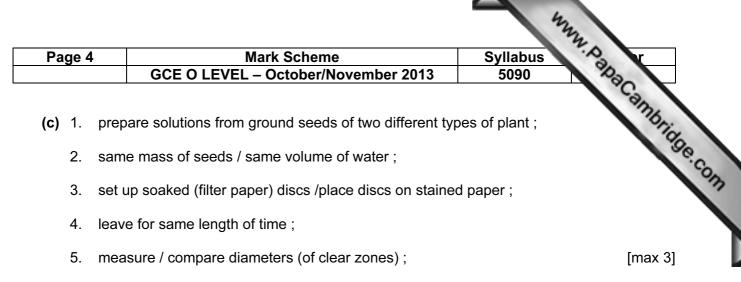
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme Syllabus	<b>V</b>
	GCE O LEVEL – October/November 2013 5090	
<b>(a)</b> 1. 2. 3.	Mark Scheme Syllabus   GCE O LEVEL – October/November 2013 5090   (yeast produces) bubbles / gas / CO2; more in sucrose / AW / ORA ;   effect decreases with time /AW ;	ambride
3.	correct manipulation of figures ;	[max 2]
(b) (i)	carbon dioxide / CO <sub>2</sub> ;	[1]
(ii)	limewater ; cloudy / milky / chalky / white ;	
	or	
	hydrogen carbonate indicator / bicarbonate indicator ; red to yellow ;	[2]
(iii)	respiration / fermentation ;	[1]
(c) (i)	so the yeast can rehydrate /AW ;	
	to reach 'warm'/ uniform temperature ;	
	(allow time) for reaction to occur / for fermentation (respiration) to occur / enzyme act ;	es to [max 1]
(ii)	reliability / to calculate a mean or average / identify errors ;	[1]
(iii)	to prevent yeast settling / prevent yeast clumping / keep yeast evenly distributed re-mixing of yeast with sugar ;	/ [1]
(iv)	1. volume of (sugar) solution ;	
	2. concentration of / % of sugar in solution ;	
	3. mass of yeast ;	
	4. temperature (of the water / mixture);	

5. time for counting bubbles / time for standing / no. of times bubbles counted ; [max 3]

Page 3		Mark Scheme Syllabus	e r
		GCE O LEVEL – October/November 2013 5090	Day .
(d) (i	i) 1.	distance PQ on drawing at least 60 mm + clear clean continuous outer line + main bodies of cells not shaded ;	DapaCambrid
	2.	good proportions with parent approx. x2 'bud' in length + joined by narro	ow region ;
	3.	nucleus in parent cell + at least one other inclusion in both the parent ar cells ;	
	4.	cell wall indicated i.e. double outer line ;	[4]
(ii	<b>i)</b> 1.	line drawn on the drawing in PQ position ;	
	2.	both measurements correct ;	
	3.	correct expression for calculation ;	
	4.	allowance for $\times$ 5000 ;	
	5.	magnification recorded correctly;	[5]
			[Total: 21]
(a)	3	measurements between 28– 32 mm recorded ;	
	zo	ne 1 larger than the other 2 ;	[2]
(b) (i	<b>i)</b> io	dine (solution) + black / blue-black ;	[1]
(ii	<b>i)</b> 1.	(starch) gone / removed / changed / broken down / digested / used up / starch present ;	less / no
	2.	(starch converted to) <u>reducing</u> sugar / glucose / maltose ;	
	3.	enzyme / amylase / diastase / carbohydrase (involved) ;	
	4.	diffusion (of enzyme) ;	[max 3]
		for germination / growth ;	
(iii	i) 1.		
(iii	i) 1. 2.	(seeds contain) starch qualified ;	
(iii		(seeds contain) starch qualified ; (must be changed ) <u>soluble</u> / sugars ;	
(iii	2.		



[Total: 12]

## 3 (a)

number of spots/leaflet	number of leaflets
	number of leafiets
0	3
1	3
2	3
3	(5)
4	3
5	1
6	1
7	0
8	1

[2]

[3]

## **(b)** bar chart – A. either orientation

- 1. both axes labelled with appropriate scale + 0,1,2 etc. in centre of bar or row ;
- 2. bars of equal width with sides ruled in ascending order of number of spots (0-8);
- 3. all plots plotted correctly;
- (c) more / larger spots in non-polluted area / ORA ;

more air pollution less disease / leaves more healthy in polluted area / ORA; [max 1]

