

4.5.3 Physics Paper 3 (232/3)

1.

PART A

(c)

Distance d (cm)	70	60	50	40
Time t for 20 oscillations(s)	24.3	25.8	26.7	27.5
Period $T = \frac{t}{20}$ (s)	1.22	1.29	1.34	1.38
$T^4 (S^4)$	2.22	2.77	3.22	3.57
$d^2 (cm^2)$	4900	3600	2500	1600

(3 marks)

(1 mark)

(1 mark)

(1 mark)

Table 1

(6 marks)

(d) (i) See graph (5 marks)

Scale and axis

(1 marks)

Plotting

(2 marks)

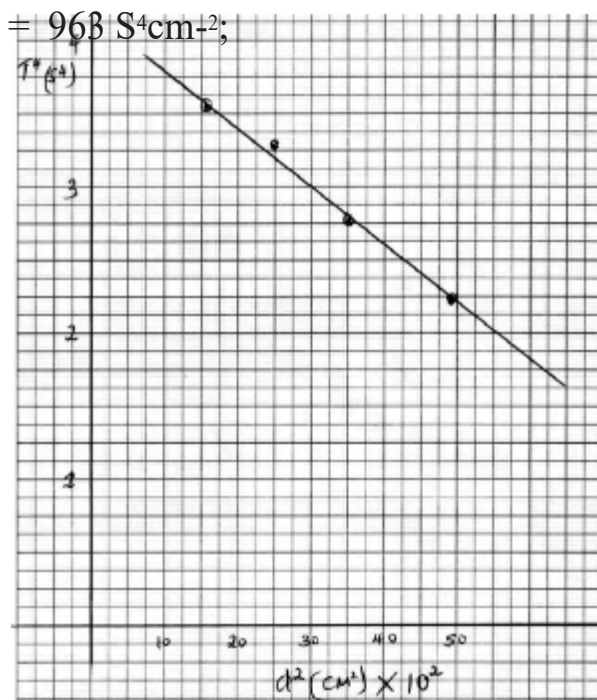
Line

(1 mark)

(ii) Slope = $\frac{2.50 - 3.50}{4.2 - 4.8} \times 10^{-4} S^4 cm^2$;

(3 marks)

(iii) $K = \sqrt{4.2 \times 10^{-4} S^4 cm^2}$;



(3 marks)

d (i)

1. PART B

(e) $l = 0.1 \text{ m}$
 $b = 0.01 \text{ m}$ (1 mark)

(f) $m = 0.06 \text{ kg}$ (1 mark)

(g) $\rho = \frac{0.06}{3} (0.1^2 + 0.01^2)$
 $= 2.02 \times 10^{-4}$ (2 marks)

(i) (I) $t = 75 \text{ s}$ (1 mark)

(II) $T = 7.5 \text{ s}$ (1 mark)

(III) $7.5 = 2r \sqrt{\frac{2.02 \times 10^{-4}}{G}}$

$G = 1.42 \times 10^{-4}$ (2 marks)

unit not required.

2. PART A

(b) $V_0 = 3.0 \text{ V}$ (1 mark)

(d)

Voltage(V)	2.5	2.25	2.0	1.75	1.5	1.25
Time(s)	1.7	2.6	3.9	4.8	6.5	7.9

(e) (i) see graph (5 marks)

(ii) $t_2 = 6.4 \text{ S}$ (1 mark)

(f) $R = \frac{6.4 \times 10^6}{0.693 \times 2200}$
 $= 4200 \text{ X}$ (1 mark)

PART B

(h) (i) $L_1 = 47.4 \text{ cm}$ (1 mark)

(ii) $W_1 = \frac{0.474 \times 0.05 \times 10}{0.35}$

= 0.68 N

(1 mark)

(II) $W_2 =$

357

(i) (I) $L_2 = 28 \text{ cm}$

(1 mark)

$$\frac{0.28 \times 0.05 \times 10}{0.35}$$

= 0.4 N

(1 mark)

(j) (iii) $W_3 = 0.285 \times 0.05 \times 10$

Accept (18 - 32°C)

(1 mark)

(k) (i) $L_3 = 28.5 \text{ cm}$

(1 mark)

(ii) $T_2 = 83^\circ\text{C}$

Accept (60 - 95°C)

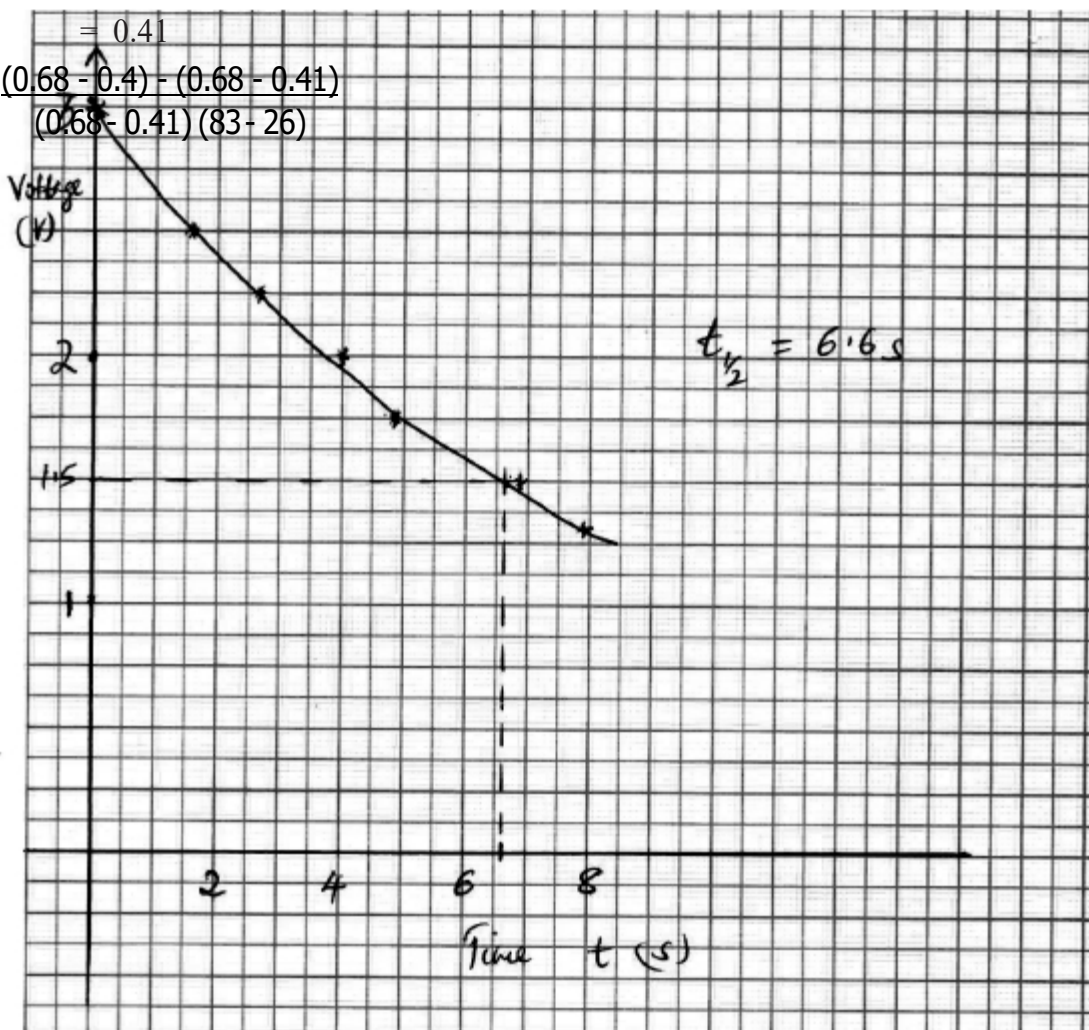
(1 mark)

0.35

(l) $K =$

$$\frac{(0.68 - 0.4) - (0.68 - 0.41)}{(0.68 - 0.41)(83 - 26)}$$

(1 mark)



$$\begin{aligned} &= \frac{0.28 - 0.27}{0.27 \times 57} \\ &= 6.5 \times 10^{-4} \text{K}^{-1} \end{aligned}$$

(2 marks)

(e) (i)