**END TERM 2**

**232/3**

**PHYSICS**

**PAPER 3**

**MARKING SCHEME**

1.d)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mass m (g) | 100 | 150 | 200 | 250 | 300 | 350 |
| Time for 20 oscillation t (s) | 6.59 | 8.03 | 9.60 | 10.91 | 11.57 | 12.56 |
| Period time T (s) | 0.3295 | 0.4015 | 0.4800 | 0.5455 | 0.5785 | 0.6280 |
| T2 (S2) | 0.1086 | 0.1612 | 0.2304 | 0.2976 | 0.3347 | 0.3944 |

\* For t each correct value ½mk max 3mks

\* For T all values correct 2mks more than 3 correct

1mk less than three correct 0mk. max 2mks

\* For T² all values correct 1mk max 1mk

f) Gradient = ∆ Y = ∆T² ✓1 =1.111 s²/kg ✓¹

∆X ∆m

g) y = mx +c

T²=π² M+0 =Slope = π²

K K

K= π² ✓ = π² = 8.972N/m ✓

slope 1.11

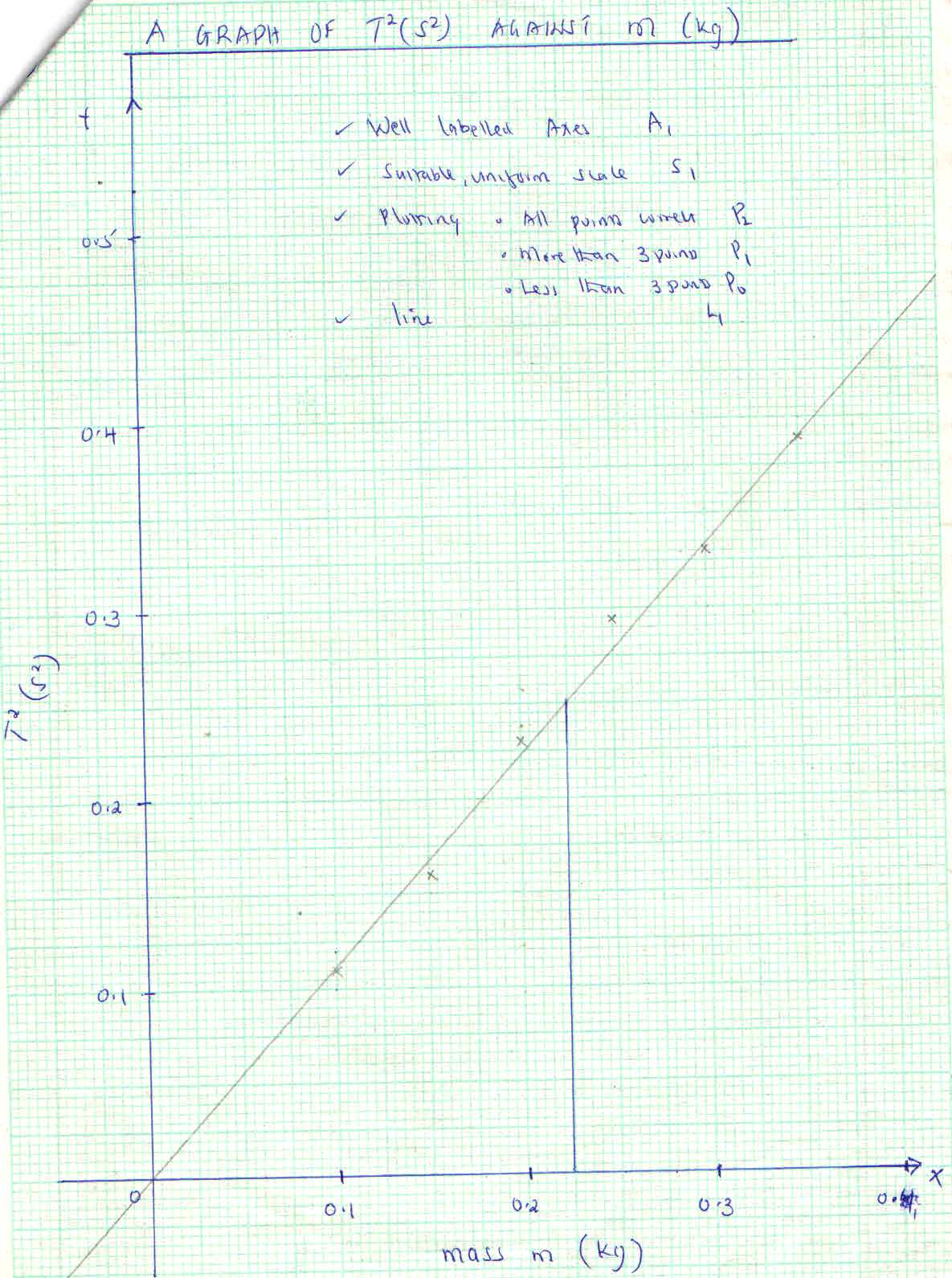
k) Lines P1 P2 & P3 P4 intersecting at I ✓

I) Q P0 = 10.0cm✓

Q 1= 6.6 cm✓

m) n =1.5152✓

n) Refractive index✓



**QUESTION 2**

b) I= 0A✓

E=3.0 ± 0.2 V✓

c)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Length L (cm) | 70 | 50 | 40 | 30 | 20 | 10 |  |
| p.d V (V) | 2.4 | 2.3 | 2.2 | 2.1 | 2.0 | 1.8 | 0.2v |
| Current 1 (A) | 0.18 | 0.21 | 0.25 | 0.29 | 0.32 | 0.38 | 0.01v |

@½mk

max 6mks

e) Slope ✓

= -3.33Ω✓

f) y = m x +c

-rI +E

i) E. m. f of the battery = y intercept

= 3.0v✓

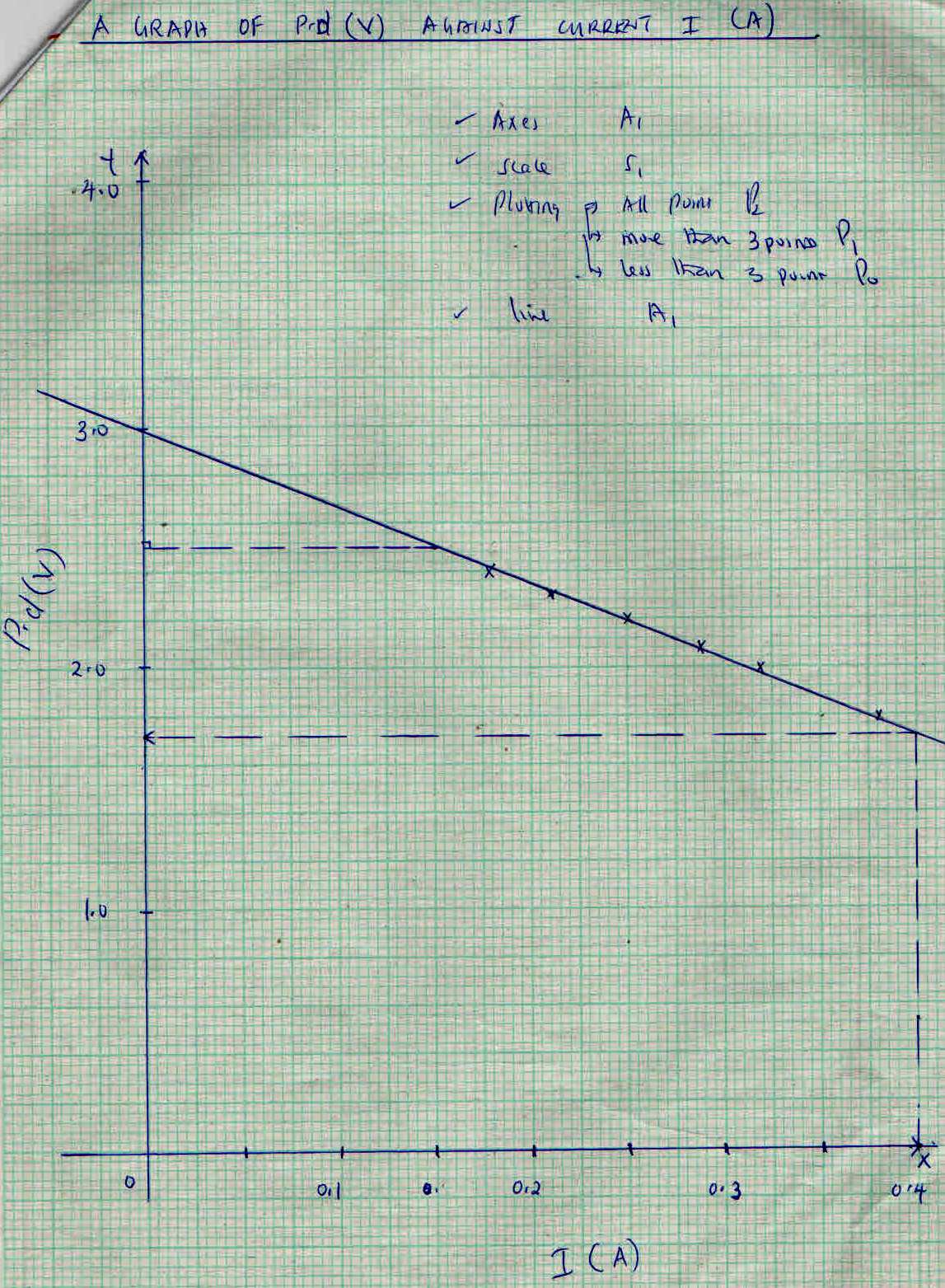
since the two cell are in series, the e. m .f of one cell =1.5V✓

ii) Slope = -r

therefore the internal resistance of the battery = -slope

= -(3.33)✓

=3.33Ω

e)

Since the cells are in series, the internal resistance of one cell 1.665Ω✓

iii) From the graph:

when 1= 0.4A

V=1.75V✓