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

0652 PHYSICAL SCIENCE

0652/06 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 (a) (i) 36.5 ; [1]

(ii) 29.5 (+/– 0.1) ; [1]

(iii) 29.5 – 25 = 4.5 (cm^3) (ecf) ; [1]

(iv) 36.5 / 4.5 = 8.1 (g / cm^3) ; (allow 8) [1]

(b) (i) apply a light spill / flame ;
result – pop (owtte) ; [2]

(ii) Mg, Zn, A*l*, Fe, Sn (name or symbol) ; (do not allow alkali metal or alkaline earth metal)
[1]

(c) (i) blue precipitate (formed) ; [1]

(ii) precipitate dissolves / soluble / forms solution ;
(dark) blue ; [2]

[Total: 10]

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

(ii) 1.55 × 0.25 = 0.39 (ecf) ;
1.6 × 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 × 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 ; [1]
(allow statement(s) is / are false if justified)

(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) ;
white 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)** **(i)** 4.7, 5.5, 6.3 (newtons) (no tolerance) ;;; [3]

(ii) 2, 4, 6, 8, 10, 12, newtons (all correct) ; [1]

(b) **(i)** sensible scale chosen and axes labelled, units (newtons) given on one axis ;
points plotted (allow one error) ;
straight line drawn **NOT** passing through (0,0) ; [3]

(ii) e.g. $\frac{6-0}{3.8-1.5} = \frac{6}{2.3}$ (choice of data shown on graph) ;
= 2.6 (no units) ; [2]

(c) $\frac{400 \times 10}{2.6}$ = 1538 N (ecf from part **(b)(ii)**) ; (allow 1540) [1]

[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]