

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

International General Certificate of Secondary Education

**MARK SCHEME for the June 2005 question paper**

**0653/0654 COMBINED SCIENCE/CO-ORDINATED SCIENCES**

**0653/06, 0654/06 Paper 6 (Alternative to Practical), maximum raw mark 60**

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the June 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

**Grade thresholds** for Syllabus 0653/0654 (Combined Science/Co-ordinated Sciences) in the June 2005 examination.

|             | maximum mark available | minimum mark required for grade: |    |    |    |
|-------------|------------------------|----------------------------------|----|----|----|
|             |                        | A                                | C  | E  | F  |
| Component 6 | 60                     | 47                               | 38 | 26 | 17 |

The threshold (minimum mark) for B is set halfway between those for Grades A and C.  
The threshold (minimum mark) for D is set halfway between those for Grades C and E.  
The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.

Grade A\* does not exist at the level of an individual component.

June 2005

IGCSE

MARK SCHEME

MAXIMUM MARK: 60

SYLLABUS/COMPONENT: 0653/06, 0654/06

COMBINED SCIENCE/CO-ORDINATED SCIENCES  
Paper 6 (Alternative to Practical)

|        |                   |           |  |
|--------|-------------------|-----------|--|
| Page 1 | Mark Scheme       | Syllabus  |  |
|        | IGCSE – June 2005 | 0653/0654 |  |

- 1 (a) (i) sepal correctly labelled (1)
- (ii) protects (the flower, bud, reproductive parts) (1) [4]
- (b) (i) good quality drawing, correspondence of shape to photograph of petal (1)  
stamen (1)
- (ii) anther (1) and filament (1) labelled [4]
- (iii) length of drawing +/- 1 mm (1) length of petal on photograph  
59mm +/- 1mm (1)  
(1 mark if both lengths correctly given in cm) [2]
- magnification =  $\frac{\text{length of drawing}}{59}$  (ecf)
- Or multiplied by 100 to give percentage (1)  
numerically correct answer (1) [2]
- [Total: 10]**

2 (a)

| piece of metal | North pole facing | South pole facing                   | name of metal |
|----------------|-------------------|-------------------------------------|---------------|
| <b>A</b>       |                   | attracted (or stick together OWTTE) | magnet        |
| <b>B</b>       | attracted         | attracted                           | soft iron     |
| <b>C</b>       |                   | no effect                           | aluminium     |

- line 1 (1), line 2 all 3 correct (2), any 2 correct (1), line 3 (1)  
If line 1 or line 3 is transposed to line 2, (1) [4]
- (b) any idea of measuring force of attraction (or repulsion) (1)  
hang magnet or soft iron (1) bring opposite poles near for attraction/  
same poles near for repulsion (1) at same distances (1) compare force by  
measuring distance repelled or attracted or angle of string (1) find nearest  
distance for attraction or repulsion to be noticed (1)  
Any 4 [4]
- needle 1 away from N (1) needle 2 towards S pole (1)  
If both needles reversed (1) [2]
- [Total: 10]**

|        |                   |           |  |
|--------|-------------------|-----------|--|
| Page 2 | Mark Scheme       | Syllabus  |  |
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3 (a)

|                     |        |                             |            |
|---------------------|--------|-----------------------------|------------|
| copper(II) sulphate | blue   | turned to colourless liquid | white      |
| sulphur             | yellow | turned litmus red           | no residue |
| iodine              | black  | purple vapour sublimed      | no residue |
|                     | (2)    | (2)                         | (2)        |

one correct answer in a column (1) [6]

(b) water or steam or water vapour [1]

(c) (i) iodine or copper (II) sulphate [1]

(ii) scrape off the cold surface or condense (sublime) gas or add water to it: answer to (ii) must match (i) [1]

(d) Any sensible precaution, e.g. wear goggles to prevent eye damage by 'spitting'/use fume cupboard, poisonous gas/tie up long hair, danger of fire. Reject: hold test-tube by holder, use gloves, aprons, lab-coat etc. precaution + reason needed for mark [1]

[Total: 10]

4 (a) (i) 72, 34, 19 (no tolerance) [3]

(ii) sensible scale using all of graph grid (1)  
points correctly plotted (1)  
line drawn through points (not best straight line) (1) [3]

(iii) reference to distance and/or amount of oxygen liberated (1)  
rate of photosynthesis related to light intensity (1)  
(Reject answers with no reference to light distance or e.g. number of bubbles) [2]

(b) errors in counting bubbles/timing error/change of temperature of water/CO<sub>2</sub> concentration change/plant needs time to adjust to light intensity/current to lamp may fluctuate (any 2) [2]

[Total: 10]

|        |                   |           |  |
|--------|-------------------|-----------|--|
| Page 3 | Mark Scheme       | Syllabus  |  |
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- 5 (a) (i) 260g, 350g (1),  
582 mm, 567 mm (+/- 1 unit) (2)  
If height read at under-surface or mid-point of rule, 579 mm and 564 mm but (1) mark only.  
Reject: measurements in cm [3]
- (ii)  $630 - 582 = 48$ ,  $630 - 567 = 63$  mm (ecf) [1]
- (b) labelling of axes (must include units) and choice of scale (1)  
plotting of points all correct (1)  
straight line passing through 0 (1)  
(-1 mark if axes are reversed) [3]
- (c) (i) 550 mm (or from candidate's own graph) (1)
- (ii) mass is proportional to the deflection (the word proportional must be used) or a calculation to find the mathematical relationship between mass and deflection, stated as equation or ratio (1) [2]
- (d) The deflections will be smaller OWTTE [1]
- [Total: 10]
- 6 (a) (i) 20.0, 28.2 and 20.5,  $43.5 \pm 0.2^\circ$  (all first d.p. shown) [4]
- (ii) 3.5, 8.2, 23.0 or 23 (ecf) [1]
- (b) (i) hydrogen [1]
- (ii) C, greatest temperature rise (1) most bubbling/reactive (1) [2]
- (c) Add powdered metal to aqueous  $\text{CuSO}_4$  (no mark for this)  
observations to prove that E is more reactive:  
decrease in blue colour/brown (red) (pink) precipitate of copper/temperature rise  
(any two points) Reject: metal E displaces copper, without correct observations [2]
- [Total: 10]