# MARK SCHEME for the May/June 2014 series

## 0653 CO-ORDINATED SCIENCES

**0653/61**        Paper 6 (Alternative to Practical), maximum raw mark 60

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)** axes labelled correctly and linear, names and % ;
all correct plots ± 0.5 square ;
suitable straight line ; [3]

**(b)** line from number of drops of unknown shown on graph ;
correct reading from graph, minimum two decimal places ; [2]

**(c)** a control / to see if water alone has an effect / AW ; [1]

**(d)** (drops sizes vary so) use e.g. syringe ;
(difficult to judge end point (AW) so) do a titration ;
alter concentration of <u>DCPIP</u> ;
(not mixed properly so) use a stirring rod after each drop / stir ;
constant temp ; [max 2]

**(e)** repeat / carry out the experiment more than once, **AND** calculate average, **AND**
look for consistency **OR** ignore outliers ; [1]

**(f)** scurvy ;
poor healing of wounds ;
loosening / loss of teeth ; [max 1]

[Total: 10]

**2** **(a)** **(i)** <u>correct</u> diagram, must be heated ; [2]
two valid labels ;

**(ii)** limewater goes cloudy (etc.) ;
then turns colourless / ppt dissolves / goes back to original ; (NOT clear) [2]

**(iii)** (anhydrous) copper sulfate / cobalt chloride ; (NOT temperature) [1]

**(b)** **(i)** (green to) blue ; (allow green / blue, but NOT purple) [1]

**(ii)** any <u>named</u> acid (allow correct formula) ; [1]

**(c)** **(i)** no ppt / milky etc. no colour change ; (allow no gas forms / no bubbles, no
drops of water) [1]

**(ii)** darker / dark blue / purple etc. ; [1]

**(iii)** copper carbonate / $CuCO_3$ (allow copper hydroxide) ; [1]

[Total: 10]

**3 (a) (i)** 3.3 only ;
3.4 only ;
3.7 only ; [3]

    **(ii)** 41.5(..) (ecf) <u>must</u> be rounded correctly ; [1]

  **(b) (i)** 19.(0) ; [1]

    **(ii)** 105.(..) (ecf) ; [1]

   **(iii)** $\dfrac{105.(..)}{41.5}$ (ecf) ; [2]
2.5(….) ;

  **(c)** difficulty in making a block ;
difficulty in finding balance point ;
difficulty in finding centre of block ; [max 2]

**[Total: 10]**

**4 (a)** good quality drawing of ONE complete cell only;
nucleus labelled correctly ;
cell wall labelled correctly ; [3]

  **(b) (i)** 6 mm ; [1]

    **(ii)** $\dfrac{6}{15}$ = 0.4 mm ; (ecf) [1]

   **(iii)** length taken from students drawing ; $\pm$ 2 mm [1]

   **(iv)** magnification = $\dfrac{\text{length}}{0.4}$ ; (ecf)
= correct calculation ; (no ecf if fraction inverted) [2]

  **(c)** vacuole or chloroplast ; (NOT chlorophyll) [1]

  **(d)** starch (present) ; [1]

**[Total: 10]**

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**5 (a) (i)** 88 ;
69 ;
20 ;          [3]

    **(ii)** axes correct and labelled name and unit ;     [3]
points correct (allow 1 error) ;
curve must include plateau at 69 ;

    **(iii)** 69 only ;     [1]

  **(b)** (movement) sliding / flowing etc.
(arrangement) random

(movement) vibrate
(arrangement) regular / ordered ;;;     [max 3]

*awarding of marks*
*4 correct answers = 3 marks*
*2 correct comparisons = 2 marks (e.g. move less and become more regular)*
*1 correct comparison ) = 1 mark (e.g. move / vibrate less*

                  **[Total: 10]**

**6 (a) (i)** voltmeter ;
ammeter ;     [2]

    **(ii)** $R = \dfrac{V}{I}$ (allow words or units) ;     [1]

    **(iii)** <u>series</u> circuit with a cell / power source ;
ammeter in series ;
voltmeter in parallel ;
wire under test ;     [4]

**(b)  (i)**

resistance / ......



0

0                length of wire / cm
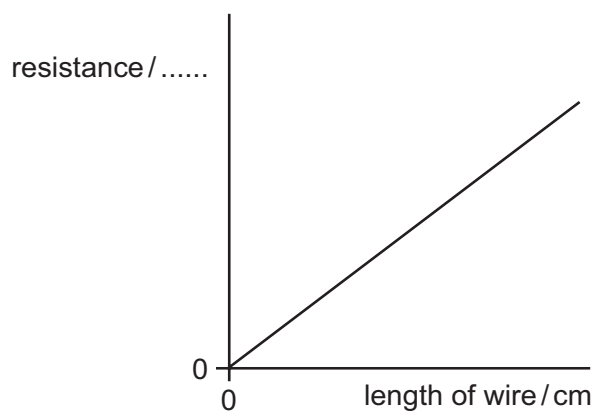
straight line, positive slope ;
<u>through</u> origin ;                                                                                    [2]

**(ii)**  $\Omega$ (allow ohm) (may be written on the axis label) ;                          [1]

**[Total: 10]**