Electrical Quantities

Mark Scheme

Level	IGCSE
Subject	Physics
Exam Board	CIE
Topic	Electricity and Magnetism
Sub-Topic	Electrical Quantities
Paper Type	Alternative to Practical
Booklet	Mark Scheme 4

Time Allowed: **42 minutes**

Score: **/35**

Percentage: **/100**

1 **(a** *R* values 0.553, 1.55, 2.74, 3.74, 4.92
(2,3,4 or more significant figures) [1]
Consistent 3 or consistent 4 significant figures for final four entries [1]

(b) Graph:
Axes labelled and scales suitable (must include origin) [1]
Plots correct to ½ square (–1 each error or omission) [2]
Well judged str. line taking account of all points and reaching an axis [1]
Thin line [1]

(c) Statement proportional (wtte) or as *x* increases, *R* increases [1]
Justification straight line through origin [1]

(d) Clear indication of method on graph [1]
Correct value to ½ square [1]

(e) low current/switch off between readings
or add (variable) resistor/lamp
or reduce voltage/power [1]

[Total: 12]

2 **(a)–(c**
table:
V, A, Ω [1]
V 1.8 [1]
I 0.25 [1]
R values 7.20, 3.46(3.5) [1]
consistent significant figures for *R* (2 or more) [1]

(d) *y* 0.48, 0.49, 0.5 (ecf) [1]
2/3 significant figures and no unit [1]

(e) correct symbols and circuit (ignore power source symbol) [1]

(ii) voltmeter position correct [1]

(iii) control current/voltage/resistance/speed of motor [1]

[Total: 10]

3 Table:

(a) Units V, A, Ω (symbol/word) [1]
R values 1.11, 2.19, 5.05, 9.55 [1]
Consistent 2 or consistent 3 sig fig for R [1]

(b) Yes (if within 10%) No (if not) [M1]
Circuit 1 and circuit 2 compared [A1]

(ii) limit current (so temperature not increased)
OR switch off between readings
OR check for zero error
OR Repeats
OR Parallax error explained
OR Tapping meter [1]

[Total: 6]

4 Diagram: correct symbols for ammeter and voltmeter [1]
correct symbols for resistor [1]
correct circuit arrangement [1]

Table: units V, A (symbol/word) [1]

(c) Prediction 1 Yes – close enough (or words to that effect)
OR No – not close enough (or words to that effect) [1]
Prediction 2 Yes – approximately half (or words to that effect) [1]

Resistance at connections
Internal resistance of source/other sensible suggestion [1]

[Total: 7]