UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

5054 PHYSICS

5054/41 Paper 4 (Alternative to Practical), maximum raw mark 30

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1 **(a)** 152 202 252 303 B1 [1]

(b) axes, correct way round, labelled quantity and unit B1
y: 2 cm ≡ 50 g *x*: 2 cm ≡ 50 s or 80 s
scales: more than ½ page, sensible B1
points plotted accurately B1
best fit straight line neatly drawn B1 [4]

(c) directly proportional / doubling *x* doubles *y* B1 [1]

(d) 0.84 ± 0.02 ignore unit B1 [1]

(e) 2400 ± 50 e.c.f. 2020/(d) B1 [1]

(f) 1460 – 860 or 600 seen C1
715 ± 15 s e.c.f. 600/(d) A1 [2]

(g) high temperature / kettle hot / may burn you B1
changes reading on balance / measurement B1 [2]

(h) *L* increases plus
as more water to be boiled away / less mass is boiled off / *m* decreases
gradient of graph is reduced B1 [1]

[Total: 13]

2 **(a)** 5 to 30 s unit required B1 [1]

(b) **(i)** 1 trundle wheel / long tape measure / metre rules (at least two)
2 stopwatch / watch with second hand **both required** B1 [1]

(ii) timing several / at least 3 intervals B1
intervals round the track marked/used B1
each measures time from start B1 [3]

(c) **(i)** initial curve in correct direction B1
straight line B1 [2]

(ii) second graph line: gradient increasing then decreasing/
S-shaped curve B1
lines meet at 100 m B1 [2]

[Total: 9]

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3	**(a)**	**(i)**	A	M0	
		(ii)	22 Ω cao	A1	[1]
	(b)	**(i)**	circuit with resistor and d.c. power supply	M0	
			ammeter connected in series with resistor	A1	
			voltmeter connected in parallel with resistor	A1	[2]
		(ii)	tolerance / differences in manufacture / not all identical / student errors	B1	[1]
					[Total: 4]
4	**(a)**	**(i)**	rod drawn alongside right hand side of A	B1	[1]
		(ii)	end of rod A moves away / rotates can be shown on diagram	B1	[1]
	(b)		to be sure we get same sign charge / effect on each rod / ensure rods repel	B1	[1]
	(c)		charge is dissipated / leaks away into air / bench / lost / decreases	B1	[1]
					[Total: 4]

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