UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2010 question paper for the guidance of teachers

0653 COMBINED SCIENCE

0653/52 Paper 5 (Practical Test), maximum raw mark 30

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 must be read in conjunction with the question papers and the report on the examination.

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1 (a) (i) masses recorded correctly 5–15 g at least 1 decimal point ;
name of juice recorded correctly ; [2]

(ii) table headings correct including units (at least once) ;
table laid out correctly ; [2]

(b) calculation correct for tube **1** ;
calculation correct for tube **2** ;
calculation correct for tube **3** ;
calculation correct for tube **4** ;
(if an increase must be less than 10%) [4]

(c) correct answer from student's data ;
shows greatest loss in mass or greatest proportional loss ; [2]

[Total: 10]

2 (a) (i) value of $\mathbf{d}_1$ (must be less than $\mathbf{d}_2$) but greater than $\mathbf{d}_2 / 2$ and must be in mm ; [1]

(ii) value of $\mathbf{d}_2$ (should be close to supervisor value if no note about size of blocks differing) ; [1]

(iii) correct calculation of $\mathbf{d}_2 / \mathbf{d}_1$ (at least one decimal point recorded, any rounding up must be correct) ; [1]

(b) (i)

***i*°**	**sine *i***	***r*°**	**sine *r***
0	0.00	0	0.00
20	0.34		
30	0.50		
40	0.64		

all other ***r*** values greater than matching ***i*** value ;
r value increase with increasing ***i*** ;

(ii) correct sine ***r*** values put in table ; [3]

(c) (i) at least 3 points must be plotted within ½ square ;
0,0 plotted or line is through origin ;
best straight line through points ; [3]

(ii) it is the average of several readings / idea of more than one set of readings ;
or method **1** is difficult to do ; [1]

[Total: 10]

3 (a)

solution	observation on adding sodium carbonate	conclusion of test	possible identities of solution
A	fizzes / bubbles / effervesces	acid / H^+	HCl or HNO_3
B	no reaction / solid dissolves	no acid / no H^+	KNO_3
C	fizzes / bubbles / effervesces	acid / H^+	HCl or HNO_3

whole observation column correct ;
whole conclusion column correct ;
all the possible identities for each solution ;;; [5]

(b)

solution	observation on adding silver nitrate solution	conclusion of test	identity of solution
A	white ppt / white solid	chloride / Cl^-	HCl / hydrochloric acid
B	no reaction / remains colourless	no chloride / no Cl	KNO_3 / potassium nitrate
C	no reaction / remains colourless	no chloride / no Cl	HNO_3 / nitric acid

whole observation column correct ;
whole conclusion column correct ;
the correct identity for each solution (all three) ; [3]

(c) add aqueous sodium hydroxide / NaOH, **plus** aluminium / Al, **plus** warm / heat ;
litmus turns blue **or** ammonia given off ; [2]

[Total: 10]