UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 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.

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1 (a) (i) A stigma ;
B filament ; [2]

(ii) meiosis/reduction ; [1]

(iii) chromosome number halved/haploid ;
gametes/pollen/ovule ;
diploid number at fertilisation ; [2 max]

(iv) line labelled x–x horizontally through anther ; [1]

(b) (i) Drawing marks
1 at least 8 cm across and wider at top ;
2 clear continuous lines ;
3 4 pollen sacs + vascular bundle outlined realistically ;
4 indentations on left and right well drawn ; [4]

(ii) correct measurements + line on either Fig. or drawing + units ;
correct formula drawing size over specimen ;
allowance for magnification of Fig. 1.2 ;
calculation correct and well expressed ; [4]

(iii) (method for) transfer of pollen on to slide ;
adding stain/water/mountant ;
name of suitable stain ;
use cover slip ;
(method of) preventing air bubbles forming ;
removing any excess stain/liquid ; [4 max]

[Total: 18]

2 (a) (i) root ; [1]

(ii) xylem (vessel) ; [1]

(b) (i) transport water + mineral salts ;
from root to leaf AW ; [2]

(ii) tubes/hollow/no cell contents ;
no cross walls ;
strengthened for support/lignified ; [2 max]

[Total: 6]

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3 (a) (i) Graph marks
year/month on x axis, length on y ;
both scales linear ;
both axes fully labelled – x to include years, y length/mm ;
plotting correct ;
plots joined by ruled lines ; [5]

(ii) 06/June – 08/August ;
2006 ; [2]

(iii) 41 mm ; [1]

(iv) idea of continuous growth:
irregular/non-uniform ;
more growth in warmer months/April – August ;
varying amounts of growth in similar periods/AW ;
slower growth Aug – Oct ; [3 max]

(b) (i) higher water temperature, higher body temperature (or converse) ;
higher temperature – more active (or converse) ;
increased/decreased metabolic activity ;
(related to) enzyme activity ; [3]

(ii) more food for fish in warmer months (or converse) ;
reason for increase/decrease in fish food ; [2]

[Total: 16]

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