232/3
PHYSICS
Paper3
MARKING SCHEME

1. (e) Lo = 56.0cm (It may depend on its position the student tied the meter – rule)

(h)

L(cm)	Ext e(cm)	Time t 20 osc (s)	Periodic time T (s)	T^2 (s^2)
10	8.8	12.22	0.611	0.37
20	7.7	11.21	0.561	0.31
30	6.6	10.12	0.506	0.26
40	5.6	9.15	0.458	0.21
50	4.5	8.20	0.410	0.17

(i) Graph
- Axes with scale ✓✓2
- Plot 4-5 corr ✓✓2
- Plot 3 corr ✓1
- Best line ✓1

(j) Gradient $= \frac{\Delta e}{\Delta T^2}$

$$= \frac{(4.3-1.4)\times 10^{-2}}{(1.5-0)\times 10^{-1}}$$

$$= = 0.19 m/s^2 \pm 0.05$$

(k) C = O

$$\text{Gradient} = \frac{R}{4\prod^2}$$

R = 1.9×4×3.142×3.142
= 75.028m/s^2

2. a) (ii)

L(cm)	100	80	60	40	20	0
V(v)	0.25	0.45	0.55	1.75	1.15	1.60
I(A)	0.12	0.14	0.15	0.16	0.18	0.21

(iii) - Brightness increases with a decrease in L

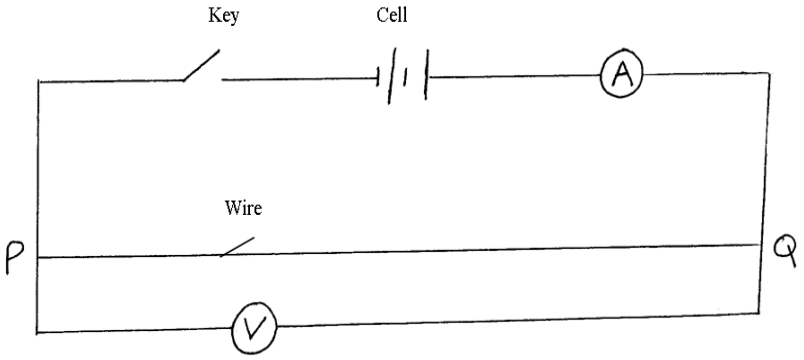
(iv) Axes ✓1
Scale ✓1
Plot 4-5 corr ✓✓1
Plot 2-3 corr ✓1
Curve ✓1

(v) - Tangent at v = 1 volt✓1

$$\text{Slope of tangent} = = \frac{0.16-0.14}{1.4-0.3} = 0.018\Omega^{-1}$$

(vi) (a) Reciprocal of resistance of bulb.

(b) (i)



(ii) V = 1.8V
I = 0.14A

(iii) d = 3.6×10^{-4}M

$$p = 0.785 \times \left(\frac{1.8}{0.14}\right) \times \left(\frac{3.6\times10^{-4}}{1}\right)^2$$

$$= 1.308 \times 10^{-6}\,\Omega M$$