UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2011 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) heat solution with Benedict's solution;
equal volumes of each;
changes colour from blue to *yellow/*orange/red;
positive – presence of reducing sugar; [max 3]

(ii) **S1** – reducing sugar present; [1]

(iii) heat with Benedict's solution and colour changes to green/stays blue/no change with little or no reducing sugar present; (i.e. green for little or blue/no change for no reducing sugar) [1]

(b) (i) and (ii)

Table 1.1

	length of potato strip / cm		
	A	**B**	**C**
initial length	5.0	5.0	5.0
measured length			
change in length			

Allow 1 mark for correctly completing two columns and 2 marks for completing three columns (including + / - signs in the change in length column) [max 2]

(iii) **A** – **S1** solution – decreased length;
exosmosis / absorbed water from potato / AW;
B – **S1** and water – stayed nearly the same;
water in = water out / AW;
C – water – potato absorbed water – increased in length;
endosmosis; [max 4]

[Total: 11]

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2 (a) (i)

Table 2.1

	volume of vitamin C solution / cm^3		
	1st reading	2nd reading	3rd reading
initial volume			
final volume			
volume used to make the blue colour disappear			

Decimal places given at least in one of the columns [3]

Practical Test

(ii) calculate difference between original and final volumes to complete last row in Table 2.1 – this will be based on results in table; [1]

(iii) comment on reliability / accuracy / minimize errors; [1]

(iv) mean value (units) based on values in Table 2.1; [1]

(b) (i)

Table 2.2

	volume of **S2** / cm^3		
	1st reading	2nd reading	3rd reading
initial volume			
final volume			
volume of **S2** used to make the blue colour disappear.			

Decimal places given in at least one of the columns [3]

(ii) volume difference; [1]

(iii) mean value (units) based on values in Table 2.2; [1]

(iv) **S2** greater or less than vitamin C solution; [1]

(c) (i) X names and bars spaced equally on *x*-axis;
A axes orientation and label;
S scale on *y*-axis to fill most of grid;
P plot;
B bars not touching; [max 4]

(ii) 3100 ÷ 50 = 62 times / greater; [1]

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(d) fruits collected / harvested at same time;
conditions of storage – dark; cool;
sample at regular intervals / every week etc;
squeeze / extract juice;
measure volume;
test with DCPIP;
calculation/plot graph/tabulate
repetition of sample; [max 5]

(e) prevent scurvy / bleeding gums / AW;
cannot be made by body; [max 1]

[Total: 23]

3 (a) (i) drawing: larger than specimen with clear outline / no shading;
attachment end detail;
correct number of parts;
claw at end; [4]

(ii) front leg length and back leg length with units;
ratio expressed; [2]

[Total: 6]

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