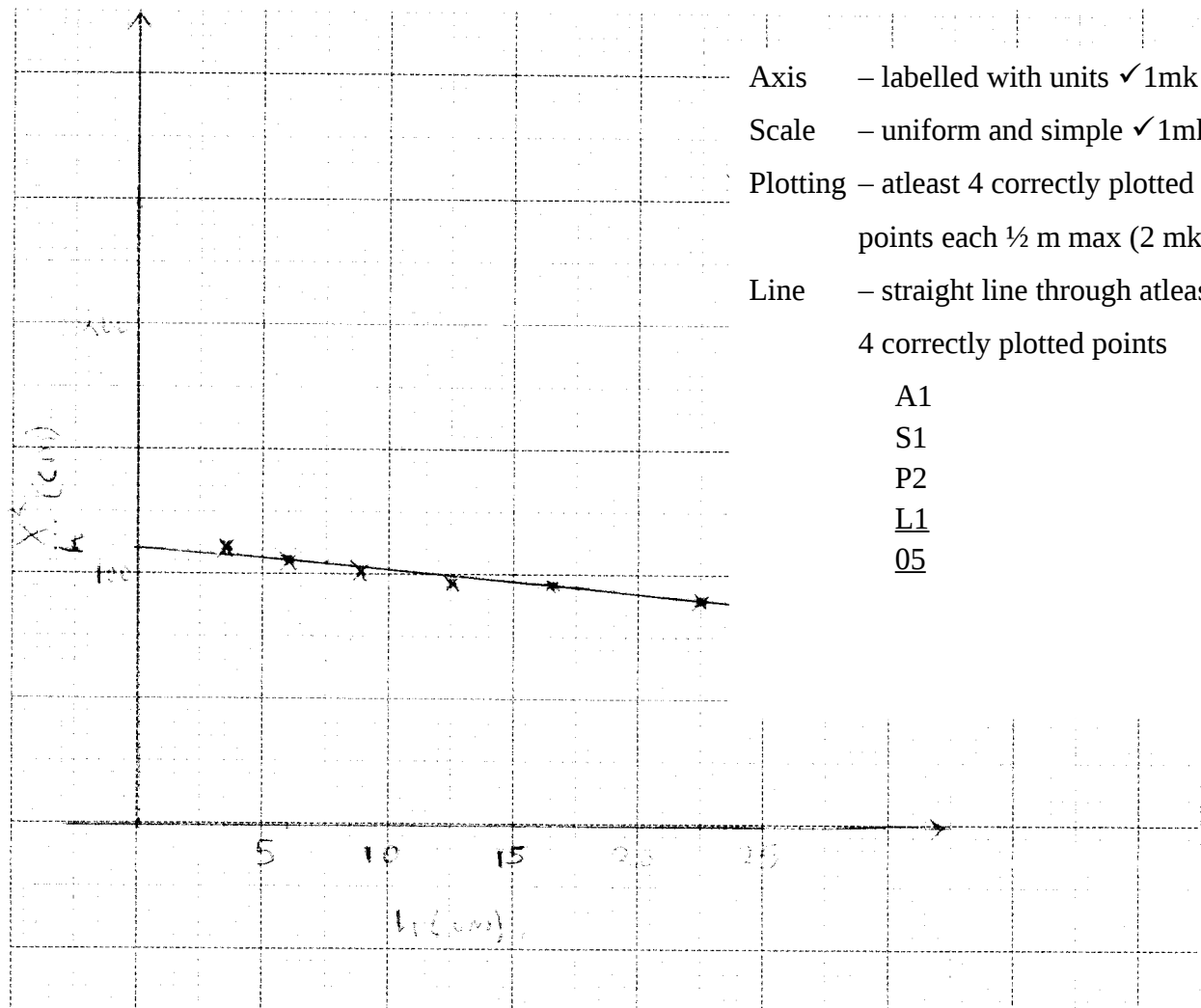


**KITUI COUNTY MOCK****END OF TERM II FORM FOUR EXAMINATION, 2017****Kenya Certificate of Secondary Education (K.C.S.E)****232/3****PHYSICS****PAPER 3****MARKING SCHEME****Question 1**a) i)  $h = 3.0\text{cm} \pm 1.0$  (1 D.p a must)

ii)

| x (cm) | h (cm)                                                            | $x^2$ (cm <sup>2</sup> ) | $\frac{x^2}{h}$ (cm)                           |
|--------|-------------------------------------------------------------------|--------------------------|------------------------------------------------|
| 20     | 3.6                                                               | 400                      | 111.11                                         |
| 25     | 5.9                                                               | 625                      | 105.93                                         |
| 30     | 8.8                                                               | 900                      | 102.27                                         |
| 35     | 12.5                                                              | 1225                     | 98                                             |
| 40     | 16.5                                                              | 1600                     | 96.97                                          |
| 45     | 22.5                                                              | 2025                     | 90                                             |
|        | - each ½ mk<br>- 1 d.p range $\pm 1$ for each value<br>- Max 3mks |                          | - 4 s.f or exact<br>- Each ½ mk<br>- Max 3 mks |

iii)



$$\begin{aligned}
 \text{iv) Slope} &= \frac{\Delta \frac{x^2}{h}}{\Delta h} \\
 &= \frac{(95-105) \text{ cm} \square^{\frac{1}{2}}}{15.5-7.5 \text{ cm} \square^{\frac{1}{2}}} \\
 &= \frac{-10}{8} \checkmark^{\frac{1}{2}} \\
 &= -1.25 \checkmark^{\frac{1}{2}} \quad \text{(Correct evaluation, exact or 4 s.f)} \\
 &\quad \text{No unit}
 \end{aligned}$$

$$\text{v) When } h = 0 \quad \frac{x^2}{h} = 110 \text{ cm} \checkmark^1 \text{ (Unit a must)}$$

$$\text{b) i) } t = 28.16 \text{ seconds} \checkmark^1 \pm 1 \text{ s (1 d.p a must)}$$

$$\text{ii) } T = 1.408 \checkmark^1 \text{ seconds (exact or 2d.p)}$$

$$\text{iii) } T = 2\pi \sqrt{\frac{p}{g}}$$

$$1.408 = 2\pi \sqrt{10} \quad \text{Substitution } \checkmark^1$$

$$\sqrt{\frac{p}{10}} = \frac{1.408}{2\pi} \quad \text{Evaluation } \checkmark^1$$

$$\left( \sqrt{\frac{p}{10}} \right)^2 = (0.2241)^2$$

$$\frac{p}{10} = 0.05022 \quad \text{Answer to 4 s.f or exact}$$

$$p = 0.5 \quad \text{Ignore units}$$

## Question 2

### PART A

a) iv)

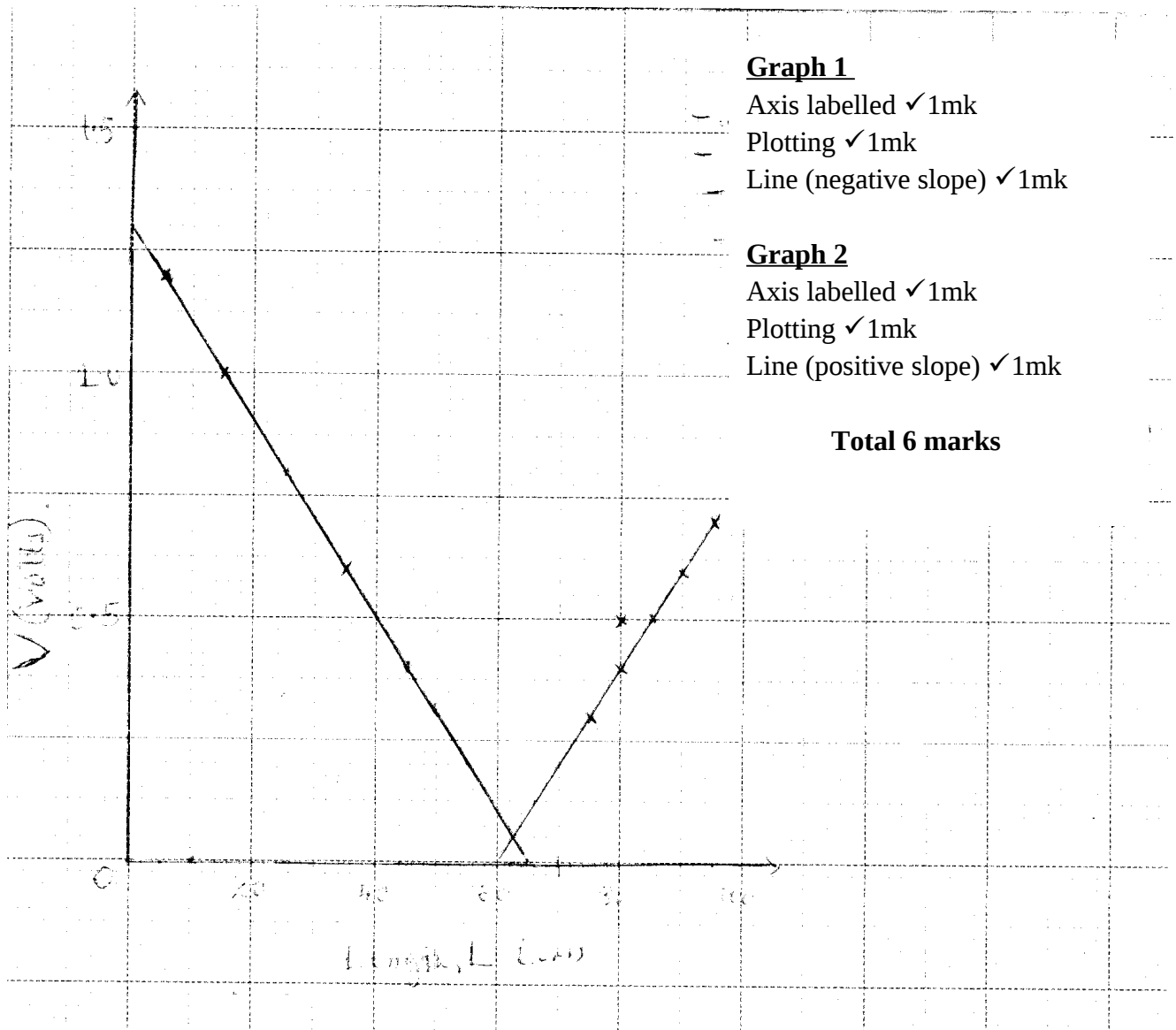
|             |            |            |            |            |            |           |
|-------------|------------|------------|------------|------------|------------|-----------|
| Length (cm) | 5          | 15         | 25         | 35         | 45         |           |
| V (volts)   | <b>1.2</b> | <b>1.0</b> | <b>0.8</b> | <b>0.6</b> | <b>0.4</b> | $\pm 0.1$ |

1 d.p must  
4 correct values  $\frac{1}{2}$  mk

b) iii)

|             |            |            |            |            |            |           |
|-------------|------------|------------|------------|------------|------------|-----------|
| Length (cm) | 95         | 90         | 85         | 80         | 75         |           |
| V (volts)   | <b>0.7</b> | <b>0.6</b> | <b>0.5</b> | <b>0.4</b> | <b>0.3</b> | $\pm 0.1$ |

c)



- d) i)  $V = 1.3 \pm 0.1V$  ✓<sup>1</sup> (1 d.p, if no units ✓<sup>1</sup>/<sub>2</sub> mk)  
 ii)  $L = 63.0\text{cm} \pm 1\text{cm}$  ✓<sup>1</sup> (1 d.p, if no units ✓<sup>1</sup>/<sub>2</sub> mk)

e) 
$$\frac{R_x}{R_y} = \frac{L}{100 - L}$$

$$\frac{R_x}{10} = \frac{63.0}{100 - 63.0}$$

$$\frac{R_x}{10} = \frac{63}{37}$$

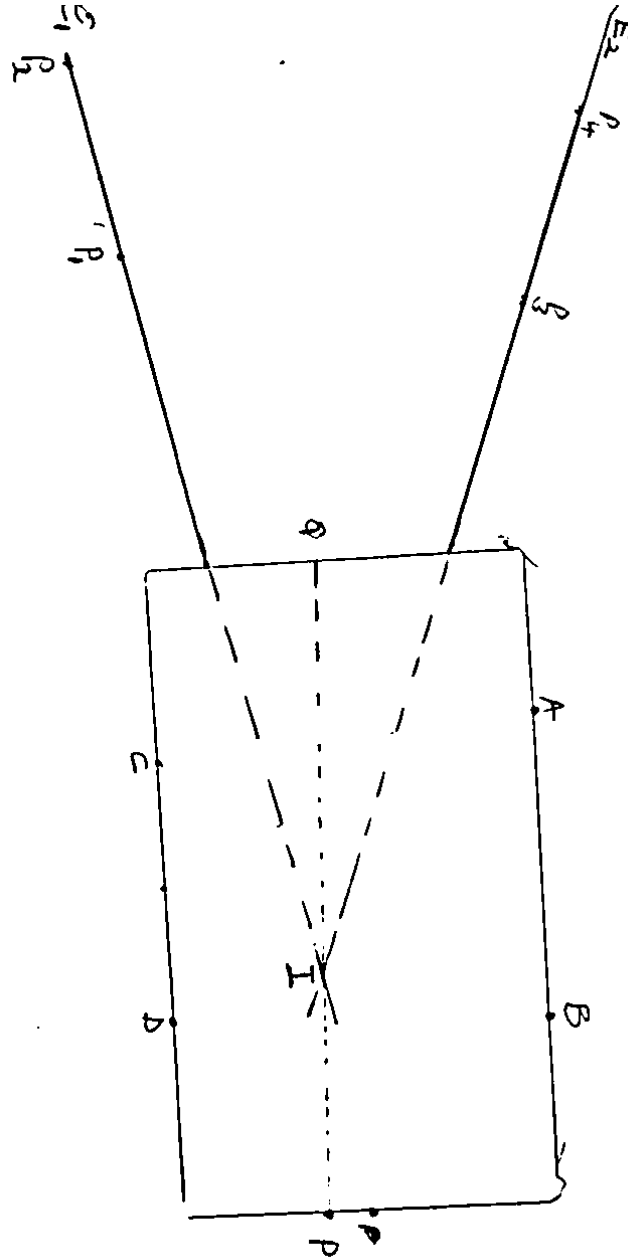
$$R_x = \frac{630}{37}$$

$$R_x = 17.03 \text{ ✓}^1$$

- Substitution ✓<sup>1</sup>
- Correct evaluation (Ignore units) ✓<sup>1</sup>
- 4 s.f

## PART B

- h) i) - Trace of glass block ✓<sup>1</sup>  
 - Rays drawn from P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub>, P<sub>4</sub> and their intersection labelled I. ✓<sup>1</sup>



ii)  $QP = 10.6 \pm 0.1 \text{ cm}$  (1 d.p must, if no units ✓<sup>1/2</sup> mk)

$QI = 6.8 \pm 0.1 \text{ cm}$  (1 d.p must, if no units ✓<sup>1/2</sup> mk)

iii)  $\frac{QP}{QI} = \frac{10.6}{6.8}$

Substitution (1/2 mk)

$= 1.5588$

Evaluation exact or 4 s.f (1/2 mk)

If no substitution award 1 mk