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CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0653 COMBINED SCIENCE

0653/51 Paper 5 (Practical), maximum raw mark 30

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.

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1 **(a)** result recorded for each vitamin C solution ;
result recorded for the fruit juice ;
trend: number of drops needed **increases** as concentration decreases (2 marks) ;;
(allow 1 mark if trend correct with two adjacent readings the same) [4]

(b) vertical axis labelled correctly and scales for both axes are linear and increasing ;
all four points plotted correctly ± 0.5 square ;
suitable straight line for the four points (not including a fruit juice point) ; [3]

(c) line from number of drops of unknown fruit juice shown on graph / fruit juice point plotted and distinct from other points ;
correct vitamin C content reading from graph (allow ecf from a curve) ; [2]

(d) (drop sizes vary) so use a syringe / burette ;
OR
(difficult to judge end point / not properly mixed) so stir after each drop ;
OR
(only 2 drops DCPIP used) so use more drops DCPIP in larger wells ; [max 1]

[Total: 10]

2 **(a)** milky / white ppt in limewater ;
solid remains white / solid remains the same ; [2]

(b) **(i)** (green) to blue-green / blue / dark green ; [1]

(ii) bubbles / effervescence / fizzes ; [1]

(iii) blue-green solid / cloudy blue / cloudy green / blue ppt / green ppt ; [1]

(c) **(i)** (green) to purple / (dark) blue ; [1]

(ii) bubbles / effervescence / fizzes ; [1]

(iii) (pale) blue **ppt** ; [1]

(d) **(i)** *test 1:* Universal Indicator / **(i) AND** *test 2:* copper sulfate / **(iii)** ;
(OR tests reversed) [1]

(ii) test used and stated **AND** correct observation for test used ; [1]
i.e. Universal Indicator – purple / blue
OR
copper sulfate – blue ppt

[Total: 10]

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3 (a) (i) *l*, *b*, *h* values present ;
to nearest 0.1 cm ; [2]

(ii) *V* correct and minimum two significant figures ; [1]

(b) (i) *x* present and to nearest 0.1 cm ;
$x < 40.0$ cm ; [2]

(ii) correct calculation and minimum two significant figures ; [1]

(iii) *d* evaluated ;
correct *d* to two or three significant figures ; [2]

(c) difficulty in moulding a perfect cube / rounded corners / not regular shape ;
difficulty in measuring *x* / recording an accurate balance point ; [2]

[Total: 10]

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