UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

MARK SCHEME for the October/November 2009 question paper for the guidance of teachers

5090 BIOLOGY

5090/06

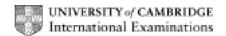
Paper 6 (Alternative to Practical), maximum raw mark 40

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 must be read in conjunction with the question papers and the report on the examination.

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Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
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1 (a) A = guard cell; B = stoma(ta);

[2]

(b) (i) CO₂ ; [1]

(ii) O_2 and water (<u>vapour</u>); [1]

(iii) stomata/pore/guard cell closed (in darkness); [1]

(iv) either: cobalt chloride paper on leaf; how held;

(blue to) pink shows water;

or: plant in bell-jar (etc); droplets (condense);

test for water;

or: aquatic plant; bubbles; test for oxygen/glowing splint; [max 3]

(c) (i) measurements of both with units (once);

expression $\frac{49(-52)}{8(9)} \times 400$;

magnification correctly given; (× 2450 or c. 1100 if wrong dimension used)

R: decimal places

Look for reasonable and consistent attempts.

[3]

(ii) thicker inner wall;

causes bending/banana shape; when cell turgid;

[3]

(iii) chloroplast;

iodine (solution)/methylene blue ;

[2]

[2]

(iv) two from:

photosynthesis in light; produces CHO/sugar; R: starch/food in cell sap/solution affects water potential; AW ref. osmosis/water enters/turgor;

[Total: 18]

2 (a) Table 2.1

statement	starch test	reducing sugar test	biuret test	ethanol emulsion test
heating is required	×	√	×	×
when test solution added contents of test-tube are blue	×	√	✓	×
the test is completed by the addition of water	×	×	×	✓
positive result of test is contents turning black	✓	×	×	×
the test can be carried out on a solution of the test material in water	✓ or ×	✓	✓	×
the material being tested is a carbohydrate	✓	✓	×	×

(1 mark per line)

max 3 if words used R: any line with ✓ and × and blank

[6]

raye 3	Mark Scheme. Teachers version	Syliabus	Fapei
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(b) (i) redu	cing sugar test ;		[1]
(ii) sma	ll amount (etc) of reducing sugar ;		[1]
burning f	sugar test: e/even heating; avoids spurting; test-tube breaking inger or other safety factor; may change substrate; eating alcohol or decolourising leaf		educing sugar) [2]
			[Total: 10]
(a) (i) all b	oxes reasonably filled ;		[1]
total	e marks: clear method of 'tally' (etc), somewhere ; 'numbers' given ; column grouping correct and total 25 ;		[3]
3–5 axes rang accu	uency diagram marks: ruled, uniform columns, good size ; s labelled, with units ; e of each column clear on <i>x</i> -axis ; erate for numbers in table ; ersed axes: allow 1, 3 and 4 line graph allow 2 and 4	4	[4]
grown in two spectors seeds (continued to seed the seeds (continued to seed the seeds (continued to seed the seeds (continued to seed to seed the seeds (continued to seed the seeds (continued to seed the seeds (continued to se	is from) seeds of different sizes; uniform conditions; ified (soil/medium, light, nutrients, temperature, water) collected and) measured; corded/tabulated; ation within single genotype; range – same for shorter and longer parents? ins; conclusion suggested; croach of: same size seeds; different conditions; and so on for other points above		[max 4]

Mark Scheme: Teachers' version

Syllabus

Paper

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[Total: 12]