535/3
PHYSICS
PRACTICAL
PAPER 3
July/August 2018
$2^{1}/_{4}$ hours

WAKISSHA JOINT MOCK EXAMINATIONS

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 as soon as they are made. Whenever possible candidates should put their observations and calculations in a suitable table drawn in advance.
- 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.

1. In this experiment you will determine acceleration due to gravity, g, using a simple pendulum.

(a) Suspend the pendulum bob by means of a thread from a retort stand as shown below in figure 1.

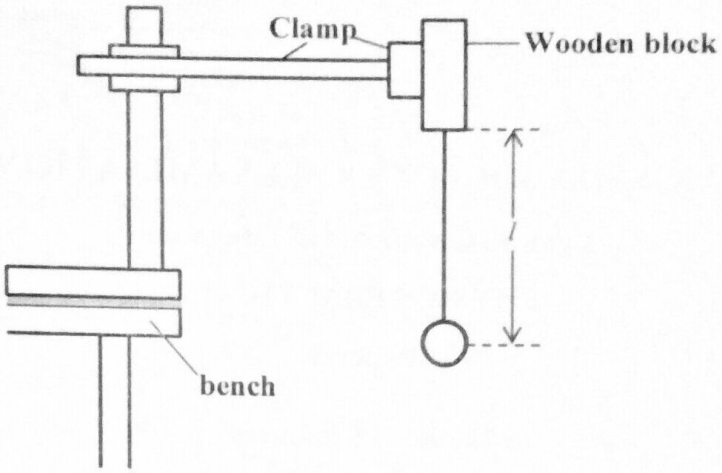


Fig. 1

(b) Adjust the length, l, of the pendulum string to 0.900m.

(c) Displace the pendulum bob through a small angle and allow it to oscillate.

(d) Measure and record the time, t, for 20 complete oscillations.

(e) Repeat procedure (b) to (d) for l = 0.800, 0.700, 0.600, 0.500 and 0.400m.

(f) Tabulate your results in a suitable table including values of $\sqrt{l}$.

(g) Plot a graph of t against $\sqrt{l}$.

(h) Find the slope, S, of the graph.

(i) Calculate g from $S = \frac{40\pi}{\sqrt{g}}$.

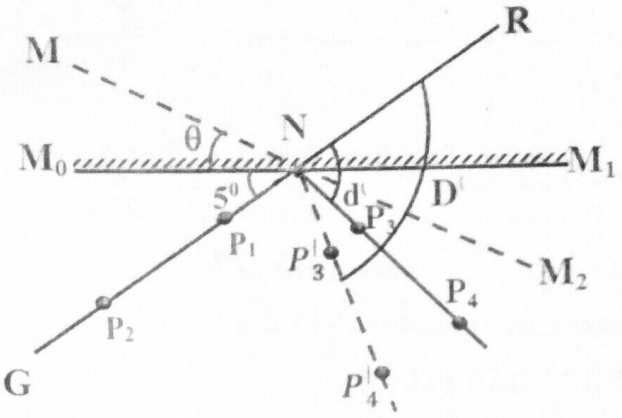
2. In this experiment you are to investigate the relationship between the angle of rotation of a plane mirror and the angle of rotation of the reflected ray for a fixed point of incidence.

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

(b) Draw a line M_0M_1 about 15.0cm long in the middle of a white sheet of paper.

(c) Label the midpoint of M_0M_1 as N.

Fig. 2



(d) Draw a line GNR at an angle of 5^0 to M_0M_1.

(e) Place the plane mirror vertically along M_0M_1

(f) Place points P_1 and P_2 on line GN.

(g) View the images of P_1 and P_2 in the plane mirror and stick pins P_3 and P_4 such that they are in a straight line with images of P_1 and P_2.

(h) Remove the mirror **but not** pins P_1 and P_2

(i) Remove P_3 and P_4.

(j) By means of a foot rule draw a straight line through holes of P_3 and P_4 to meet point N.

(k) Measure and record angle d.

(*l*) Draw a line MNM_2 at an angle, $\theta = 10^0$ to MoM1.

(m) Place the plane mirror along MM_2.

(n) Repeat procedures (g), (h) and (i)

(o) Draw a line through P_3 and P_4 to meet M_0M_1 at N.

(p) Measure angle D.

(q) Repeat procedures (*l*) to (*p*) for values of $\theta = 20^0, 30^0, 40^0, 50^0$ and 60^0.

(r) Record your results in a suitable table, include (D − d).

(s) Plot a graph of (D − d) against θ.

(t) Find the slope, *t*, of the graph.

NB: HAND IN YOUR TRACING PAPER.

Turn Over

3. In this experiment you will determine the emf, E, and internal resistance, r of the cells provided.

(a) Connect the circuit as shown in the figure 3.

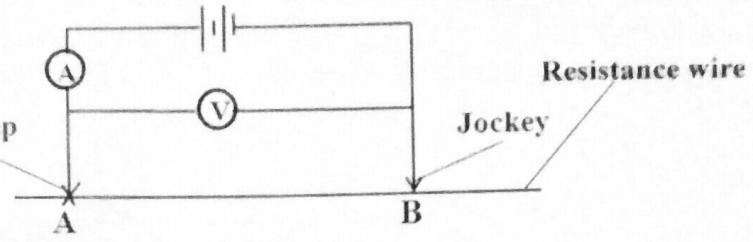


Fig. 3

(b) Starting with about 15cm from A to B, of the resistance wire, move the jockey until the ammeter gives a reading I of 0.30A.

(c) Read and record the voltmeter reading V

(d) Repeat procedure (b) and (c) for values of

$I = 0.40, 0.50, 0.60$ and $0.70A$.

(e) Tabulate your results in a suitable table.

(f) Plot a graph of I against V.

(g) Find the slope, S, of your graph.

(h) Find the value of, r, from the expression $r = \frac{1}{S}$.

(i) From your graph determine the intercept, E, on the V-axis.

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