535/3

PHYSICS

PRACTICAL

Paper 3

JULY/AUGUST 2022

2 ¼ Hours

TORORO ARCHDIOCESE EXAMINATIONS BOARD

Uganda Certificate of Education

MOCK EXAMINATIONS – AUGUST 2022

PHYSICS PRACTICAL

Paper 3

2 Hours 15 Minutes

INSTRUCTIONS TO CANDIDATES

*Answer question 1 and **one** other question.*
Any additional question answered will not be marked.

*You will **not** be allowed to start working with the apparatus for the **first quarter** of an hour.*

*For each **question** candidates will be required to **select** apparatus from the equipments provided.*

*Marks are given for a clear record of the observation actually made; for their **suitability** and **accuracy** and for the use made of them.*

Candidates are reminded to record their observations as soon as they are made.

*Where possible, candidates should put their **observations** and **calculations** in a suitable table drawn in advance.*

*Candidates are required to use **blue or black ink** only. No pencil work will be marked.*

*An account of the method of carrying out the experiment is not required. **Squared papers** are provided.*

Mathematical tables and silent non-programmable calculators may be used.

Turn Over

1. In this experiment, you will determine the constant, μ of the pendulum bob provided.

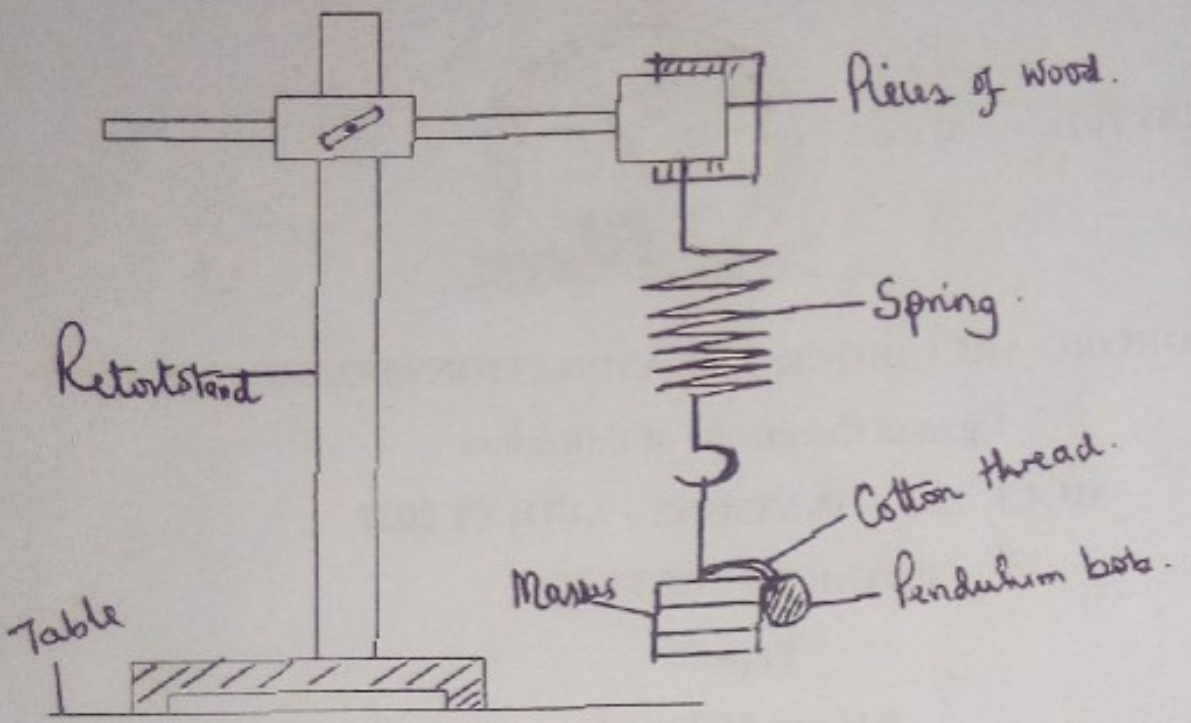

Fig. 1

(a) Clamp the two pieces of wood with one free end of the spring in between them are shown in figure 1 above.

(b) Loop the white cotton thread provided onto the hook of pendulum bob.

(c) Attach the thread of the bob on to a mass M=0.100kg and suspend it from the lower free end of the spring.

(d) Pull the mass slightly downwards through a small distance and release it to oscillate.

(e) Determine the time for 20 complete oscillations.

(f) Find the period, T.

(g) Repeat procedures (c) to (f) for M=0.200, 0.300, 0.350, 0.400 and 0.500kg.

(h) Record your results in a suitable table including values of T^2.

(i) Plot a graph of T^2 (along the vertical axis). against m (along the horizontal axis)

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

(k) Read and record the intercept, C on the T^2 axis.

(l) Calculae the constant, μ from the expression, $C = \mu S$

2. In this experiment, you will determine the width, W of the material of the glass block provided. (30 Marks)

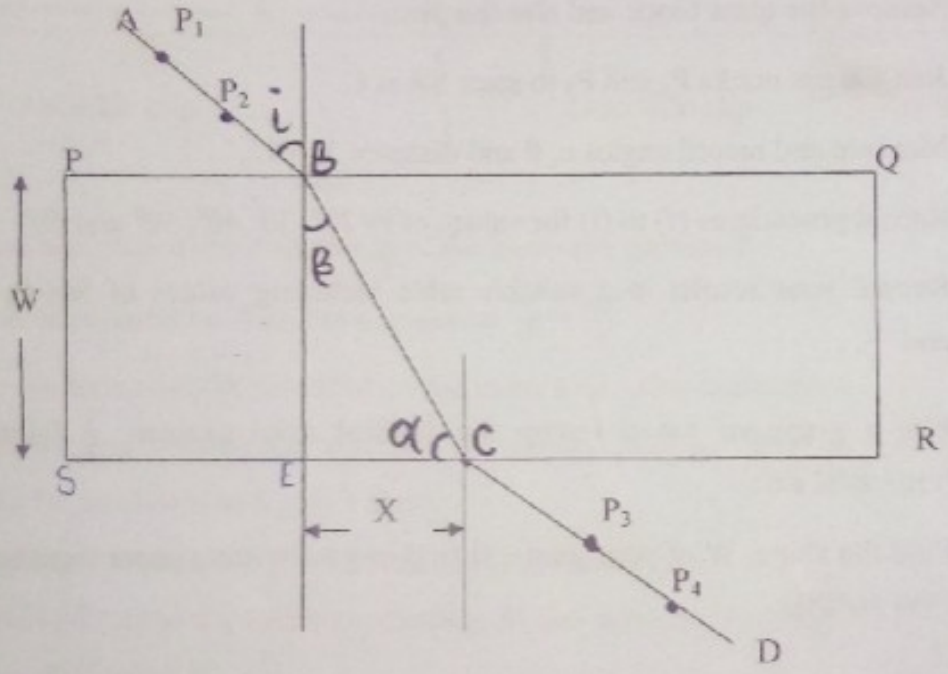

Fig. 2

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

(b) Place the glassblock at the centre of the plain sheet of paper with its broad face lining on the paper.

(c) Trace the outline of the glass block.

(d) Remove the glass block and label its outline PQRS.

(e) Draw a normal to PQ at B such that PB=2cm.

(f) Draw a line AB such that angle i $=10^{\circ}$.

(g) Fix pins P_1 and P_2 vertically on line AB as shown in figure 2.

(h) Replace the glass block on its out line.

(i) While looking through the glass block from side SR, fix pins P_3 and P_4 such that they appear to be in line with the images of P_1 and P_2 seen through the block.

(j) Remove the glass block and also the pins.

(k) Join the pin marks P_4 and P_3 to meet SR at C.

(l) Measure and record angles α, β and distance X=EC .

(m) Repeat procedures (f) to (l) for values of i= 20°, 30°,40°, 50° and 60°.

(n) Record your results in a suitable table including values of Sin β, tan α and $\frac{1}{X}$.

(o) Plot a graph of tan α (along the vertical axis) against $\frac{1}{X}$ (along the horizontal axis)

(p) Find the slope, W of your graph. (Hand in your tracing paper together with your scripts)

3. In this experiment, you will determine the constant, α of the bare wire, **W**. provided.

(30marks)

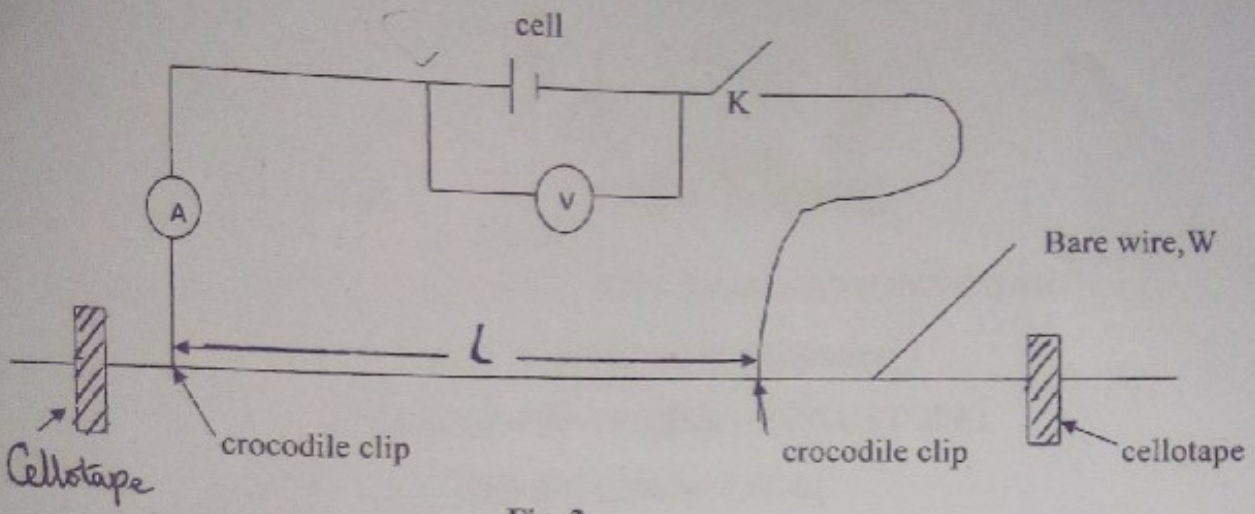

Fig. 3

(a) Read and record the diameter, *d* of the bare wire provided.

(b) Find the constant α from the expression $\alpha = \frac{\pi d^2}{4}$

(c) Fix the bare wire, **W** provided on the metre rule using cellotape.

(d) Arrange and connect the voltmeter,**V**, the ammeter,**A**, switch,**K** and the bare wire **W**, as shown in figure 3 above.

(e) Beginning with length, *l*= 0.250m, close the switch **K**.

(f) Read and record the voltmeter reading, **V**, and ammeter reading, **I**.

(g) Open the switch **K**.

(h) Repeat procedures **(e)** to **(g)** for values of *l*=**0.350, 0.450, 0.500, 0.600** and **0.700m**.

(i) Record your results in a suitable table including values of $\frac{V}{I}$.

(j) Plot a graph of $\frac{V}{I}$ (along the vertical axis) against *l* (along the horizontal axis).

(k) Find the slope,**K** of your graph.

(l) Calculate the constant,α of the bare wire, W from the expression $K\alpha = 44 \times 10^{-8}$.

END