

**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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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Page 2	Mark Scheme: Teachers' version	Syllabus
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- 1 (a) (i) 6–8 recorded in Table 1.1 ;
- (ii) water (into apparatus) from syringe ;
fills capillary tube / replaces air / AW ;
- (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 ;
evaporation / water vapour ;
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: radicle ;
plumule
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]

Page 3	Mark Scheme: Teachers' version	Syllabus
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- 3 (a) (i) In Table 3.2:
container A container B container C container D
red ; yellow ; purple ; red ;
- (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]