

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

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- 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]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0654	51

- 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) Cu²⁺ / Cu(II) / copper (**not** Cu) ; [2]
copper oxide / CuO ;
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) Zn²⁺ [1]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0654	51

- 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 $\pm \frac{1}{2}$ 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** \geq half the line used ; [2]
 correct calculation using data from graph ;
- (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]