UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

5090 BIOLOGY

5090/61 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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1 **(a)** **(i)** **A** 4.5–4.6 cm
B 4.9–5.0 cm
C 5.3–5.4 cm
3 correct with correct units at least once 2 marks
3 correct with no units or 2 correct with correct units once 1 mark [2]

(ii) answers related to measurements in **(a)(i)**
3 correct with appropriate –/loss or +/gain 2 marks
3 correct with no -/loss or +/gain or 2 correct with -/loss and +/gain 1 mark [2]

(iii) all changes described correctly in terms of increase, decrease or no change;
<u>osmosis;</u>
correct reference to the direction of movement of water;
correct reference to the effect on cell size / cell turgor / AW ; [4]

(b) named plant tissue ;
suitable range of sucrose solutions ;
each left for the same appropriate length of time ;
initial and final masses measured / changes in mass measured ;
external blotting of tissue after removal from solution ;
equal masses used initially / percentage change in mass calculated ;
repeat for reliability ;
repeat using narrower range of sucrose concentrations / use graph ;
reference to identifying solution producing no change ; [max 5]

[Total: 13]

2 **(a)** reliability of result / need for average / reducing experimental error ; [1]

(b) **(i)** axes correctly orientated and fully labelled ;
suitable scale on *y*-axis ;
correct plotting ;
bars ruled and of similar width ; [4]

(ii) $\frac{3100}{50} = 62$; [1]

(c) fruits collected at same time ;
stored under identical conditions ;
sampled at regular intervals ;
juice tested with DCPIP ;
constant volumes used ;
results compared ;
repeat / replicate ;
OVP; [max 5]

(d) prevent scurvy / AW ;
cannot be made by body ; [2]

[Total: 13]

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3 (a) (i) correct leg drawn with clear, clean lines at least 8cm wide ;
jointed segments well proportioned ;
detail of claw at end;
at least 6 spines drawn ; [4]

(ii) measurements correct ;
ratio calculated and correctly expressed ; [2]

(b) segments / three body parts / jointed ;
head ;
thorax ;
abdomen ;
pair of eyes ;
6 / 3 pairs of legs ;
feelers / antennae ; [max 3]

(c) (i) correct reference to sizes ;
locust 2 pairs of wings / fly one pair ;
hairs present on fly / absent on locust ;
OVP ; [max 2]

(ii) wings on fly / no wings on aphid ;
OVP ; [max 1]

(iii) $\frac{\text{size of drawing}}{1.5}$; magnification correct with x or times to 2 d.p. ; [2]

[Total: 14]

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