**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

# MARK SCHEME for the May/June 2010 question paper

# for the guidance of teachers

## 0654 CO-ORDINATED SCIENCES

**0654/51** Paper 51 (Practical), maximum raw mark 45

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)** 2 drawings with sun leaf smaller;
shows some detail rather than simple outline e.g. veins [2]

**(ii)** accurate measurement of length of sun leaf from diagram +/- 2 mm;
accurate measurement of length of shade leaf from diagram +/- 2 mm;
(these values should be the maximum possible lengths)
give ONE if in cm [2]

**(b)** larger area for greater absorption of light (for photosynthesis); [1]

**(c) (i)** table constructed correctly with correct headings;
correct comparison of leaf thickness;
correct comparison of numbers of palisade cells;
correct comparison of size of air spaces; [4]

**(ii)** any suitable feature and linked explanation. e.g.
feature two rows of palisade cells;
explanation greater amount of photosynthesis; [2]

**(iii)** prevents too much water (vapour) loss due to transpiration; [1]

**(d) (i)** length = 63 mm ; (allow 1 mm tolerance) [1]

**(ii)** magnification = 63/0.2;
= 315 (times); (allow e.c.f.) [2]

**[Total: 15]**

**2 (a)** suitable figures for both;
(do not give this mark if in cm)
use of figures correctly;
answer; [3]

**3 (b) (iv)** table
5 readings;
all decreasing;
$\mathbf{d_2}$ values all less than $\mathbf{d_1}$;
if only 4 readings, lose 1st mark
if only 3 readings lose 1st and 2nd mark [3]

**(c)** Graph
**A** axes labelled correctly;
**S** suitable scale;
**P** 4 points plotted correctly;
**L** best straight line; [4]

**(d)** clear indication of values chosen from graph; (values must be correct)
correct evaluation;
if value is between 1.1 and 1.5; [3]

**(e)** measure a known volume and weigh;
density is mass / volume; [2]

**[Total: 15]**

**3** **(a)** volume of drop between 0.05 and 0.1 $cm^3$; [1]

**(b)** number of drops for **X** is between 20 and 30;
values decrease;
number of drops approximately halves going down; [3]

**(c)** **X** is most concentrated because needs most drops; [1]

**(d)** does not relight;
pops;
hydrogen; [3]

**(e)** white ppt.;
hydrochloric; [2]

**(f)** litmus blue;
ammonia; [2]

**(g)** use same amount of acid and magnesium;
time taken to dissolve;
shortest time means most concentrated; [3]

other methods may be accepted if would work but max 2 if refers to amount of fizzing;

**[Total: 15]**