**Kenya Certificate of Secondary Education**
**PHYSICS**
**PAPER 3**
**MARKING SCHEME**

1. (a) $R_o = 130g$√
(c) $L_o = 50.0cm \pm 0.2cm$√
(e) $L_1 = 37.1cm \pm 0.2cm$√
$L_2 = 52.9cm \pm 0.2cm$√

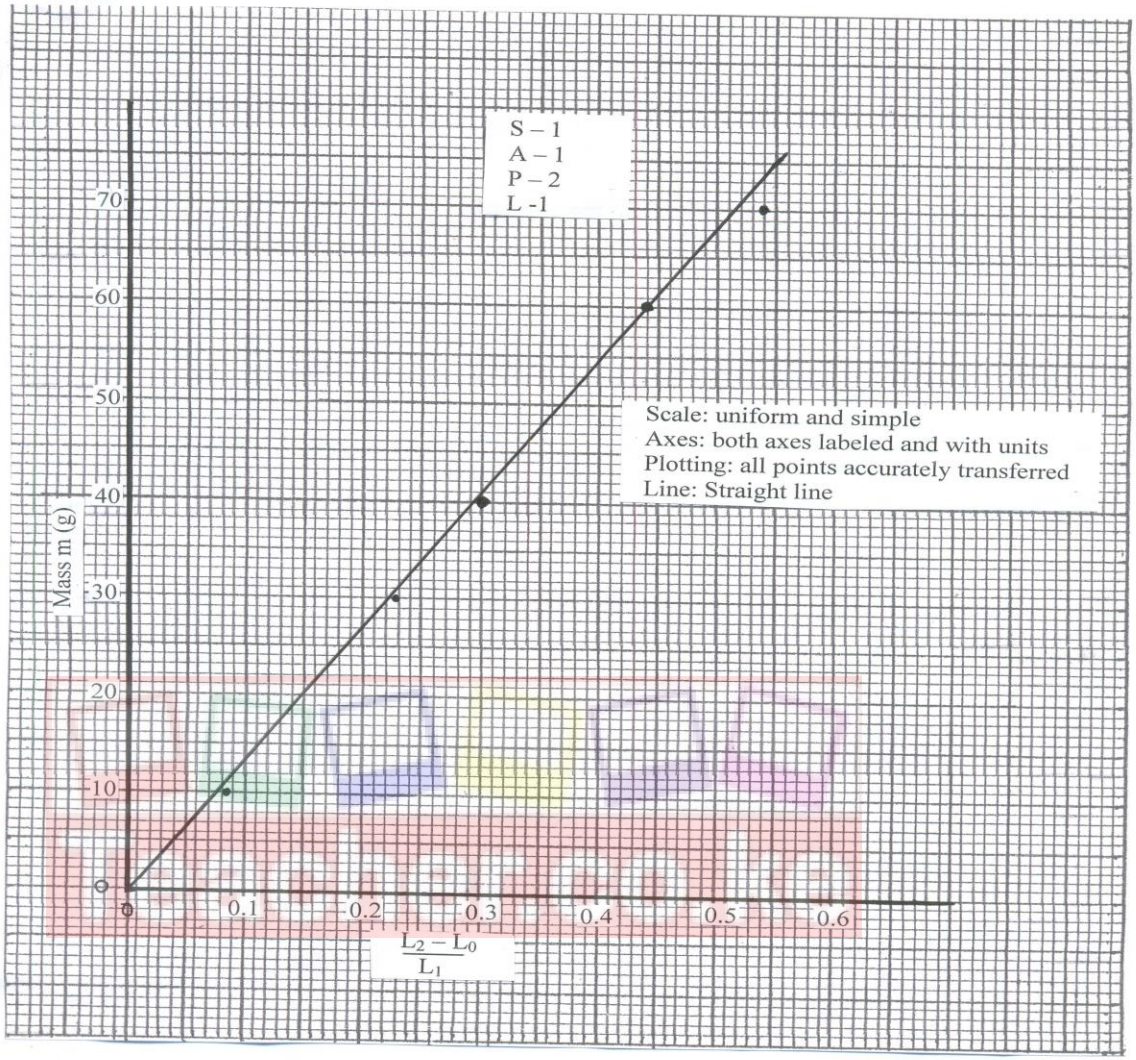
(g)

| Mass m(g) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | |
|---|---|---|---|---|---|---|---|---|
| $L_1$ (cm) | 37.1 | 34.8 | 32.5 | 31.6 | 28.8 | 27.4 | 25.9 | √ |
| $L_2$ (cm) | 52.9 | 55.3 | 57.5 | 59.4 | 61.2 | 62.1 | 64.1 | √ |
| $L_2 - L_o$ (cm) | 2.9 | 5.3 | 7.5 | 9.4 | 11.2 | 12.1 | 14.1 | √ |
| $\frac{L_2 - L_o}{L_1}$ | 0.0782 | 0.1523 | 0.2308 | 0.2975 | 0.3889 | 0.4416 | 0.5444 | |

For any 6 ratio worked @ ½ mark

(h) Graph

(h) Graph



(i) K = 40 – 20 extraction√
0.30 – 0.15 substitution √
= 133.3 ans √

(j) n = K
1000
= 133.3 sub √
1000
= 0.1333kg √

2. A. (b) V = 30cm√
(c)

| U(cm) | V(cm) | $^{I}/_{U}(cm^{-1})$ | $^{1}/_{V}(cm^{-1})$ | $^{I}/_{U} + ^{I}/_{V} = ^{I}/_{f}(cm^{-1})$ |
|---|---|---|---|---|
| 15 | 30 | 0.067 | 0.033 | 0.10 |
| 20 | 20 | 0.05 | 0.05 | 0.10 |
| 25 | 16.7 | 0.04 | 0.059 | 0.099 |
| | | √ | √ | √ |

(d) (i) Mean of $^{I}/_{f}$ = 0.1 + 0.1 + 0.099
3
= 0.09967√

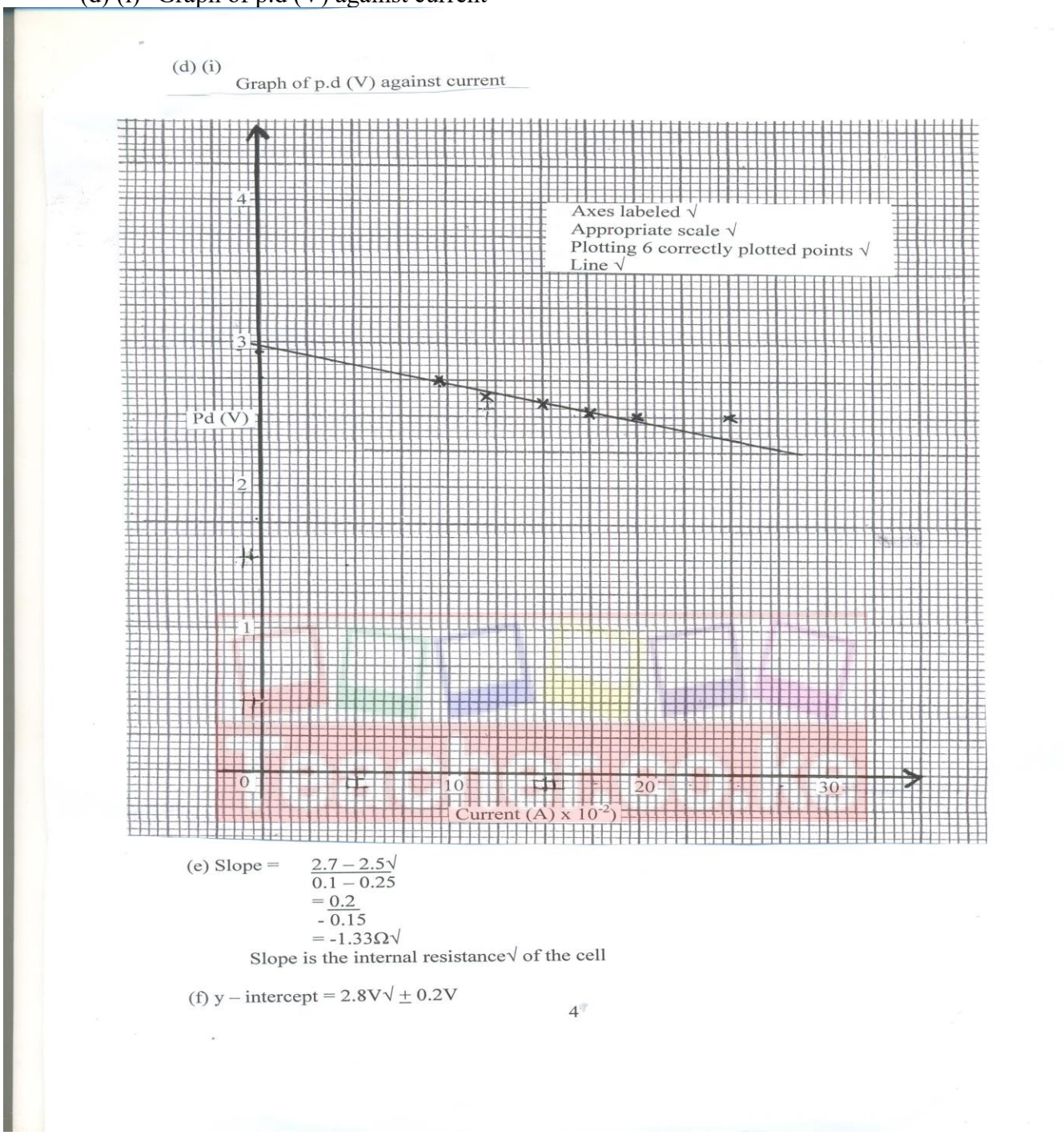
(ii) Mean of f = 10.34cm √

2. B. (b) V = 2.7V√ A = 0.1A√

(c)

| Length (cm) | 80 | 70 | 60 | 50 | 40 | 30 |
|---|---|---|---|---|---|---|
| P.d (V) | 2.7 | 2.65 | 2.6 | 2.55 | 2.55 | 2.5 |
| Current (A) | 0.1 | 0.125 | 0.155 | 0.175 | 0.2 | 0.25 |
| | | √ | √ | √ | | |

(d) (i) Graph of p.d (V) against current




(e) Slope = $\frac{2.7 - 2.5\surd}{0.1 - 0.25}$

$= \frac{0.2}{-0.15}$

$= -1.33\Omega\surd$

Slope is the internal resistance√ of the cell

(f) y – intercept = 2.8V√ ± 0.2V