535/3
PHYSICS
PRACTICAL
Paper 3
July/Aug. 2019
2¼ Hours

UGANDA TEACHERS' EXAMINATIONS SCHEME

Uganda Certificate of Education

JOINT MOCK EXAMINATIONS

PHYSICS PRACTICAL

Paper 3

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of **three** *questions.*
Answer question **1** *and* **one** *other question. You will* **not** *be allowed to start working with apparatus for the first quarter of an hour.*

Marks are given mainly for a clear record of the observations actually made, for their suitability, accuracy and use made of them.

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

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

Graph papers are provided.
Mathematical tables, slide rules and silent non – programmable scientific electronic calculators may be used.

Turn Over

1. In this experiment you will determine the force constant ***K*** of the rubber strip provided.

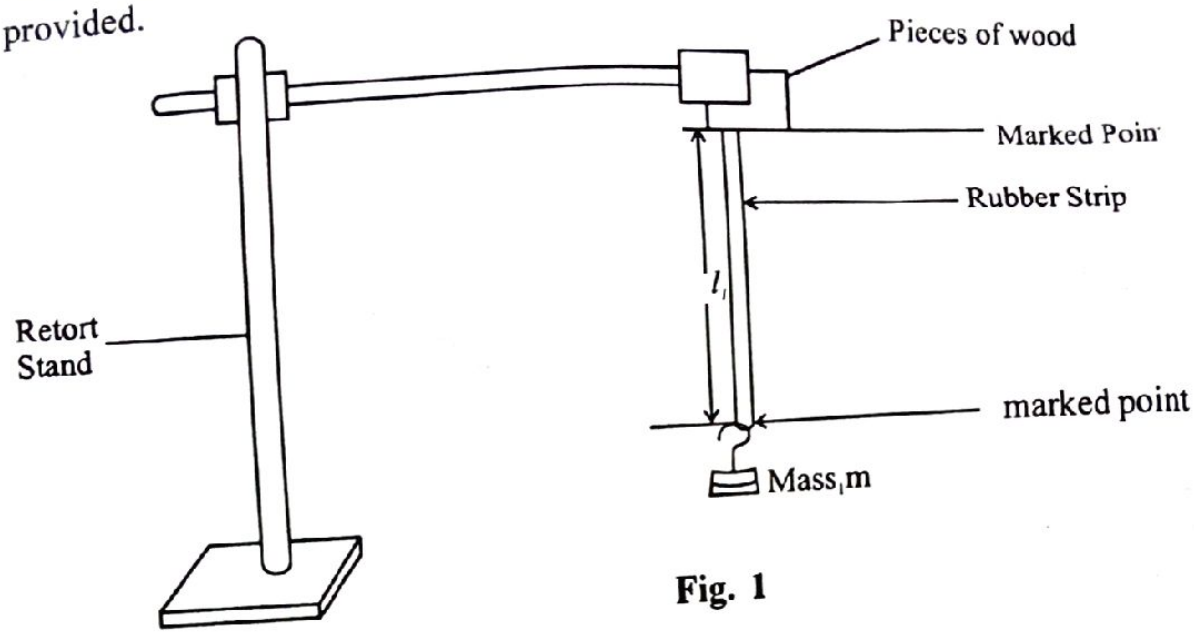

Fig. 1

(a) Clamp the rubber strip from retort stand using piece of wood.

(b) Mark the two points on a rubber strip such that the length between them, $l_o - 40.0cm$ and record it.

(c) Suspend a mass, $m = 0.100kg$ from the rubber strip (at lower marked point of the strip) as shown in fig. 1.

(d) Measure and record the length l_1 between the two marked points on the strip.

(e) Calculate the extension of the rubber strip $e = l_1 - l_o$ *in metres.*

(f) Repeat procedures (c) to e for $m = 0.200, 0.300, 0.400, 0.500$ *and* $0.600kg$.

(g) Record your results in a suitable table.

(h) Plot a graph of ***m*** against ***e***.

(i) Find the slope, ***S*** of your graph.

(j) Calculate the force constant ,*K*, of the rubber strip from $S=\frac{K}{g}$ where g is acceleration due to gravity, i.e $g = 10.0ms^{-2}$

2. In this experiment you will determine the focal length ***f***, of the converging lens ***L***, provided. (30 marks)

(a) Mount the lens ,***L***, in the holder provided.

(b) Position the lens facing the window.

(c) Place the white screen behind the lens.

(d) Adjust the distance between the lenses and screen until a clear image of a distant object is formed on it.

(e) Measure and record the distance x between the lens and the screen.

(f) Connect the dry cells, bulb and switch ***K*** in series.

(g) Arrange the white screen, lens, wire gauze and the bulb as shown in fig .2 below.

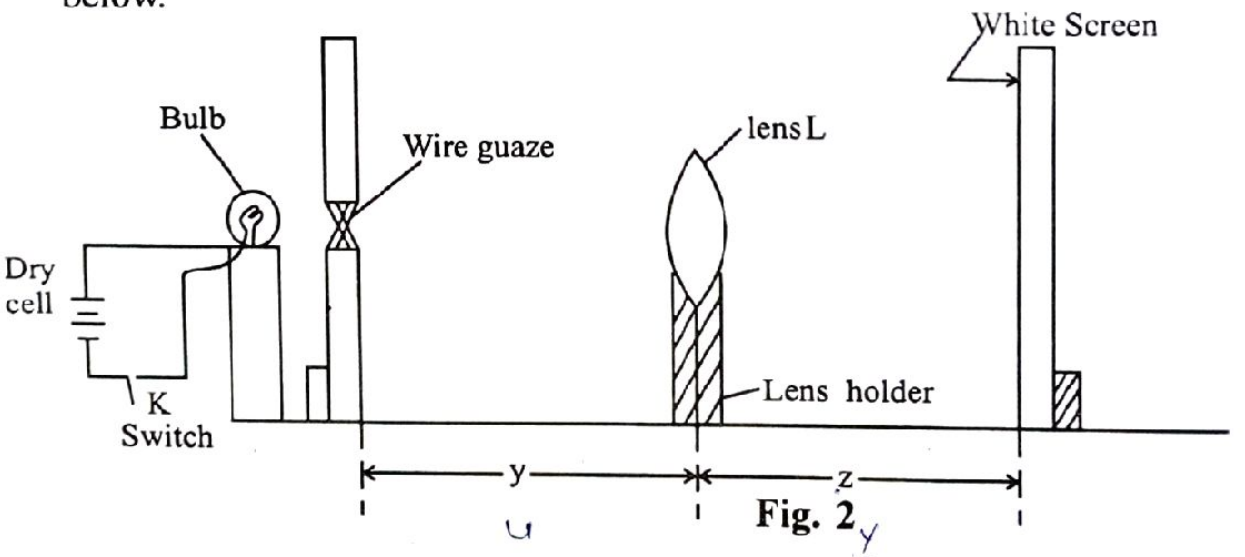

Fig. 2

(h) Adjust the lens so that the distance y between the wire gauze and lens is equal to $\frac{300}{x}$

(i) Close the switch ***K***, and move the white screen until a clear image of the wire gauze is obtained on it.

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

(k) Measure and record the distance ***Z***, between the lens and white screen.

(l) Repeat procedures ***(h) to (k)*** for values of

$y = \frac{375}{x}, \frac{450}{x}, \frac{525}{x}, \frac{600}{x}$ and $\frac{675}{x}$

(m) Record your results in a suitable table including values of $\frac{1}{y}$ and $\frac{1}{z}$

(n) Plot a graph of $\frac{1}{z}$ against $\frac{1}{y}$.

(o) Read and record the intercepts C_1 and C_2 ***on*** $\frac{1}{y}$ and $\frac{1}{z}$ ***axes*** respectively.

(p) Calculate the focal length ***f***, of the lens from the expression $f = \frac{C_1 + C_2}{2C_1C_2}$

3. In this experiment, you will determine the internal resistance ***r***, of the cells provided. (30 marks)

(a) Record the resistance R_p of the resistor P.

(b) Connect the two dry cells in series across, the voltmeter as shown in circuit below.

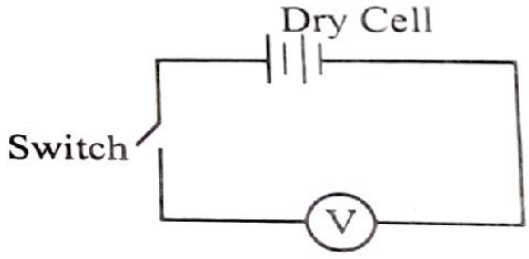

Fig. 3

(c) Close the switch ***K***.

(d) Record and read voltmeter reading E_0.

(e) Fix the wire *q* provided on a metre rule using cello tape and arrange the circuit as shown in fig. 4.

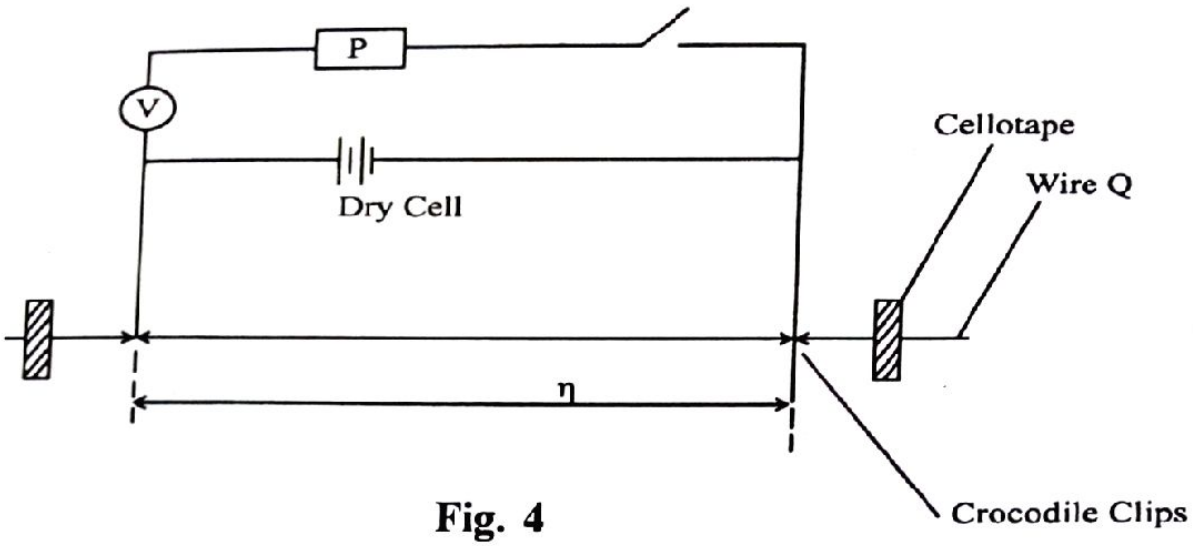

Fig. 4

(f) Adjust the distance η such that it is equal to ***0.200m.***

(g) Close the switch ***K*** and record ammeter reading ***I***.

(h) Open switch ***K***.

(i) Repeat procedures in (f) to (h) for the values of η = ***0.300, 0.400, 0.600, 0.700 and 0.800m.***

(j) Record your results in suitable table including values of $\frac{1}{I}$ and $\frac{1}{\eta}$

(k) Plot a graph of $\frac{1}{I}$ against $\frac{1}{\eta}$

(l) Find the intercept ***C on the*** $\frac{1}{I}$ ***axis.***

(m) Calculate the internal resistance r from the expression $\frac{r + R_p}{C} = E_o$

END