**NAME: ……..……..INDEX NO: …….**

**ADM.NO: …….....**

**232/3** **CANDIDATE'S SIGN: ……..……**

**PHYSICS** **DATE: ……..…CLASS: …….**

**PAPER 3**

**(PRACTICAL)**

**JULY, 2025**

**TIME: 2 ½ HOURS**

# SULIMO MOCK EXAMINATION – 2025

***Kenya Certificate of Secondary Education (K.C.S.E)***

## INSTRUCTIONS TO CANDIDATES

*(a) Write your Name, Index Number and Admission number in the spaces provided above.*
*(b) Sign and write your class and the date of Examination in the spaces provided above.*
*(c) Answer all questions in the spaces provided.*
*(d) You are supposed to spend the first 15 minutes of the 2½ hours allowed for this paper reading the whole paper carefully before commencing your work.*
*(e) All working must be clearly shown where necessary.*
*(f) Mathematical tables and silent electronic calculators may be used.*
*(g) This paper consists of 8 printed pages. Candidates are advised to check that all pages are printed as indicated and no questions are missing.*

## FOR EXAMINER'S USE ONLY

**Question 1**

| | PART A | | | PART B | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **i** | **ii** | **iii** | **i** | **ii** | **iii** | **iv** | **v** | **vi** |
| Maximum score | **2** | **1** | **1** | **1** | **6** | **5** | **2** | **0.5** | **1.5** |
| Candidate's score | | | | | | | | | |

**Total** **20 Marks**

**Question 2**

| | PART A | | | | | | PART B | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **a** | **b** | | | | | **b** | **c** | **d** | **e** |
| | | **i** | **ii** | **iii** | **iv** | **v** | | | | |
| Maximum score | **3** | **1** | **1** | **1** | **1** | **1** | **5** | **2** | **3** | **2** |
| Candidate's score | | | | | | | | | | |

**Total** **20 Marks**

| **GRAND TOTAL** | |
|---|---|

**QUESTION 1**

**PART A**

You are provided with the following:

- 5 optical pins
- A glass block
- A plain paper
- A soft board
- 4 thumb pins

Proceed as follows:

Fix the white piece of paper on softboard using the thumb pins provided. Place the glass slab on the white paper and draw the outline of the block on the paper. Remove the block and indicate the sides ABC and D as shown. On side BC determine the centres of side BC using your ruler and fix pin $P_0$ as shown. Looking from one side at the opposite end of the slab fix pin $P_1$, $P_2$ so that they are in with the image I of $P_0$. On the other side locate the same image using pins $P_3$ and $P_4$ as shown in **figure 1**. Remove the glass block and produce lines $P_1$, $P_2$ and $P_3$, $P_4$ to their points of intersection which is the position of the image I.

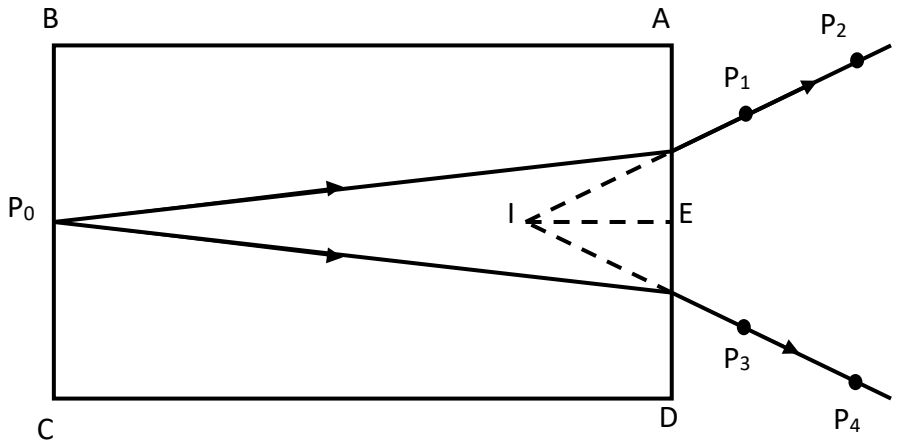



**Figure 1**

(i) Using the half metre rule, measure the lengths

$EP_0$ = _____ cm (1 Mark)

EI = _____ cm (1 Mark)

(ii) Determine the value of z given that:

$$z = \frac{EP_O}{EI}$$ (1 Mark)

……

……

……

……

……..

(iii) State the significance of z (1 Mark)

……

……

**PART B**

You are provided with the following apparatus.

- 2 new dry cells size D.
- A cell holder.
- 8 connecting wire at least two with crocodile clips.
- A resistance wire TQ of 1m long mounted on a metre rule.
- An ammeter (0-1A).
- A voltmeter (0 -3v).
- Lamp R.
- Switch S.
- A micrometer screw gauge (to be shared).

**Proceed as follows**:

Connect the circuit as in **figure 2** below;

TQ is the resistance wire.

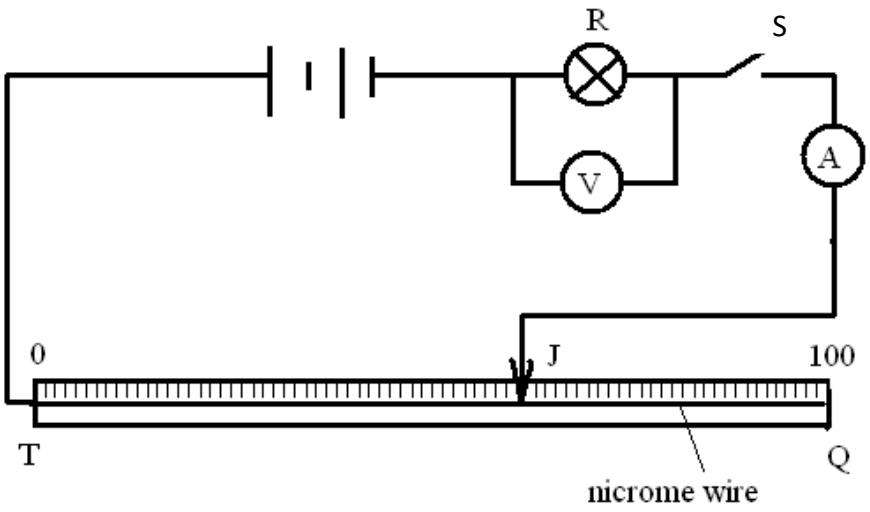



**Figure 2**

(i) With the jockey J at Q (*Y*= 100 cm from T) record the ammeter and voltmeter readings.

V =……v I =……A (1 mark)

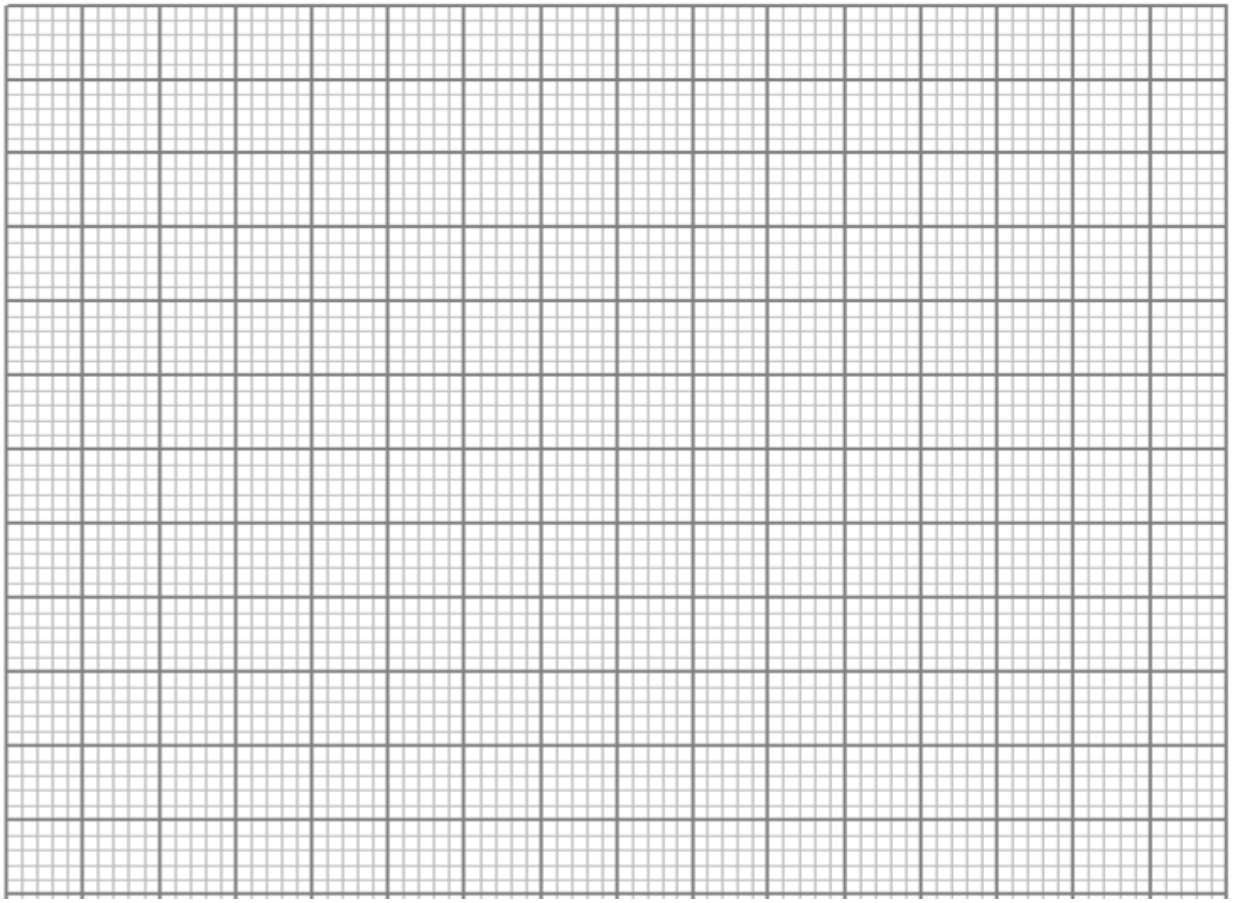
(ii) Repeat (a) (i) for other values of Y and records the ammeter and voltmeter readings in the table below.

**Table 1**

| Y(cm) | 80 | 60 | 40 | 20 | 0 |
|---|---|---|---|---|---|
| Ammeter reading, I (A) | | | | | |
| Voltmeter reading, V (v) | | | | | |
| $R = \frac{V}{I}\ (\Omega)$ | | | | | |

(6 marks)

(iii) Plot a graph of R (y- axis) against *Y (x- axis).* (5marks)



iv) From your graph, find the slope **s** at Y = 40 cm. (2 marks)

(v) Using a micrometer screw gauge, measure the diameter D of the wire. ($\frac{1}{2}$ mark)

D = ……cm

(vi) Calculate the quantity,

p = 0.5 $\left(\frac{D^2}{s}\right)$ at Y= 40cm. ($1\frac{1}{2}$ marks)

**QUESTION 2**

**PART A**

You are provided with the following:

- Rubber cork.
- Vernier calipers.
- Beam balance.

**Proceed as follows:**

a) Using a vernier caliper, measure the lengths D, d, and h as shown in **figure 3.**

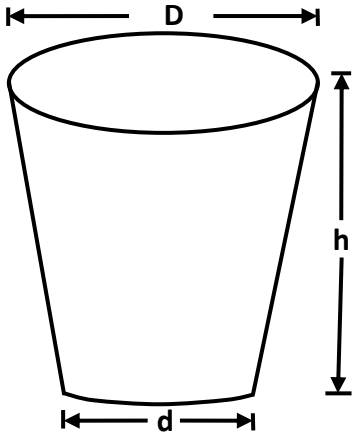



**Figure 3**

D = ..... m (1 mark)

d = ..... m (1 mark)

h = ..... m (1 mark)

b) (i) Measure the mass, M of the rubber bung using the beam balance.

M = ..... kg (1 mark)

(ii) Given that $Q = \frac{(d+D)}{4}$, determine the value of Q. (1 mark)

(iii) Determine the value of r given that:

$$\pi r Q^2 = \frac{M}{h}$$ (1 mark)

(iv) State the unit of r and its significance.

Unit…… (1 mark)

Significance…… (1 mark)

**PART B.**

You are provided with the following:

- 50g mass with a hook.
- A piece of string of length about one metre.
- Metre rule.
- Stop watch.
- A complete stand with a boss and a clamp.
- Two pieces of wooden blocks for clamping.

**Proceed as follows:**

a) Suspend the mass on the stand such that distance D = 70cm as shown in **figure 4** below. This distance should remain fixed throughout the experiment. Adjust the string so that the mass hangs at a distance H = 5cm. Give the mass a slight displacement sideways, let it oscillate freely and measure the time t for 10 oscillations. Record the time **in table 2** below.

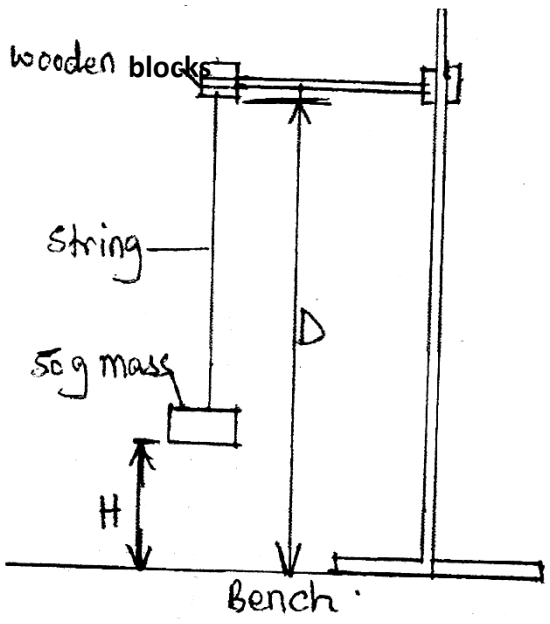



**Figure 4**

b) Repeat the experiment to obtain more values of time t for other lengths 10, 15 and 20cm respectively. Complete **table 2.**

| **H (cm)** | **5** | **10** | **15** | **20** |
|---|---|---|---|---|
| **Time for 10 oscillations (s)** | | | | |
| **Period T (s)** | | | | |
| **$T^2$ ($S^2$)** | | | | |

(5 marks)

c) Determine the average value of $T^2$ from the table above. (2 marks)

d) Determine the value of g in SI unit, at $L = 0.20\text{m}$, given that T and L are related by the equation: (3 marks)

$$T = 2\pi\sqrt{\frac{L}{g}}$$

e) State **two** sources of errors in the experiment, that could contribute to your answer above. (2 marks)

……
……
…….