

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0654 COMBINED SCIENCE

0654/62

Paper 6 (Alternative to Practical), maximum raw mark 60

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1 (a) 20.5 [1]
 15.5
 10.5
 all three averages correct ;

(b) axes labelled with units ; [4]
 vertical axis linear ;
 points plotted correct \pm half small square ;
 best fit straight line going through the origin \pm half small square ;
 ecf on (a)

(c) lines on graph ; [2]
 correct reading from graph \pm half small square ; ecf

(d) potato will take longer to rise/there will be fewer bubbles ; [1]

OR

potato will not rise/no bubbles ;

(e) glowing splint ; [2]
relights ;

[Total: 10]

2 (a) (i) (dilute) hydrochloric acid ; [2]
 carbon dioxide ;

(ii) limewater ;
 white ppt/milky ; [2]
 allow ecf for incorrect gas in (a)(i).

(b) sodium chloride ; [1]

(c)

	C	D
barium chloride solution	white ppt AND	white ppt ; [1]
ammonia solution	white ppt ; [1] dissolves (in excess) ;[1]	blue ppt ; [1] (dissolves in excess to) deep blue solution ; [1]

[5]

[Total: 10]

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- 3 (a) 17 (mm) ; [1]
- (b) 13 and 10 ; [1]
- (c) 1.47, 1.00, 0.76, 0.59, 0.47 ;
all results to 2 dp ; [2]
- (d) (i) plots correct $\pm 1/2$ square ; ecf
straight line of best fit ; [2]
- (ii) **clear** indication of use of graph (triangle at least $1/2$ of graph);
correct value 0.07 ; [2]
- (iii) 14.3 (ecf from gradient value) ; [1]
- (e) Any **one** from: [1]
use of darkened room / mark position of centre of lens in holder / place metre rule
on bench / clamp ruler in position or keep in same position / ensure the centre of
lens and the object are the same height above bench / card or lens or screen
perpendicular to table ;
- [Total: 10]**
- 4 (a) (i) repeats ; [1]
- (ii) (experiment 1 is) anomalous result / one result is different from the
others / one result doesn't fit the pattern / range is high(est) / range 1 and 2
very high ; [1]
- (iii) do not include experiment 1 in average / carry out 4th experiment / repeat
again ; [1]
- (b) control / baseline / normal rate / needed for comparison / normal habitat ; [1]
- (c) (i) increases heart rate ; [1]
- (ii) agree – similar / close to pond water result / removal of anomaly gives mean
of 306 [max 1]
OR
disagree – 304 is an increased heart rate to 275 ;
- (d) axes labelled with units ; [2]
bar for each solution with heights correct ;

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(e) (i) 80(mm) ; [1]

(ii) 2(mm) ; [1]

[Total: 10]

5 (a) (damp) red litmus paper ; [2]
turns blue ;
OR
hydrogen chloride ;
white fumes / smoke ;

(b) universal indicator / litmus ; [2]
(turns) red / pink ;

(c) **two** properties of non-metals **from**: [1]
dull / brittle / low density / low melting point / poor conductor of heat ;

(d) (i) circuit including a cell and a lamp / ammeter ; [2]
metal in circuit / some means of connecting a metal in ;

(ii) use of water or steam (before acid) ; [3]
use of acid ;
comparing rate of gas evolved with other metals ;
OR
add bismuth to salts of other metals ;
in solution ;
if displaces it is more reactive ORA ;

[Total: 10]

6 (a) time x swings and divide by x ; [1]

(b) 104.5 ; [1]

(c) (no effect) (very) close together ; [2]
no trend or pattern ;

(d) 103.7 ; [1]

(e) 9 ; [1]

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(f) one result/61 cm obviously wrong ; [3]
others show a trend ;
shorter the thread shorter the period ;

(g) repeat experiment (at each length) **and** take average ; [max 1]
or repeat the 61 cm length (as anomalous reading) ;
use different (specified in numbers) lengths ;

[Total: 10]