

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0653 COMBINED SCIENCE

0653/51

Paper 5 (Practical Test), maximum raw mark 30

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	51

- 1 (a) (i) (any) blue / no change ; [1]
- (ii) colourless / like water / clear ; [1]
(ignore: stayed the same)
- (b) turns white / pink **AND** indicates water is produced / present ; [1]
- (i) turns milky / cloudy / white ppt. ; [1]
- (ii) (indicates) carbon dioxide / CO₂ ; [1]
- (d) heat produced / temperature increase ; [2]
light produced / glows / fire / flame / smoke ;
- (e) a control / show that water not already present / show that carbon dioxide not already present ; [1]
- (f) respiration ; [1]
- (g) goggles / hair tied back / Bunsen at safe distance / keep maximum distance from burning food / accept other sensible suggestions ; [1]
(ignore: test-tube holders as in diagram)
- [Total: 10]**
- 2 (a) (i) value of time greater than or equal to 10 s ; [1]
(allow: answers in minutes and seconds)
- (ii) value within 10% of first value ; [2]
both values to nearest second ;
- (b) (i) Fe²⁺ value less than both values in (a) ; [1]
- (ii) Fe³⁺ value less than both values in (a) **AND** to nearest second ; [1]
- (c) they are catalysts ; [1]
time decreased (with addition of metal ion) / rate increased ;
- (d) reliable as within 10% (or other suitable percentage or comment) **OR** [1]
not reliable as greater than 10% difference (or other suitable percentage or comment) ;
(answer must demonstrate an understanding of reliability)
(ignore: references to accuracy)

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0653	51

- (e) add 1 cm³ water / add 5 drops + 1 cm³ starch ;
 (do NOT allow: 0.5 cm³ more of A and 0.5 cm³ more of B)
 total volume should be same as in (b) / equivalent volume to metal ion / to keep concentrations the same ; [2]
 (mark independently)

[Total: 10]

- 3 (a) *h* AND *D* AND *d* recorded ;
h > *D* > *d* ;
 all values to the nearest 0.1 cm ;
d_A calculation correct ;
V calculation correct ;
V given as whole number ; [6]

- (b) (i) *V_w* correctly calculated with working shown, e.g. subtraction of two values ;
V_w is supervisor's value ± 20 cm³ (can get this accuracy mark without calculation) ; [2]

- (ii) cup not completely full / measuring cylinder not read at eye level / measuring cylinder not read perpendicularly / measuring cylinder not read from bottom of meniscus / water spilled on transfer / *R₂* off scale of measuring cylinder ; [1]

- (iii) *V_w* since difficult to measure *h* / *V_w* since *d* (or *D*) not inside diameters / *V_w* since it is a direct measurement / *V_w* since *V* is an approximation / *V_w* is actual measurement whereas *V* uses a formula ; [1]

[Total: 10]