

**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

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| Page 2 | Mark Scheme                             | Syllabus | Paper |
|--------|---|----------|-------|
|        | Cambridge IGCSE – October/November 2014 | 0654     | 52    |

- 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 changes correct (ignoring signs) ;  
 all signs correct ; [2]  
 (ii) exothermic ; [1]
- (c) (i) blue ppt. ;  
 copper / Cu<sup>2+</sup> / copper(II) ; (*depends on observation of blue*) (**not Cu**) [2]  
 (ii) red litmus goes blue ;  
 ammonia / NH<sub>3</sub> ;  
 ammonium / NH<sub>4</sub><sup>+</sup> ; [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  $\pm \frac{1}{2}$  small square ;  
 good best fit straight line judgement and through origin ; [3]
- (c) (i) length recorded **AND** extension  $e_A$  correct ; [1]
- (ii) mass correctly read from graph ; [1]

|               |  |                 |              |
|---------------|--|-----------------|--------------|
| <b>Page 4</b> | <b>Mark Scheme</b>                             | <b>Syllabus</b> | <b>Paper</b> |
|               | <b>Cambridge IGCSE – October/November 2014</b> | <b>0654</b>     | <b>52</b>    |

- (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 ( $\text{g/cm}^3$ ); [1]
- (e) use of set square / fiducial aid / other sensible suggestion (e.g. clamp rule vertically); [1]

**[Total: 15]**