CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 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 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

CAMBRIDGE
International Examinations

1 **(a)** outline concave on one side ;
projections on the other side ; [2]

(b) **(i)**

test solution	observation
Benedict's solution	**green / yellow / orange / red ;**
biuret solution	**blue / no change / colour stays the same ;**
iodine solution	**brown / orange / no change / colour stays the same ;**

[3]

(ii) reducing sugar / glucose ; [1]
(**NOT** sugar. **DO NOT ALLOW** additional food groups)

(c) **(i)** several small circles labelled 'stained' or 'coloured' or **(c)(i)** or red ;
close to the outer ridged edge ; [2]

(ii) xylem ;
water transport (**ALLOW** water and any idea of movement, 'absorbs water' is not enough) [2]

(d) star shape labelled 'transport tissue' or 'xylem' or ecf from (c)(ii) ;
one structure in the middle ; [2]

(e) different temperatures in separate experiments ;
time for coloured water to appear at top of cut stem / set time and measure distance moved ;
all other conditions / named condition kept constant ;
(if one experiment proposed with gradual increase in temperature then can only score 2nd marking point) [3]

2 (a) (i) white ppt. / milky / cloudy white ; [1]

(ii) blue / purple **AND** pH value in range 8–14 ; [1]

(iii) calcium oxide / CaO ;
(**ALLOW** quicklime / limewater / calcium hydroxide / $Ca(OH)_2$; [1]
note: accept answer if seen in **(iv)**

(iv) base / basic / alkali / alkaline ; [1]

(b) (i) blue (and white) ppt. ; [1]

(ii) blue (and white) ppt. ;
(some) ppt dissolves soluble in excess (ammonia) ;
to form darker blue (solution) ; [3]

(iii) Cu^{2+} / Cu(II) / copper (**not** Cu) ;
copper oxide / CuO ; [2]
note: both marks depend on 'blue' being reported in **(b)(i)** or **(b)(ii)**

(c) (i) colourless ; [1]

(ii) (faint) white ppt. / milky / cloudy white ;
(ppt dissolves to form) colourless solution ; [2]
(**DO NOT ALLOW** 'blue to colourless' for second marking point)

(iii) chloride ; [1]

(iv) Zn^{2+} [1]

3 **(a)** l_1 recorded as whole number and clearly in mm ; [1]

(b) **(i)** l_2 recorded and *e* correctly calculated ; [1]
(**DO NOT ALLOW** negative value of e)

(ii) correct calculation of *k* ; [1]
(**ALLOW** ecf from **(b)(i)**, **ALLOW** 1 sig. fig. but then rounding must be correct)

(c) all *t* values present and increasing ;
(**ALLOW** 0:12 format)

T values correct minimum 2 sig. fig. ;
(if 0:12 format used for t then T = 12 / 20 **NOT** 0.12 / 20)
(**ALLOW** ecf from T)

T^2 values correct **AND** to 2 sig. fig. ; [3]
(**ALLOW** ecf from T)

(d) **(i)** axes labelled with units ;
suitable choice of scales from (0,0) using at least half of each axis (m likely to be 0.1 per 2 cm) ;
at least three plots correct to ± ½ small square ; ;
good best-fit straight line judgement ; [4]
(**if non-linear** then do not award scale, plot or line marks **EXCEPT** if non-linear region is just between 0 and 0.2 kg, then do not award scale mark)

(ii) indication on graph of how data obtained AND ⩾ half the line used ;
correct calculation using data from graph ; [2]

(iii) correct calculation of *k* to 2/3 sig. fig. and correctly rounded ; [1]

(e) **Method 1:** view at 90° **to reading on scale** / equivalent ;
Method 2: Eye level with **top** / **bottom** / **middle** / **specified point** of oscillations / equivalent ; [2]