UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

5090 BIOLOGY

5090/31 Paper 3 (Practical Test), maximum raw mark 40

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1 (a) (i)

S1		**S2**
green	–	yellow ;
uniform colour	–	blotchy/spotted ;
smooth	–	rough AW ;
firm	–	soft ;
well defined section	–	less clear lines AW ;
skin/pericarp/epicarp thicker	–	comparative smell ; [3 max]

(ii) **S1** blacker than **S2** ;
S1 contains (more) starch ;
comment on distribution ; [2 max]

(b) (i) equal samples of each ;
prepare sample ;
heated with Benedict's solution ; **R** 37°
in water-bath ;
ref. (equal) volume of Benedict's/equal heating time ;
comparative result described – more +ve for **S2** ; [4 max]

(ii) in table:
observations: **S1** green – yellow ; **S2** yellow/orange – red ;
conclusion: less reducing sugar in **S1**/no difference ; [3]

(c) less starch in **S2** than **S1** ;
more reducing sugar in **S2** than **S1** ; [2]

(d) (i) **S1** darker/more discoloured ;
S2 darker/more discoloured ;
S3 'no change' in both/lighter ; [3]

(ii) acid conditions – pH effect on enzymes/metabolism ;
ref. ripening ; [2]

(iii) 3 or more pieces of banana taken ;
from each type of specimen ;
placed in range of solutions of different pH (acid & alkali etc) ;
leave for e.g. 15 min ;
compare/observe changes ;
OVP ; same temperature/test for starch & reducing sugar ; [4 max]

[Total: 23]

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2 **(a)** drawing marks:
head, (thorax) and abdomen cleanly drawn, min 7 cm ;
6 legs, reasonably correct orientation ; **A** 3 if lateral view
segments shown on/abdomen/leg/antenna ; [3]

labels:
head (thorax) and abdomen ;
antenna(e) ; **R** feelers
(compound) eyes ;
OVP ; e.g. wing/leg/segment/exoskeleton) [2 max]

(b) **(i)** & **(ii)** length of beetle, length of drawing, place indicated ;
expression using these figures ;
magnification properly expressed ; **R** if expression inverted. [3]

A up to 2 d.p. **R** rounding above 0.2

(c) **(i)** in Table 2.1:
number for **B** (at least 5) ; number for **C** ; [2]

(ii) application of formula ;
correct calculation, based on **(i)** ; (30 minimum) [2]

(iii) appropriate numbers given ; [1]

(d) **(i)** 16 ; [1]

(ii) bar chart :
axes correct and labelled ;
accurate plotting in equal, ruled columns ; [2]

(iii) AVP such as : predator/prey/moisture/light intensity/
other environmental preference ; **R** 'suitable' [1]

[Total: 17]

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