

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0653 COMBINED SCIENCE

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

® IGCSE is the registered trademark of Cambridge International Examinations.

Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	61

- 1 (a) water (is produced / present) ; [1]
- (b) carbon dioxide (produced / present) ; [1]
- (c) control / to show that water and carbon dioxide are not present ; [1]
- (d) respiration ; [1]
- (e) heat / it gets hot ;
light ; [2]
- (f) goggles / tie hair back / Bunsen position or safety flame ; [max 1]
- (g) (i) mass / amount of water ;
distance to test-tube ;
volume of water ;
start temperature of water ;
mass / amount of food ; [max 2]
- (ii) heat loss to air / not all energy goes to water ;
incomplete burning ; [max 1]
- [Total: 10]**
- 2 (a) starch ; [1]
- (b) (i) burette / pipette / syringe ; [1]
- (ii) (dropping) pipette / syringe / burette / dropper ; [1]
(must be different to the answer to (b)(i))
- (c) 57 ;
8 ;
4 ; [3]
- (d) Fe^{2+} (no mark if no explanation) because it caused a faster reaction / shorter time / faster ; [1]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	61

(e) (i) copper ; [1]

(ii) copper hydroxide ; [1]

(f) add 1 cm³ water ; [1]

[Total: 10]

3 (a) (i) $h = 8.2$ (cm) ; [1]

(ii) $B = 4.6$ (cm) ; [1]

(iii) $T = 6.7$ (cm) ; [1]

(iv) $d = 4.6 + 6.7 = 11.3$, $\frac{11.3}{2} = 5.7$ (cm) ; (allow: 5.65 or ecf) [1]

(v) $V_1 = \pi d^2 \frac{h}{4} = 3.14 \times 5.7^2 \times \frac{8.2}{4} = 209$ or 209.2 (cm³) ; [1]

(b) (i) 55 (cm³) ; [1]

(ii) $V_2 = 250 - 55 = 195$ (cm³) ; [1]

(c) the student cannot tell when the cup is 'full' of water/owtte ;
measuring cylinder / scale is not accurate / to 1 cm³ ;
air bubbles in the water ;
warmer / colder affecting density ; [max 2]

(d) subtract the masses **AND** gives volume ; [1]
(allow: subtract masses and divide by the density)

[Total: 10]

4 (a) water ;
oxygen ;
suitable temperature / warmth ; [max 2]

(b) (*all must extend the line*)
dish **A**: seedling is straight / towards light ;
dish **B**: seedling is curved to the left ;
dish **C**: seedling is straight ; [3]

(c) phototropism ; [1]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	61

(d) Benedict's (and heat) ;
red/orange/yellow/green (from blue) ; [2]

(e) demonstrates repeatability/reliability ;
not all germinate/AW ; [2]

[Total: 10]

5 (a) tube dips into water, in suitable vessel ; [1]

(b) (i) (first signs of the) whiteness or milkiness ; [1]

(ii) 6.4 (cm³) ;
7.7 (cm³) ;
7.0 (cm³) ; [3]

(iii) 7(.0) or 7.03 (cm³) ; [1]

(c) $7.03 \times \frac{0.015}{25}$ or $7 \times \frac{0.015}{25}$ or 0.004218 ;
0.004(2) (mol/dm³) ; [2]

(d) litmus ;
red **to** blue ;
OR
universal indicator ;
orange/yellow **to** green/blue/purple ;
(allow other suitable indicator and result ;;) [max 2]

[Total: 10]

6 (a) one student times the 1-metre run and the other times the 2-metre run ;
OR
one student releases and the other times at 1 m and 2 m ; [max 1]

(b) 2.6(s) **AND** 3.5(s) recorded in correct place ; [1]

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	61

- (c) (i) $\frac{1}{3.5} = 0.29 \text{ (m/s)}$;
 $\frac{2}{4.9} = 0.41 \text{ (m/s)}$ or $\frac{1}{1.4} = 0.71 \text{ (m/s)}$ (so must have accelerated) ;
OR
 same distance (1 m) ;
 in less time quoting 1.4 s ;
OR
 correct calculation of acceleration ;; [max 2]
- (ii) height = 2 cm, average speed = 0.41 (m/s) ;
 height = 4 cm, average speed = 0.57 (m/s) ;
 height = 5 cm, average speed = 0.65 (m/s) ; [max 2]
- (d) since acceleration due to gravity is independent of mass ;
 the results will be the same ;
OR
 more friction ;
 slower ; [max2]
- (e) (speeds too great) difficult to measure time / reaction time now significant ; [1]
- (f) (gravitational) potential energy **to** kinetic energy ; [1]

[Total: 10]