MARK SCHEME for the May/June 2013 series

0654 CO-ORDINATED SCIENCES

0654/51   Paper 5 (Practical), maximum raw mark 45

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 <u>to 2 significant figures</u> ;
$M = 48 - 52$ 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 <u>through origin</u> ; [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** <u>and water</u> / stated range for volume of **B** <u>and water</u> ; [2]

[Total: 15]