

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2009 question paper  
for the guidance of teachers**

**0653/0654 COMBINED SCIENCE**

**0653/06 and 0654/06** 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.

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- 1 EITHER table containing three columns with two correct headings, and 3 rows with correct headings (2)  
 OR table containing two columns with correct headings, and three rows (1)  
 3 features compared in three different rows (3)  
 allusion to the function in pollination of at least one feature marked \* (1) [max 6]

example of a correct table.

feature	wind-pollinated flower	insect-pollinated flower
Petals or (bracts)	(small) bracts	(large) (*attractive) petals
anthers	outside bracts/long (*in wind)	inside petals/short (*to brush against insects)
stigma	large/feathery (*to catch wind-borne pollen)	small (*insects may brush against it)

[Total: 6]

- 2 (a) 75, 86, 94 cm<sup>3</sup> (+/- 1 cm<sup>3</sup>) [3]
- (b) (i) fewer bubbles, less effervescence OWTTE  
 data incorrectly mentioned here may be brought forward to part (ii) [1]
- (ii) EITHER use of the data to show smaller volumes (1)  
 in equal time intervals (1)  
 OR graph drawn (to shown change in rate) (2) [2]
- (c) D [1]
- (d) (i) Insert a lighted splint or flame (no mark for glowing splint) (1)  
 "pop" or gas burns (1) [2]
- (ii) hydrogen + oxygen → water (or steam)  
 mark may be awarded for a correct symbol equation [1]

[Total: 10]

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- 3 (a) 3, 18, 42 cm (no tolerance) [3]
- (b) at least one of the axes correctly labelled and suitable scale chosen (1)  
 points correctly plotted +/- one small square (allow one error) (1)  
 smooth curve drawn (0,0 may be omitted) (1) [3]
- (c) EITHER gradient/slope/steepness of the graph (1)  
 increases (1)  
 OR use of the data to show greater distance moved (1)  
 in equal time intervals (1) [2]
- (d) (i) EITHER acceleration will be less/trolley will move more slowly (1)  
 OR the distance moved in equal time intervals will be smaller (1) [1]
- (ii) EITHER the acceleration will be greater/trolley will move faster (1)  
 OR the distance moved in equal time intervals will be greater (1)  
 If (i) distance moved is less and (ii) distance moved is greater,  
 award 1 mark only for both (i) and (ii) [1]

[Total: 10]

- 4 (a) tissue A h = 22 mm ; (1)  
 tissue B h = 78 mm ; (no tolerance) (1) [2]
- (b) at least one axis labelled and correct scale (1)  
 correct plotting of points for A (allow one error) +/- one small square (1)  
 drawing and labeling of curve A (not straight lines) (1)  
 correct plotting points for B (allow one error) +/- one small square (1)  
 drawing and labeling of curve B (not straight lines) (1)  
 (penalise by 1 mark only if labels are missing) [5]
- (c) liver/tissue B ; (1)  
 fastest rate of production of oxygen/greater height of foam/steeper slope  
 /most oxygen produced in equal time intervals; (1) [2]
- (d) 82 mm or as candidate's graph ; (1)  
 8 mm or as candidate's graph ; (1)  
 hydrogen peroxide concentration is decreasing/has been converted  
 (reject "reaction is slowing down") (1) [3]
- (e) leave detergent out of reaction tube (1)  
 collect gas in a measuring cylinder over water or syringe (1)  
 showing graduation (1)  
 OR as shown in diagram  
 (the apparatus must work for award of any mark) [max 2]

[Total: 14]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
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- 5 (a) (i) blue (any indication) [1]
- (ii) filter funnel (1)  
and filter paper clearly shown (1) [2]
- (iii) Cu<sub>2</sub>O [1]
- (b) conducts electricity [1]
- (c) test; add starch solution (1)  
result; turns blue/black (either or both) (1)  
OR purple vapour seen on heating (1 mark only) [2]
- (d) mixture becomes warm/temperature increases (1)  
blue colour disappears/becomes colourless (1)  
red/brown/pink/copper-coloured solid (precipitate) seen (1) [3]

[Total: 10]

- 6 (a) (i) 49, 68 +/- 1 mm [2]
- (ii) 79, 72 (no tolerance) [2]
- (iii) 21, 28 (e.c.f) (both correct) [1]
- (b) points correctly plotted (allow one error) +/- 1 cm<sup>3</sup> / 1 mm (1)  
straight line drawn (ignore error if not passing through (0,0)) (1) [2]
- (c) (i) correct lines or marks shown on graph (1)  
about 31 cm<sup>3</sup> (answer from candidate's graph) (1) [2]
- (ii) about 24 mm (e.c.f) [1]

[Total: 10]