CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2012 series

5090 BIOLOGY

5090/31 Paper 3 (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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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1 **(a)** table drawn with ruled lines ;
column (or row) for A + column (or row) for B ;
rows (or columns) for volume + units ;
rows (or columns) for appearance ;
2 volumes recorded ;
appearance of both recorded ; [6]

(b) more or larger volume with enzyme / less or smaller volume without enzyme ;
actual volumes given;
clear or light brown / cloudy or dark brown /AW ; [3]
Answer must be comparative

(c) **(i)** prevent enzyme being introduced to B / **AW** ; [1]

(ii) distribute enzyme evenly / **AW** ; [1]

(iii) as a control / comparison ;
keep volumes of both the same ; [2]

(d) **(i)** 5 ; [1]

(ii) more/less juice/enzyme activity increases/decreases to/from optimum pH /AW ;
correct ref. to enzyme denaturing / active site shape changing ;
ref. to symmetry /**AW** of graph line ;
AVP; [Max 2]
Description and explanation required for both marks

[Total 16]

2 **(a)** **(i)** suitable size, min. 6 cm ;
good proportions ;
clear, clean, continuous lines ;
3 loculi ;
outer layer (double line) / vascular bundles indicated; [5]

(ii) two correct measurements ;
appropriate line drawn ;
use of correct method ;
magnification correct, x or times, number of dps etc.; [4]

(b) **(i)** **in water**
drawing ;
section opens / increases / **AW** ;

in salt solution
drawing ;
section closes / decreases / **AW** ; [4]

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(ii) water movement ;
ref. to partially permeable membrane ;
one correct ref to direction of movement ;
either increase in size of cells / turgor *or* decrease in size of cells / turgor ;
ref. to changes in texture or curvature ;
Ig ref to osmosis as given in question [Max 4]

[Total 17]

3 (a) (i) 5 digits / pentadactyl ;
Hairless or smooth palm / hairs on back ;
4 fingers + 1 thumb / 4 digits with 2 (3) joints + 1 with 1/2 ; thumb opposable /**AW** ;
nails ; lines on palm; [Max 3]
A 5 fingers
Idea of thumb different from fingers
A index finger longer than ring finger
Ig ref to thumb unqualified

(ii) orang-utan has more hair ;
(orang-utan) has longer fingers ;
(orang-utan) has shorter thumbs ;
(orang-utan) has darker finger nails ; [Max 2]
R size
Answers must be comparative
Ig ref to skin colour

(b) sweating ; evaporation of water/sweat (causes cooling);
OR
vasodilation / dilating blood vessel / more blood flow near the skin surface;
heat loss from blood;
process identified + effect for 2 marks [2]
A arterioles
R arteries, veins, capillaries
R blood vessels moving

[Total 7]

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