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## 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

## 0654 CO-ORDINATED SCIENCE

0654/52

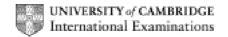
Paper 5 (Practical), maximum raw mark 45

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Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2010	0654	52

1

(a) (i) masses recorded correctly; (5–15 g to 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; [4] (if there is increase, not greater than 10%) (c) correct answer from student's data; shows greatest loss in mass, or greatest proportional loss; [2] (d) use water instead of juice; see if the protein would have lost mass anyway; [2] (e) set up same experiment with protein and acid; weigh protein before and after experiment; compare masses to see if any mass lost; [3] alternative answer: neutralise acid in juice; weigh protein before and after;

if mass still lost, then its protease and not acid;

[Total: 15]

Page 3	Page 3 Mark Scheme: Teachers' version		Paper
	IGCSE – October/November 2010	0654	52

2 (a) (i) value of  $\mathbf{d}_1$  must be less than  $\mathbf{d}_2$  but greater than  $\mathbf{d}_2/2$ ; (if clearly in cm do not give mark) [1]

(ii) value of **d**<sub>2</sub> (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 1 decimal point recorded), any rounding up must be correct); [1]

(b) (i)

i°	sine i	r°	sine r
0	0.00		
0	0.17		
20	0.34		
30	0.50		
40	0.64		

all other *r* values greater than matching *i* value;

**r** value increase with increasing **i**;

4 readings of r; [4]

(ii) correct sine r values put in table ; [1]

- (c) (i) axes must be labelled with sine r vertical and sine i horizontal; scales must be marked clearly and must be linear;
   (0,0) plotted or line through zero at least 3 points must be plotted within ½ square; best straight line through points;
  - (ii) correct value of gradient ignoring decimal places but not allowing incorrect rounding;working can be fraction or triangle on graph with figures on sides of triangle;[2]
  - (iii) it is the average of several readings / idea of more than one set of readings;
    or looking through block is difficult to do;
    [max 1]

[Total: 15]

[4]

Page 4	age 4 Mark Scheme: Teachers' version		Paper
	IGCSE – October/November 2010	0654	52

3 (a)

solution	observation on adding sodium carbonate	conclusion the solution must have the following present	possible identities of solution
Α	fizzes / bubbles / effervesces	acid / H <sup>+</sup>	HC <i>l</i> HNO₃
В	no reaction / solid dissolves	no acid / no H⁺	NaC <i>l</i> KNO₃
С	no reaction / solid dissolves	no acid / no H <sup>⁺</sup>	NaC <i>l</i> KNO₃
D	fizzes / bubbles / effervesces	acid / H <sup>+</sup>	HC <i>l</i> HNO₃

whole observation column correct; whole conclusion column correct; the **two** possible identities for each solution::

the **two** possible identities for each solution ;;;; [6]

(b)

solution	observation on adding silver nitrate solution	conclusion the solution must have the following present	identity of solution
Α	white ppt/white solid	chloride / C $l^-$	HC1/ hydrochloric acid
В	white ppt/white solid	chloride / C1 <sup>-</sup>	NaC1/ sodium chloride
С	no reaction / remains colourless	no chloride / no Cl	KNO <sub>3</sub> / potassium nitrate
D	no reaction / remains colourless	no chloride / no Cl	HNO <sub>3</sub> / nitric acid

whole observation column correct; whole conclusion column correct; the correct identity for each solution;;;;

[6]

(c) add aqueous sodium hydroxide / NaOH, **plus** aluminium / A*l*, **plus** warm / heat; damp red litmus (paper) in gas / mouth of test tube; litmus turns blue (if states ammonia given off without test, allow 1 mark); [3]

[Total: 15]