**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Ordinary Level**

# MARK SCHEME for the October/November 2010 question paper for the guidance of teachers

## 5090 BIOLOGY

**5090/62** 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)** 6–8 recorded in Table 1.1 ; [1]

**(ii)** water (into apparatus) from syringe ;
fills capillary tube / replaces air / AW ; [2]

**(iii)** Graph marks:
1. time on *x*-axis, distance on *y*-axis with correct linear scales ;
2. axes labelled – time of day or time / hours, distance / arbitrary units ;
3. plots clear and accurate ;
4. ruled connections / line of best fit ; [4]

**(iv)** humidity ;
temperature ;
light ;
air movement / wind AW ; [max 3]

**(v)** cloud / rain / fall in temperature or wind / stomata closing / experimental error ; [1]

**(b) (i)** arrow(s) from xylem out through stoma ;
<u>evaporation</u> / water <u>vapour</u> ;
diffusion (into air) / osmosis (cell to cell) ;
water pathway and carbon dioxide pathway labelled / distinguished by key ; [4]

**(ii)** arrow(s) from atmosphere, through stoma ;
to photosynthetic cell ; [2]

**(iii)** guard cell ;
mesophyll / palisade / spongy ;
xylem / vessel ; [3]

**[Total: 20]**

**2 (a) (i)** Drawing:
1. at least 6 cm, clear and clean ;
2. accurate shape of embryo ; [2]

Labels: <u>radicle</u> ;
<u>plumule</u>
stem or root origin correctly identified ; [3]

**(ii)** measurements correct with correct units at least once ;
correct expression, drawing size over specimen size ;
allowance for × 0.75 magnification ;
magnification correctly stated – × or times, no more than 2 dp ; [4]

**[Total: 9]**

**3 (a) (i)** In Table 3.2:

| container **A** | container **B** | container **C** | container **D** |
|---|---|---|---|
| red ; | yellow ; | purple ; | red ; |

[4]

**(ii)** respiration ; photosynthesis ; [2]

**(iii)** respiration / snail / animal produces (AW) carbon dioxide ;
carbon dioxide acidic / lowers pH ;
photosynthesis / plant uses (AW) carbon dioxide ;
hence less acidic / more alkaline ; [max 3]

**(iv)** yellow ;
**either** no photosynthesis / no carbon dioxide removed ;
**or** respiration continues / carbon dioxide produced ; R. respiration starts [2]

**[Total: 11]**