535/3
PHYSICS
PRACTICAL
PAPER 3
$2^{1}/_{4}$ hours

WAKISSHA

Uganda Certificate of Education

PHYSICS PRACTICAL

Paper 3

2hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

- Answer question 1 and one other question. You will not be allowed to start with the apparatus for the first 15 minutes.
- Marks are given mainly for a clear record of the observations actually made and use made of them. Whenever possible candidates should put their observations in a suitable table drawn in advance, as soon as they are made.
- An account of the method of carrying out the experiment is not required.
- Graph papers may be provided.
- Mathematical tables and silent non-programmable calculators may be used.

Turn Over

1. **In this experiment you are to determine the mass of a metre rule.**

(a) Adjust the metre rule on a knife – edge until it balances horizontally as shown in figure 1

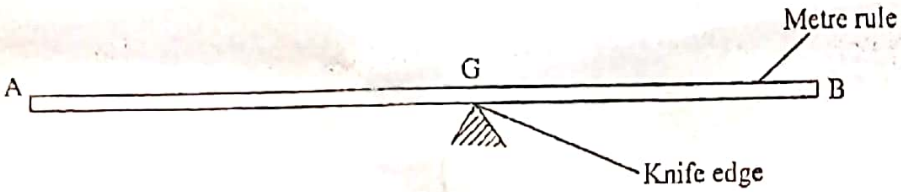

Fig. 1

(b) Read and record the position, G, of the knife edge on the metre rule.

(c) Hang the 100g mass from end A at a distance x = 2.0cm on the metre rule.

(d) Adjust the metre rule on the knife edge until the rule balances horizontally on the knife edge as shown in figure 2

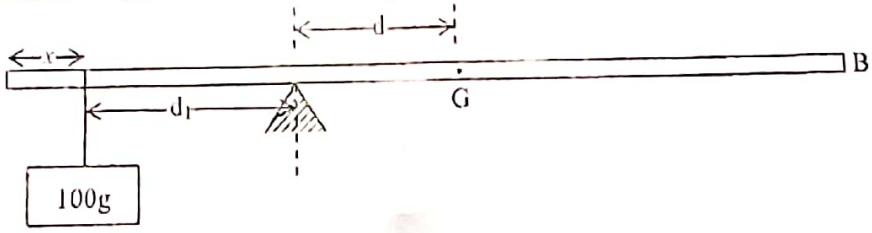

Fig. 2

(e) Read and record distances d, from G to the knife edge and d_1, from the mass to the knife edge.

(f) Repeat procedures (c) to (e) for values of x = 4.0, 6.0, 8.0, 10.0 and 12.0cm.

(g) Tabulate your results in a suitable table

(h) Plot a graph of d_1 against d

(i) Find the slope, D of the graph

(j) Calculate the mass, m, of the metre rule from m = 100D

2. **In this experiment you are to determine the refractive index of a block of glass using Snell's law.**

(a) Fix the white sheet of paper on the soft board using drawing pins.

(b) Make an outline ACDE of the glass block in the middle of the paper.

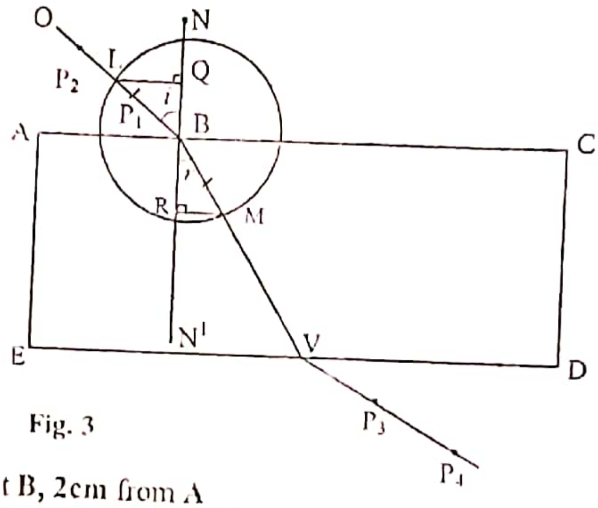

Fig. 3

(c) At point B, 2cm from A

(i) Draw a normal NN^1 to AC

(ii) Draw a circle of radius 4.0cm with B as its centre

(d) Measure from the normal NN^1 angle $i = 10^0$ and draw a ray OB

(e) Replace the glass block to its outline and place pins P_1 and P_2 along OB.

(f) Observe the images of P_1 and P_2 by looking through side ED and place pins P_3 and P_4 such that the images of P_1 and P_2 and pins P_3 and P_4 are in a straight line.

(h) Remove the glass block and pins P_3 and P_4.

(i) Join the holes P_3 and P_4 with a straight line to touch ED at V

(j) Draw a line VB

(k) Draw perpendiculars MR and LQ on the normal as shown in figure 3.

(l) Measure LQ and MR.

(m) Repeat procedures (d) to (*l*) for
$i = 20^0, 30^0, 40^0, 50^0$ and 60^0

(n) Record your results in a suitable table.

(o) Plot a graph of LQ against MR.

(p) Determine the slope, η of the graph.

3. **In this experiment you are to determine the relationship between the potential difference causing current to flow through a uniform wire and the length of wire through which it flow.**

(a) Connect up the circuit as shown in figure 4.

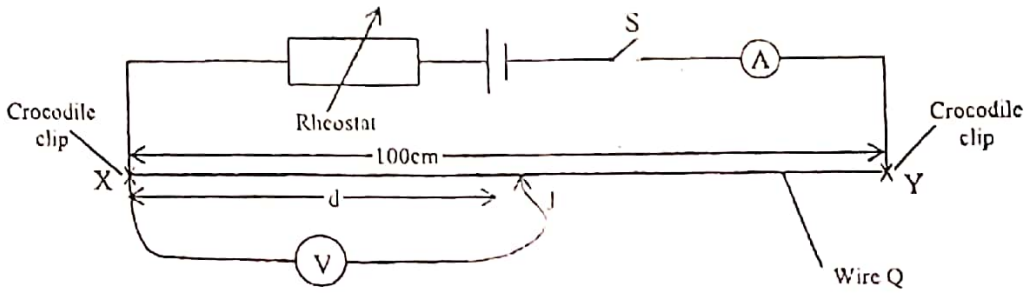

Fig. 4

(b) Close switch S

(c) Touch point Y with the sliding contact J then adjust the rheostat until the voltmeter shows maximum deflection, V_0.

(d) Record V_0.

(e) Read and record the ammeter reading, I_0.

(f) Move J along wire Q to a point d = 80.0cm

(g) Record the voltmeter reading, V.

(h) Repeat procedures (f) and (g) for d = 60.0, 40.0 and 20.0cm; keeping I constant throughout by adjusting the rheostat.

(j) Plot a graph of V against d.

(k) Determine the slope, P, of the graph.

END