UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

MARK SCHEME for the May/June 2009 question paper for the guidance of teachers

5090 BIOLOGY

5090/06

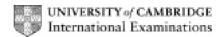
Paper 6 (Alternative to Practical), maximum raw mark 40

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	2	Mark Scheme: Teachers' version	Syllabus	Paper		
		GCE O LEVEL – May/June 2009	5090	06		
(a) (i)		iodine; R if heated e)- <u>black</u> if <u>starch</u> present; R substrate				
(ii)	R ur	t / warm with Benedict's; nqualified water bath. R non-reducing / orange / yellow if reducing sugar / glucose present;		[4]		
(b) (i)	1	oh marks: pH on x axis, time / on y ;		[5]		
	3 4	x axis: pH, correctly numbered, y time / sec.; A t / s clear, correct plotting; R if from 0 well joined, ruled or smooth best fit; curves identified;				
		curve only – allow 1, 2 and 4 chart – allow 1 and 5 only				
(ii)	sam	mum (etc.) pH 4 ; e for both ;				
	/ slo	nas similar effect with or without salt / wer at extremes / time decreases then increases ; eded up / time decreases with salt ; (at all pH values)		[max 4]		
(c) ren	olicatio	on ·				
inv sai sai sai sai ado	c) replication; investigate narrower pH range; same concentration / volume / amount / batch of enzyme; same concentration / volume / amount of substrate; same iodine / Benedict's treatment; same temperature; R ref. heat add equal volume / 1 cm³ of water equivalent to salt solution added; (same) stirring;					
cle	an áp	paratus before use ;				
ens	sure a	accurate pH ;		[max 5]		
				[Total: 18]		
(a) A - B -		cus ; llus / rod ;		[2]		
(b) (i)	lacto	ose / milk sugar ; R glucose		[1]		
(ii)	lacto	ose → lactic acid ;		[1]		
(c)	mix keep	then cool milk ; the 2 components ; o at suitable temperature 35°–45° ; 2–48 hours (etc.) ;				
		eat / multiply up ;		[may 0]		
				[max 2]		

1

2

[Total: 6]

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
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3 (a) Mark this section as a whole

Drawing marks:

- 1 Attempts at all three, fairly realistic;
- 2 Good; double lines, minimal shading etc.
- 3 At least 2 labels from testa / leaves / root (hairs);

Measurements:

- 1 Accurate and consistent units, decimal place if cm;
- 2 Realistic for either Fig. 3.1 or drawings;

Description / labels:

4 correct from:

Ref. colour – white (ish) / pale v dark green / brown;

Ref. relative lengths of axes;

2 / large leaves in **B**; **A** converse

Shoot / plumule / axis in **B** clear / well developed; Seed **C** not germinated / no growth; **R** dead / bad

Ref. pattern on testa of **C**;

AVP e.g. ref. etiolation / chlorosis in A;

[max 8]

[2]

[2]

- (b) (i) in light chlorophyll so photosynthesis; A converse unlike etiololated / pale / yellow A;
 - (ii) ref. enzyme action at low temperature / 4°; R deactivation
- (c) (i) <u>mitosis</u>; [1]

(energy released) at higher temp / 20°C for germination / growth;

- (ii) chromosome / chromatid; R: chromatin / DNA / nucleus [1]
- (iii) not specialised (for different functions), AW; [1]
 1 from: ± same shape / size; no vacuoles; frequent divisions; [1]

[Total: 16]