CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0654 CO-ORDINATED SCIENCES

0654/51 Paper 5 (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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

CAMBRIDGE
International Examinations

1 (a) (i) large, neat pencil drawing ;
drawing clearly shows petals, stamens, carpel ; [2]

(ii) stamen and carpel correctly labelled ;
stamen marked as **male** and **carpel** marked as **female** ; [2]

(iii) yellow powder inside the anther ;
pollen ; [2]

(iv) clear pencil drawing of carpel in section ;
any two of the following correctly labelled – ovary, ovary / carpel wall, ovule ; [2]

(v) contains or protects ovule or gamete / becomes fruit / receives pollen / transfers pollen to ovary / place where fertilisation occurs ; [1]

(b) (i) petal drawing in left of Table 1.1 showing colours ; [1]

(ii) petal drawing in right of Table 1.1 showing colours plus green / yellow / orange / red / brown ; [1]

(iii) to attract insects ; [1]

(iv) colours are conspicuous to insects **AND** (lines) guide insects towards nectar ; [1]

(v) (reducing) sugar / glucose / nectar present ;
insects will visit flower to collect sugar / sugar or glucose or nectar will attract insects ; [2]

[Total: 15]

2 (a) (i) *x* value for 60 g recorded in the range 25 – 50 cm ; [1]

(ii) note readings on either side of mass and find mean ; [1]

(iii) *x* value for 70 g recorded <u>to 1 decimal place</u> ; [1]

(iv) remaining values of *x* recorded ;
values of *x* decreasing down the table; [2]

(v) 1/*x* values calculated correctly ;
all values to 3 decimal places ; [2]

(b) (i) axes labelled with units ;
suitable choice of scales with vertical axis starting at 60 g and 10 g represented by at least 2 cm ;
4 points out of 5 plotted correctly to half a small square ;
good best fit straight line judgement ; [4]

(ii) indication on graph of how data obtained ;
correct calculation of gradient ; [2]

(c) correct calculation of *M* from candidate's gradient to 2 significant figures ;
M = 48 – 52 g from a correctly calculated gradient (accuracy mark) ; [2]

[Total: 15]

3 (a) (i) time value for 10 cm^3 of **A** ; [1]

(ii) time value for 8 cm^3 of **A** ; [1]

(iii) complete set of time values ;
all time values to nearest second (whole number) ;
values of time increase down the table ; [3]

(b) (i) all 1/time values correct (2 decimal places or more) ; [1]

(ii) axis – correct and labelled with units for volume ;
scale – uniform and numbered for both axes ;
points – 3 points plotted correctly within half a square ;
line – best straight line through origin ; [4]

(c) (i) proportional / rate increases as (volume of) **A** increases ; (ignore conclusions in terms of time) [1]

(ii) blue-black colour (with starch) ; [1]

(iii) to keep (total) volume constant / so concentration is proportional to volume ; [1]

(d) keep volume of **A** constant / stated value for volume of **A** ;
vary volume **B** and water / stated range for volume of **B** and water ; [2]

[Total: 15]