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

0653 COMBINED SCIENCE

0653/62 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** **(i)** 5.4 g ;
5.(0) g ; [2]

(ii) tube **1** 0.2 g ;
tube **2** 0.3 g ;
tube **3** 1.0 g ;
tube **4** 0.8 g ; (1 mark each, (ecf)) [4]

(b) pineapple ; (allow ecf)
(protein) lost greatest mass ; [2]

(c) set up (weighed) protein with acid (instead of juice) ;
check for loss in / change of mass after 10 mins ; [2]

[Total: 10]

2 **(a)** **(i)** correct symbols for ammeter and lamp shown in circuit ;; [2]

(ii) it is metallic / metal ; [1]

(b) any mention of use of a magnet ; [1]

(c) **(i)** heat the mixture ;
diagram or mention of suitable apparatus, e.g. test-tube or metal container ; [2]

(ii) heat gives energy (so that atoms react) ; [1]

(iii) exothermic ; [1]

(d) suitable property mentioned ;
result with iron sulfide ; [2]
(e.g. magnetic + non-magnetic / melting point + high mpt / electrical conductivity + non-conductor)

[Total: 10]

3 **(a)** **(i)** 8.6 cm (+/– 0.1 cm) ; [1]

(ii) 6.2 cm (+/– 0.1 cm) ; [1]

(iii) 8.6 / 6.2 = 1.4 (1.39) (no penalty for using more decimal points) (ecf) ; [1]

(b) **(i)** r_3 = 49 degrees (+/– 2 degrees) ;
r_4 = 76 degrees ; [2]

(ii) sine r_3 = 0.75 /
sine r_4 = 0.97 (ecf) (one or both correct) ; [1]

(iii) both points correct (+/– half square) **and** straight line drawn through the origin ; [1]

(iv) *x*- and *y*- distances used marked on the graph ;
gradient = 1.5 (ecf) ; [2]

(c) (value **(b)(iv)** is more accurate)
it is derived from several values instead of just one / owtte / very difficult to measure through glass block ; [1]

[Total: 10]

4 **(a)** **(i)** still air 1.8 cm ;
windy air 14.7 cm ; [2]

(ii) 1.4 cm ;
14.4 cm ; [2]

(iii) 1.4 / 4 = 0.35 ; (ecf)
14.4 / 4 = 3.6 ; (ecf) [2]

(b) moving air / the wind takes water (vapour) away from leaf ;
(gradient between inside and outside of leaf maintained) therefore more <u>evaporation</u> occurs / owtte ; [2]

(c) **(i)** prevents air from entering stem / prevents air lock ; [1]

(ii) water on leaves would block stomata (and prevent evaporation) ; [1]

[Total: 10]

5 **(a)** solution **A** effervescence / bubbling / gas given off
solution **B** no change / no reaction / no bubbles / dissolves
solution **C** no change / no reaction / no bubbles / dissolves
solution **D** effervescence / bubbling / gas given off
1 mark if lines **A** and **D** correct ;
1 mark if lines **B** and **C** correct ; [2]

(b) solution **A** nitric acid or potassium nitrate
solution **B** sodium chloride or hydrochloric acid
solution **C** nitric acid or potassium nitrate
solution **D** sodium chloride or hydrochloric acid
1 mark if lines **A** and **C** correct ;
1 mark if lines **B** and **C** correct ; [2]

(c) solution **A** is nitric acid
solution **B** is sodium chloride
solution **C** is potassium nitrate
solution **D** is hydrochloric acid ;;;
(all 4 correct 3 marks, 3 correct 2 marks, 2 correct 1 mark) [3]

(d) add sodium hydroxide solution and aluminium foil and warm ;
test gas evolved using red litmus or by smell ;
litmus turns blue / ammonia is given off ;
or carry out flame test ;
lilac flame seen ; (for a max of 2 marks) [3]

[Total: 10]

6 **(a)** any dimensions to give an area of 5 cm^2 e.g. 5 cm × 1 cm ; [1]

(b) 0.75 A, 0.90 A (second decimal point **must** be shown) ; [2]

(c) (he increases the resistance so that) the current is decreased / cannot get through the resistor / owtte ; [1]

(d) four points plotted +/– half square ;
straight line drawn ; [2]

(e) the hook / pan has a mass / owtte ; [1]

(f) soft iron loses its magnetism when the current is switched off ;
but steel does not / owtte / steel retains its magnetism ; [2]

(g) current could leak from the wire (through the iron) / owtte / prevent short circuit / no shock if touched ; [1]

[Total: 10]