BOMET DISTRICT JOINT M-CATS EXAMINATIONS
232/3 PHYSICS MARKING SCHEME
JULY/AUGUST 2011

1. (e) Lo = 56cm (it depends on the position the student tied the ruler)(1mk)

L(cm)	Extension		Time (t) for 20 oscillations (s)	Periodic time T(s)	$T^2(S^2)$
	cm	m			
10	8.8	0.088	12.22	0.611	0.37
20	7.7	0.077	11.21	0.561	0.31
30	6.6	0.066	10.12	0.506	0.26
40	5.6	0.056	9.15	0.458	0.21
50	4.5	0.045	8.20	0.41	0.17

(i) *Graph: labeled and axes units*
   Appropriate scale   (1mk)
   Plotting 4 or 5 correctly transferred   (2mks)
   3 correctly transferred   (1mk)
   Best line   (1mk)

(j) Gradient = $\dfrac{\Delta e}{T^2}$ (1mk)

   Slope = $\dfrac{(4.3 - 1.4) \times 10^{-2}}{(1.5-0) \times 10^{-1}}$ = $\dfrac{2.9 \times 10^{-2}}{1.5 \times 10^{-1}}$

   $= 0.19 \text{m/s}^2 (\pm 0.05)$ (1mk)

(k) Gradient = $\dfrac{R}{4\pi^2}$

   R = gradient x $4\pi^2$

   = 0.19 x 4 x 3.142 x 3.142   (1mk)

   = 7.63m/s^2

Length L(cm)	100	80	60	40	20	0
Voltage V(v)	0.25	0.45	0.55	0.75	1.15	1.60
Current I (A)	0.12	0.14	0.15	0.16	0.18	0.21

   Axes 1 , scale – 1
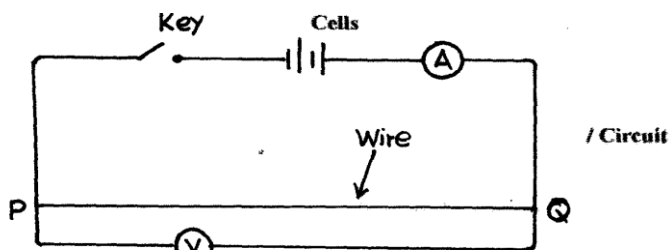   *Plotting – 2 at least four each ½ mark*
   Cure – 1

(v) Tangent at the point
   Slope = $\dfrac{0.16 - 0.14}{1.4 - 0.3}$ 1 correct intervals

   $= \dfrac{0.02}{1.1}$

   $= 0.018\Omega^{-1}$ correct evaluation

(vi) Reciprical of resistance √1mk

   N/B – ammeter in cell switch in series voltmeter parallel to wire

(ii) V = 1.8V
   I = 0.14A

(ii) d = 3.6×10^{-4} m

   p= $0.785 \times \dfrac{1.8}{0.14} \times \dfrac{(3.6 \times 10^{-4})^2}{1}$

   $= 7.63 \text{m/s}^2$