

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

0654 CO-ORDINATED SCIENCES

0654/53

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.

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- 1 (a) (i) green ;
chlorophyll ; [2]
- (ii) **A**: blue-black/black/blue/violet ;
B: brown/orange/yellow ;
starch present in **A** **AND** starch absent in **B** ; [3]
- (b) (i) to soften leaf/to kill leaf ; [1]
- (ii) photosynthesis occurred in leaf **A** ;
due to light ;
making starch/making glucose ;
(or reverse argument for leaf **B**) [3]
- (c) (i) to prevent gas entering/escaping ; [1]
- (ii) to act as a control/to show that the leaf causes the colour change/to show
that air used has normal levels of CO₂ ; [1]
- (iii) tube **C**
CO₂ used up/CO₂ levels fall/CO₂ converted ;
due to photosynthesis ;
tube **D**
CO₂ released/CO₂ levels rise ;
due to: no photosynthesis/less photosynthesis/respiration ; [4]
- [Total: 15]**
- 2 (a) (i) **V** and **I** reading for 20 cm, **AND V** and **I** same order of magnitude as
supervisor, **AND V** greater than **I** ; [1]
- (ii) **V** and **I** reading for 40 cm, **AND V** greater than **I** ; [1]
- (iii) **V** and **I** readings for 60, 80 and 100 cm ;
V increases and **I** decreases down the table ; [2]
- (iv) all **R** values calculated for 5 or 4 sets of readings to same number of
decimal places ; [1]
- (b) (i) *axes*: correctly labelled with units ;
scale: linear and good use of grid ;
points: 4 points plotted correctly within ½ square ;
line: best straight line passing through (0,0) within ½ square ; [4]
- (ii) working shown on graph or below graph ;
gradient calculated correctly ; [2]
- (iii) cross-sectional area, **C** calculated correctly to 2 significant figures ; [1]
- (iv) answer **(b)(iii)**/ 10 000 ; [1]

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- (c) current, **I** ... would be greater/increases ;
resistance, **R** ... would be lower/decreases ; [2]

[Total: 15]

- 3 (a) (i) *residue*: green ;
filtrate: colourless ; [2]

- (ii) *observations*:
bubbles / fizzes / effervesces ;
green solution ;
conclusion:
carbonate / CO_3^{2-} ; [3]

- (iii) *observation*:
blue ppt ;
conclusion:
copper / Cu^{2+} / Cu(II) ; [2]

- (b) (i) *observation*:
white ppt ;
conclusion:
chloride / Cl^- ; [2]

- (ii) *observation*:
no change ;
conclusion:
not sulfate / not SO_4^{2-} ; [2]

- (iii) *observation*:
no ppt ;
litmus stays red ;
conclusion:
not ammonium (ion) / no ammonia ;
possible identity:
sodium / potassium (Group 1 metal ion) ; [4]

[Total: 15]