**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education**

# MARK SCHEME for the October/November 2014 series

# 0654 CO-ORDINATED SCIENCES

**0654/52** 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.

Cambridge will not enter into discussions about these mark schemes.

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**1** **(a)** full set of results (colours) recorded for tube **A** ;
full set of results (colours) for tube **B** ;
correct trend for tube **A** (later samples are brown / orange) ; *(check Supervisors results)*
correct trend for tube **B** (all blue-black) ; [4]

**(b)** to reach 30 °C / give time to get to temperature ; [1]

**(c)** amount of starch reduces / no starch by end of experiment ;
brown colour appears when no more starch present ;
starch is digested / starch is broken down by the amylase ; [3]

**(d)** **(i)** starch is still present ; [1]

**(ii)** amylase is, denatured / not working / inactive ;
starch is not broken down ; [2]

**(e)** difficulty in distinguishing colours by eye ;
drops not all the same size ;
both tubes not tested at the same time ; [max 1]

**(f)** several water-baths at different temperatures ;
compare time for samples to become brown / orange;
keeping other factors constant ; [3]

**Total: [15]**

**2** **(a)** **(i)** initial temperature of **P** recorded to nearest 0.5 °C ; [1]

**(ii)** sensible final temperature of **P** *(expect: **increase** of 2 – 4 °C)* ; [1]

**(iii)** sensible final temperature of **Q** *(expect: **decrease** of 1 – 2 °C)* ; [1]

**(iv)** sensible final temperature of **R** *(expect: **slight or no change**)* ; [1]

**(b)** **(i)** all temperature <u>changes</u> correct (ignoring signs) ;
all signs correct ; [2]

**(ii)** exothermic ; [1]

**(c)** **(i)** blue ppt. ;
copper / $Cu^{2+}$ / copper(II) ; *(depends on observation of blue) (**not** Cu)* [2]

**(ii)** red litmus goes blue ;
ammonia / $NH_3$ ;
ammonium / $NH_4^+$ ; [3]

**(iii)**

| | aqueous barium chloride | aqueous silver nitrate |
|---|---|---|
| observation | no reaction | white ppt. |
| conclusion | not sulfate | chloride present |

**OR**

| | observation | conclusion |
|---|---|---|
| aqueous barium chloride | no reaction | not sulfate |
| aqueous silver nitrate | white ppt. | chloride present |

labelled table ;
both observations ;
both conclusions ; [max 3]

**[Total: 15]**

**3 (a) (i)** sensible $l_0$ *(check Supervisors values)*, recorded to the nearest millimetre ; [1]

**(ii)** sensible distance, carefully marked on Fig. 3.1 ; [1]

**(iii)** values of $m$ (100 g) and $l$ present in the table ; [1]

**(iv)** extension calculated correctly (for 100 g) ; [1]

**(v)** all readings present of mass and length present ;
all lengths increasing down the table ;
all extensions correct ; [3]

**(b)** suitable choice of linear scales ;
4 points plotted correctly to ± ½ small square ;
good best fit straight line judgement and <u>through origin</u> ; [3]

**(c) (i)** length recorded **AND** extension $e_A$ correct ; [1]

**(ii)** mass correctly read from graph ; [1]

**(d) (i)** length recorded **AND** correct extension $e_W$ less than $e_A$ ; [1]

**(ii)** value of $d$ calculated correctly **AND** between 2.0 and 3.5 ($g/cm^3$) ; [1]

**(e)** use of set square / fiducial aid / other sensible suggestion (e.g. clamp rule vertically) ; [1]

**[Total: 15]**