CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0654 CO-ORDINATED SCIENCES

0654/53 Paper 5 (Practical), maximum raw mark 53

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)

liquid	**Test 1** *(Benedict's)*	**Test 2** *(biuret)*	**Test 3** *(iodine solution)*
A	blue	purple	brown
B	blue	blue	blue-black
C	yellow / green / orange / red	blue	brown

Test 1 **C** yellow / green / orange / red ;
A and **B** blue ; [2]

Test 2 **A** purple ;
B and **C** blue ; [2]

Test 3 **B** blue-black ;
A and **C** brown *(or orange or yellow if reported in Supervisors observations)* ; [2]

(b) liquid **A**: protein ;
liquid **B**: starch ;
liquid **C**: (reducing) sugar / glucose / maltose / lactose ;
(allow ecf from **(a)** *if test results have clearly been placed in wrong columns)* [3]

(c) same volume of solution ;
add same amount of Benedict's solution / keep other factors constant ;
warm until no further change / excess Benedict's ;
yellow or green = less concentrated / orange or red = more concentrated ; [4]

(d) liquid **A** / protein **and** liquid **B** / starch ;
they cannot pass through cell membranes / molecules are large / insoluble in water ; [2]

[Total: 15]

2 (a) *observation (solid):* white / no change / solid moves ;
test: (bubble gas through) limewater ;
observation (gas test): white ppt. / milky ;
name of gas given off: carbon dioxide / CO_2 ; [4]

(b) (i) bubbles / effervescence / fizzing ;
colourless solution / becomes hotter ; [2]

(ii) white ppt. ; [1]

(iii) magnesium carbonate / $MgCO_3$; [1]

(c) **(i)** blue ppt. ; [1]

(ii) red litmus become blue ;
*(**DO NOT ALLOW** if also has blue litmus becomes red)* [1]

(iii) colour: blue / purple;
pH: 8–11 ; [2]

(iv) alkali ; [1]

(v) magnesium hydroxide ; [1]

(d) magnesium oxide ; [1]

[Total: 15]

3 **(a)** **(i)** mass recorded to nearest g ; [1]

(ii) T_1 present ; [1]

(iii) T_2 present **AND** greater than T_1 ; [1]

(iv) T_3 present ;
T_3 between T_1 and T_2;
temperatures to nearest 0.5 °C **AND** in °C at least once in **(ii)** – **(iv)** ; [3]

(b) **(i)** calculation of temperature rise correct ; [1]

(ii) calculation of temperature fall **AND** greater than temperature rise ; [1]

(c) **(i)** gain in thermal energy correct ; [1]

(ii) loss in thermal energy correct ; [1]

(d) **(i)** energy gained by the glass correct ; [1]

(ii) correct answer ;
accuracy mark: answer between 0.4 J / g °C and 1.8 J / g °C ; [2]

(e) *any 2 × 1 mark each:*
energy loss on transfer or heat lost to air ;
not all glass at same temperature ;
water left in beaker after pouring ;
volume of hot water approximate ;
insufficient stirring ;
any other sensible suggestion ; [max 2]

[Total: 15]