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PHYSICS

PAPER 3

PRACTICAL

MARKING SCHEME

1.	(a) (i) 3.83cm √

(ii) 1.46cm√   (2d.p)

(b) (ii) 5.85s√1

(iii) $\underline{5.85}$ = 0.29S√1

20

(v)

Mass, M(kg)	Time for 20 oscillations (s)	Periodic time T (s)	$T^2(S^2)$
0.1	5.85	0.29	0.09
0.2	9.35	0.47	0.22
0.3	11.40	0.57	0.32
0.4	13.16	0.66	0.43
0.5	14.78	0.74	0.55
0.6	16.16	0.81	0.65
√2	√ 2	√ 2	

(c) (i)	T^2 (S^2) M (kg) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.1 0.2 0.3 0.4 0.5 0.6 0.7

A 1

S 1

P 2

L 1

Scale   √1

Axes labeled with units √1

Plotting   √2

Straight line   √1

(ii) Slope = ΔT^2 = 0.60 – 0.18 √

$\overline{\Delta M}$ $\overline{0.55 – 0.17}$

= $\underline{0.42}$√

0.37

= $1.11^{S2}/_m$ √with units

2.

V (V)	2.9	2.8	2.7	2.6	2.5	2.4	2.2
I A	0.1	0.18	0.22	0.35	0.45	0.51	0.68

Award 5mks for at least 5 correct values of I.

V (V) A (A) 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.5 1.0 1.5 2.0 2.5 3.0

Axes A 1

Scale S 1

Plotting P 2

Straight line L 1

V = -rI + E

E = y – intercept = 3.0V√   (Read from the graph)

r gradient of the line √ (slope)

slope = ΔV = 2.7 – 2.05

$$\overline{\Delta I} \quad \overline{0.26 - 0.81}√$$

$$= \underline{0.65}$$

   -0.55

$$= 1.18\Omega \text{ √}$$

(b)

U (cm)	40	45	50
V (cm)	40	36	33
M = $^V/_U$	1	0.8	0.66

√½ x 3

√½ x 3

$f_1 = \dfrac{40}{1 + 1} = 20$

$f_2 = \dfrac{36}{0.8 + 1} = 20$ √2 for 3 values correct

$f_3 = \dfrac{33}{0.66 + 1} = 19.88$

Average = $\dfrac{f_1 + f_2 + f_3}{3}$ = $\dfrac{20 + 20 + 19.88}{3}$ √correct average

= 19.96cm