CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0653 COMBINED SCIENCE

0653/63 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.

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CAMBRIDGE
International Examinations

1 **(a)** 8, 16, 15 ; [1]

(b) correct plots ;
points joined by straight lines ; [2]

(c) **(i)** molecules have more energy / more collisions / nearer enzyme optimum temp ; [1]

(ii) enzymes denatured ; [1]

(d) **(i)** to allow temperature to stabilise / yeast to adjust to new temperature / reach equilibrium ; [1]

(ii) to check reliability of results / check for anomalous results ; [1]

(iii) because this temperature kills the yeast / yeast is dead / yeast cannot be used again ; [1]

(e) use limewater instead of tapwater ; [1]

(f) repeat with no yeast / killed yeast ; [1]

[Total: 10]

2 **(a)** focal length = 7.7 to 7.8 (cm) ; [1]

(b) **(i)** v = 2.4 ; [1]

(ii) 24.0 ; [1]

(iii) 64.0 ; [1]

(iv) 960 ; [1]

(c) **(i)** graph points ;
straight line of best fit ; [2]

(ii) gradient = 15.0 to 16.0 ;
clear indication of how ; [2]

(d) the drawing in **(a)** is drawn at half life size ; [1]

[Total: 10]

3 **(a)** 12.5 ;
6.5 ; [2]

(b) **(i)** 0.27, 0.53, 0.80, 1.54 (at least two correct) ; [1]

(ii) greater length gives faster reaction ; [1]

(iii) greater surface area gives faster reaction / ora ; [1]

(iv) if states statement correct – max 2 marks
uses times ;
for 1 and 2 cm Mg ;
OR
if states statement is incorrect – max 2 marks
uses times ;
for 2 and 4 cm Mg ;
OR
statement both correct and incorrect ;
uses two sets of time ;
two sets of length ; [max 3]

(c) inaccuracy (because of difficulty) of starting clock and pouring liquid at the same time ; [1]

(d) lighted splint (pops) (allow burning flame etc. but not glowing) ; [1]

[Total: 10]

4 **(a)** **(i)** to check it is the enzyme responsible for the reaction / control ; [1]

(ii) to check that temperature does not cause break down ; [1]

(iii) tube **1** has become lighter / paler / less cloudy ; [1]

(iv) tube **3** has become lighter / paler / less cloudy than tube **1** ; [1]

(v) faster rate of reaction / more overall reaction ; [1]

(b) **(i)** add iodine (solution) and it goes blue / black ; [1]

(ii) amylase / diastase ; [1]

(iii) set up tube with apple, pectinase, amylase ;
incubate at 40 °C ;
any detail of control, e.g. tube without amylase / pectinase / volumes of substances given ; [3]

[Total: 10]

5 **(a)** **(i)** 74 ;
128 ; [2]

(ii) scales linear and labelled ;
points ;
smooth curve ; [3]

(iii) speeds up / accelerates ; [1]

(iv) (99 ÷ 6) = 16.5 (m / s) ; [1]

(b) **(i)** *similar*. constant speed ;
different **A** is faster than **B** ; [2]

(ii) it stops / crashed / engine failure (**not** run out of petrol) ; [1]

[Total: 10]

6 **(a)** table format drawn with a ruler ;
headings ;
both tests correct ;
extra words not used ;
e.g.

(ion)	test	result
carbonate	hydrochloric acid	bubbles
chloride	silver nitrate	white ppt

[4]

(b) adds solid to liquid ;
stirs / warms ;
filters ; [3]

(c) evaporation ; [1]

(d) blue ; [1]

(e) salt(s) ; [1]

[Total: 10]