CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0653 COMBINED SCIENCE

0653/51 Paper 5 (Practical), maximum raw mark 45

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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1 (a) (i)

test-tube	result	conclusion
R1	orange / brown / red / yellow / no change ;	no starch / not present / no **AND**
R2	orange / red / yellow / green / brown (ppt) ;	sugar / present / yes ;

[3]

Both conclusions required and both must match correct observations for third mark.

(ii) **(**sugar molecules) can pass through (visking tubing because found in beaker) ; [1]

(b) (i)

test-tube	result	conclusion
P1	orange / brown / red / yellow / no change **AND...**	no starch / not present / no ;
P2	orange / red / yellow / green / brown (ppt) **AND...**	sugar / present / yes ;
Q1	blue-black / black / blue **AND...**	starch / present / yes ;
Q2	blue / no change **AND**...	no sugar / not present / no ;

[4]

(ii) amylase converts starch to sugar ; [1]

(c) because (starch) molecules are too big / so that it can be absorbed / can pass through the gut wall / sugar can pass through wall / only sugar absorbed / sugar molecules are small enough ; [1]

[Total: 10]

2 **(a)** **(i)** all recorded *v* values are to the nearest 0.1 cm ;

(ii) at least three *v* values present ;
v values increasing down the table for all recorded readings ; [

(iii) *v* / *u* values correct to at least 2 sig fig ; [1]

(b) **(i)** suitable choice of scales (points should be in an area at least 6 cm × 6 cm) ;
at least 3 points plotted correctly to half a small square ;
good best fit straight line judgement ; [3]

(ii) indication on graph of how data obtained **AND** use of at least half of line drawn ;
correct calculation to at least 2 sig fig using data from the graph ; [2]

(c) image will not fit on the screen / is too far away from the object / not formed / not sharp;
(allow any reasonable interpretation of results from graph) [1]

[Total: 10]

3 **(a)** (green to) black / brown-black (powder) ;

(b) **(i)** **observations:**
green / green-blue (solution) ;
limewater turns milky / chalky / white ppt (not cloudy) ;

name of gas = carbon dioxide / CO_2 ;
(dependant on limewater or effervescence observation)

name of anion = carbonate / CO_3^{2-} ; [4]

(ii) **observations**:
blue ppt ;
name of metal cation:
copper / Cu^{2+} (dependant on 'blue' observation) ; [2]

(c) **observations**:
blue ppt (not dark blue ppt) ;
deep blue solution / dark blue solution ; [2]

(d) copper carbonate / copper(II) carbonate / $CuCO_3$; [1]

[Total: 10]