UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0654 CO-ORDINATED SCIENCES

0654/61 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 must be read in conjunction with the question papers and the report on the examination.

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Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1 (a) (i) chlorophyll ;

(ii) **A**: black / dark blue ;
B: white / brown ;
A: starch ;
B: no starch ; [4]

(b) (i) all readings in table (12, 15, 12, 3) ;;
(all four readings correct = 2 marks, three correct = 1 mark) [2]

(ii) oxygen ; [1]

(iii) carbon dioxide ;
respiration ; [2]

[Total: 10]

2 (a) (i) V = 2.22 ; (accept 2.21 to 2.23)
A = 0.21 ; [2]

(ii) 2.61, 5.25, 7.88, 10.57, 12.84 ;
(five correct = 2 marks (ecf), three or four correct = 1 mark) [2]

(b) (i) 4 / 5 correct points ± ½ square ;
ruler – straight line passing through origin ; [2]

(ii) clear indication on graph or in space ;
correct answer (ecf), allow 0.12 to 0.13 ; [2]

(iii) 3.8×10^{-4} / 0.00038 ; (ecf) [1]

(iv) decrease ; [1]

[Total: 10]

3 **(a)** **(i)** *test* limewater ;
result milky / chalky / white solid / ppt ;
anion carbonate / CO_3^{2-}

(ii) copper / Cu^{2+} / Cu(II) ; [1]

(b) **(i)** *test* (aq)(acidified) barium chloride / nitrate ;
result no white ppt ; [2]

(ii) chloride / Cl^- ; [1]

(iii) ammonium ; [1]

(c) sodium / potassium ;
no ppt formed (with NaOH) / colourless solution ; [2]

[Total: 10]

4 **(a)** **(i)** 0.5 (dm^3) ; [1]

(ii) 12 ; [1]

(iii) 6 (dm^3) ; [1]

(b) **(i)** larger volume inhaled ;
rate of breathing slowing down ;
volume of each breath falling ; [max 2]

(ii) 1.6 (dm^3) ; [1]

(iii) more oxygen needed (during exercise) ;
more CO_2 needed to be removed (during exercise) ;
oxygen debt ; [max 2]

(c) too much carbon dioxide present ;
not enough oxygen present ; [2]

[Total: 10]

5 **(a)** **(i)** 500, 0.85 ;

(ii) 750, 1.75 ;
1000, 0.45 ; [

(b) **(i)** 0.000017 ; (ecf, for all three values)
0.000023 ;
0.0000045 ; [3]

(ii) °C ; [1]

(iii) tungsten (ecf, if deduction is correct) ; [1]

(c) **(i)** e.g. fire alarms / thermostats thermometers / train tyres / barrel hoops etc ; [1]

(ii) e.g. railway tracks / bridges / power cables / telephone wires etc ; [1]

[Total: 10]

6 **(a)** **(i)** (from) purple / blue to <u>green</u> ; [1]

(ii) 20.4 and 20.5 (both) ;
20.3(3) ; [2]

(iii) 0.8(13) ; [1]

(b) **(i)** 48.3, 48.8, 48.1 (all three required) ;
48.4 ; [2]

(ii) 1.9(36) ; [1]

(c) 0.38 (ecf) ; [1]

(d) (*Bugoff*) because it is more concentrated ; [1]

(e) NaOH + HC*l* = NaC*l* + H_2O ; [1]

[Total: 10]