MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

0653 COMBINED SCIENCE

0653/61   Paper 6 (Alternative to Practical), maximum raw mark 60

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1 (a) batch **A** mass 8.8 g ;
batch **B** mass 8.3 g ; [2]

(b) average mass for batch **A** time 0 = 0.88
1 = 1.74
4 = 2.57
7 = 3.26
average mass for batch **B** time 0 = 0.83
1 = 1.68
4 = 3.22
7 = 4.20
(allow ecf) (all correct 2 marks, 1 error 1 mark) [2]

(c) scale correct ;
plotting of points for both batches correct ;
reasonable curve(s) drawn ;
(**if** a non-linear scale only curves can score) [3]

(d) (i) (seed / seedlings) took up / absorbed water ; [1]

(ii) seedlings will die ;
cannot photosynthesise / have used up stored energy ;
(ignore references to water) [2]

[Total: 10]

2 (a) (i) 1.55 ; 1.6(0) (no tolerance) ; (allow 1 mark if reversed) [2]

(ii) $1.55 \times 0.25 = 0.39$ (ecf) ;
$1.6 \times 0.12 = 0.19(2)$ (ecf) ; [2]

(iii) Watt(s) / W ; [1]

(b) (i) diagram shows 2 lamps in parallel ; [1]

(ii) 0.48 (+/– 0.01) ; [1]

(iii) $0.48 \times 1.5 = 0.72$ (allow 0.705 to 0.74) (ecf); [1]

(c) both statements are true / statement 1 is true and statement 2 is true but not as
accurate ;
(allow statement(s) is / are false if justified) [1]

(d) clock / watch / timer ; [1]

[Total: 10]

3 (a) blue ;
ammonia ;
ammonium (accept NH_4) ; [3]

(b) (i) iron(II) ;
iron(III) ; (allow 1 mark if oxidation state missing or reversed)
oxidation ; [3]

(ii) barium chloride (nitrate) ;
<u>white</u> precipitate / ppt. / solid / residue ; [2]

(iii) nitric ; (**must** score before award of next mark)
silver nitrate / lead nitrate ; [2]

[Total: 10]

4 (a) 23.2 °C ;
44.8 °C ; (no tolerance) [2]

(b) 95.8 g ;
97.9 g ; (no tolerance) [2]

(c) 97.9 – 95.8 = 2.1 g (ecf) ; [1]

(d) 44.8 – 23.2 = 21.6 °C (ecf) ; [1]

(e) (i) condensation / condensing ; [1]

(ii) molecules (particles) / gas lose energy / move more slowly / forms bonds ;
on changing from gas to liquid / owtte ;
(**not** molecules / particles come closer together)
(e.g. gas molecules lose energy when they become liquid = 2 marks) [2]

(f) some (2.1 g) water / steam cools (from 100 °C to 44.8 °C); [1]

[Total: 10]

5 **(a)** **C** and **E**   purple ;
   A, **B** and **D**   blue ;   [2]

   (b) **B**   blue / black ;
   C and **D**   brown / yellow ; (ignore colours in other boxes)   [2]

   (c) tube **D** ;
   (Benedict's solution) changes (from blue) to red / shows a positive test ;   [2]

   (d) put starch / solution **B** into two test-tubes ;
   add protein solution to each / use **C** and **E** ;
   allow to react / leave for some time ;
   at a temperature of 35 °C (allow 30 °C to 40 °C) / warming ;
   test-tubes with Benedict's solution ;
   positive result with amylase ;   [max 4]

   [Total: 10]

6 **(a)** **(i)** (dark) red or red-brown (**do not** accept 'brown' on its own) ;   [1]

   (ii) black ;   [1]

   (b) litmus (turns red and then) is bleached / loses colour ;   [1]

   (c) **(i)** blue-black colour (accept 'blue' or 'black') ;   [1]

   (ii) $Cl_2 + 2KI \rightarrow 2KCl + I_2$
   all formulae correct ;
   balanced ;   [2]

   (d) **(i)** ethene ;   [1]

   (ii) unsaturated / (molecules) contain a double bond / C=C ;   [1]

   (e) **(i)** purple ;   [1]

   (ii) sublimation / subliming ; (ignore reverse)   [1]

   [Total: 10]