FORM THREE PHYSICS PAPER 3 (232/3)

MARKING SCHEME - END OF TERM III-2024

Question 1

(a) d= 0.36 $\pm$ 0.02 mm (must be 2dp)

(d)

L (cm)	20	30	40	50	60	80	
L (cm)	0.20	0.30	0.40	0.50	0.60	0.80	
V (v)	0.4	0.6	0.8	1.0	1.2	1.6	$\pm$ 0.2
I (A)	0.20	0.20	0.20	0.20	0.20	0.20	$\pm$0.02
R= V/I (Ω)	2.000	3.000	4.000	5.000	6.000	8.000	

L (m) – 1mk for correct conversion

V (v) – ½ mk each within range to 1dp maximum of 5
Total 2.5 mks

I (A) – ½ mark each within range to 2dp maximum of 5

Total 2.5 marks

R (Ω) – 1mark for all correctly evaluated to 4sf or exact

(e) (i) A - labelled with quantity and unit

S – accommodating, simple and uniform

P – ½ mark for each correctly plotted max 4

L – Straight line positive gradient passing through at least 3 correctly plotted points

(ii) No line in e (i), no slope

Δy ✓ ½

Δx ✓ ½

Evaluation - ✓ 1 with correct unit (Ω/m)

✓ ½ with no unit

✓ 0 with wrong unit

(ii) $\frac{K}{A}$ = slope ✓ 1 or implied

Evaluation of area

Formula /implied formula of area ✓ ½

Evaluation in m^{2-}✓ ½

Substitution in $\frac{K}{A}$ = slope ✓ 1

Evaluation of k with unit (Ωm) ✓ 1

Evaluation of k without unit ½

Evaluation of k wrong unit 0

(iii) Resistivity of wire ✓ 1

Question 2

Part A

(b)Angle A = 60 $\pm$ 1 ✓ 1mark with unit

✓ ½ mark without unit

(d) Angle D =50 $\pm$ 2^0 ✓ 1 mark

Ray diagram with correctly drawn rays and observable pin marks ✓1 mark

(e) Correct substitution in formula ✓1mark
Correct evaluation to 4sf or exact ✓ 1 mark

(f) Refractive index of glass ✓ 1mark

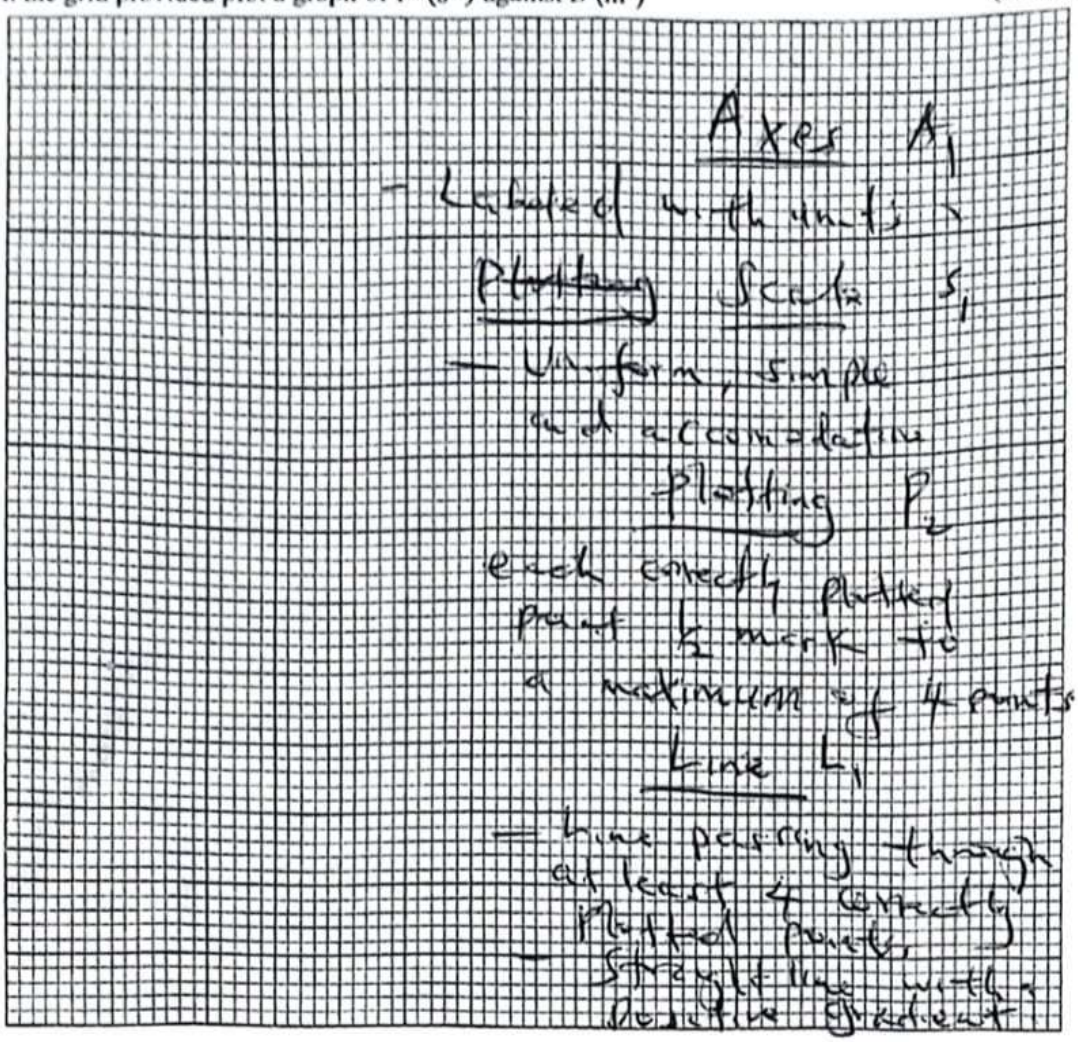
(g) Part B

Table

Length L (cm)	80.0	70.0	60.0	50.0	40.0	30.0
Length L(m)	0.800	0.700	0.600	0.500	0.400	0.300
L^2 (m^2)	0.6400	0.4900	0.3600	0.2500	0.1600	0.9000
Time for 10 oscillation	16.84	15.93	14.77	13.81	12.16	$10.37 \mp 4s$
Period T(s)	1.684	1.593	1.477	1.381	1.216	1.037
$T^2(s^2)$	2.8359	2.5376	2.1815	1.9072	1.4787	1.0754

(6 marks)

c) (i) On the grid provided plot a graph of $T^2(s^2)$ against $L^2(m^2)$ (5 marks)



(ii) Determine the slope of the graph (3 marks)

Slope $= \frac{\Delta T^2}{\Delta L^2}$ → deny $\frac{\Delta Y}{\Delta X}$

at least 4s.f or exact w.th correct unit.