



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE

0653/52

Paper 5 Practical

October/November 2016

MARK SCHEME

Maximum Mark: 30

Published

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- 1 (a) full set of results ;
all results to the same number of decimal places ;
evidence that reaction is slowing at end (not linear increments) ; [3]
- (b) axes labelled with units ;
linear scale using at least half the grid ;
at least 4 plots correct \pm half small square ;
best fit curve ; [4]
- (c) (i) any **two (for one mark)** from:
constant volume of hydrogen peroxide / constant concentration of hydrogen peroxide / constant size of celery / pH / type of celery [1]
(ii) at least 5 stated temperatures ;
at least two temperatures below 40 °C and two temperatures above 40 °C ; [2]
- 2 (a) (i) T_i for concentration 1.00 X ; [1]
(ii) T_h for concentration 1.00 X recorded to nearest half degree **AND** above T_i ; [1]
(iii) T_h for concentration 0.75 X recorded
AND ΔT for 0.75 X lower than ΔT value for 1.00 X ; [1]
(iv) T_h for concentration 0.75 X recorded
AND ΔT for 0.75 X lower than ΔT value for 1.00 X ; [1]
(v) remaining T_i and T_h values for 0.50 X and 0.25 X ;
 ΔT values decrease down table ; [2]
- (b) (i) all ΔT values recorded and correct for temperatures recorded (minimum three experiments) ; [1]
(ii) supports **AND** evidence e.g. 1.00 X to 0.50 X halves ΔT
OR
does not support **AND** evidence e.g. 1.00 X to 0.50 X nowhere near halves ΔT ; [1]
(iii) plot a graph ΔT of against concentration ; [1]

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- (c) lid/insulation around flask / rinsing (and drying) of small beaker/extra points / more accurate thermometer ; [1]
- 3 (a) (i) a recorded to the nearest 0.1 cm ; [1]
- (ii) b value correct ($b = 35 - a$) ; [1]
- (iii) note the reading on either side and find mean / measure cube and mark the centre point ; [1]
- (b) M recorded to the nearest gram ; [1]
- (c) m correct ;
2/3 significant figures [2]
- (d) mass of clay recorded ; [1]
- (e) any **two** from:
centre of gravity of the rule not at the 50 cm mark / difficulty in obtaining balance / rounding errors / pivot not perpendicular to edge of rule / centre of gravity of cube not over the mark due to irregular shape ;; [2]
- (f) a smaller and b larger ; [1]