535/4
Physics Practical
Paper 4
July/August 2022
2¼ hours

BUGANDA EXAMINATIONS COUNCIL MOCKS

UCE MOCK EXAMINATIONS

PHYSICS PRACTICAL

PAPER 4

2HOURS 15 MINUTES

INSTRUCTIONS TO CANDIDATES

- *Answer question 1 and ONE other question*
- *Any additional question(s) answered will not be marked.*
- *You will not be allowed to start working with the apparatus for the first quarter of an hour*
- *Marks are given mainly for a clear record of the observations 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.*
- *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

Qn. 1 In this experiment, you will determine the relative density, **R**, of the mass, **M**, provided.

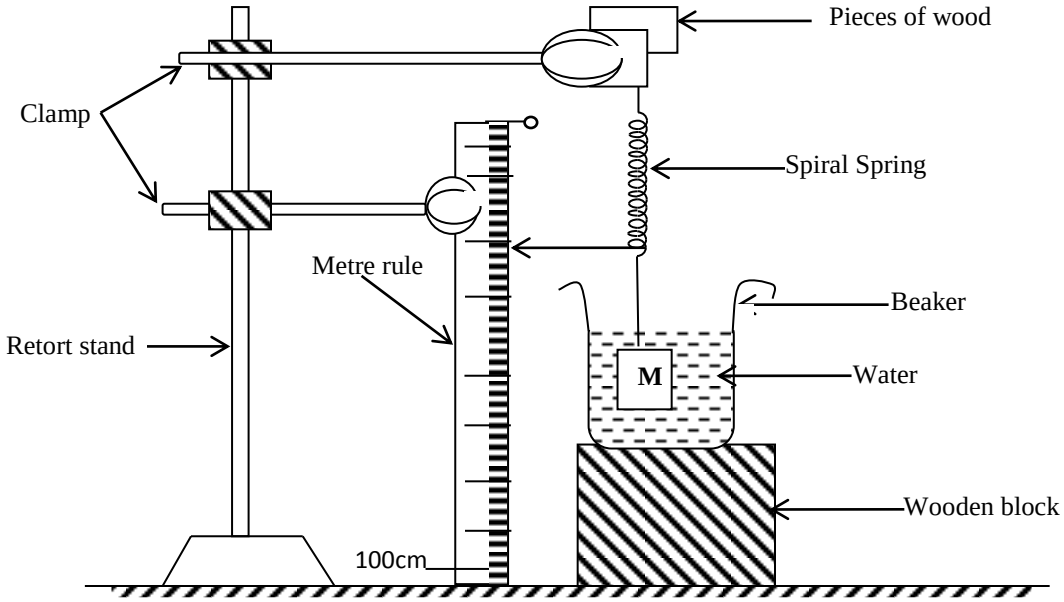

Fig.1

(a) Clamp the spring with pointer and metre-rule provided.
(b) Read and record the position, x_o, of the pointer.
(c) Suspend a mass *m = 100g*, from the free end of the spring.
(d) Read and record the new position x_1 of the pointer when the mass is in air.
(e) Determine the extension $e_1 = (x_1 - x_o)$
(f) Measure about 200cm^3 of clean water and pour it into the beaker.
(g) Read and record the new position, x_2, of the pointer.
(h) Determine the extension, $e_2 = (x_2 - x_o)$
(i) Repeat procedure (c) to (h), for values of M = 200, 300, 400, 500 and 600g.
(j) Put your results in a suitable table including values of ($e_1 - e_2$)
(k) Plot a graph of e_1 against $(e_1 - e_2)$
(l) Determine the slope, R, of the graph.

DISMANTLE THE SET-UP

Qn2. In this experiment, you will determine the focal length, **f**, of the converging lens provided. (30 marks)

(a) Mount the lens provided into its holder and place it facing a window.
(b) Place the screen behind the lens and adjust it until a clear image of a distant object is seen on the white screen.
(c) Measure and record the distance, F, between the lens and the screen.

(d) Arrange the bulb, the screen with wire gauze, the converging lens and the white screen as shown in figure 2.

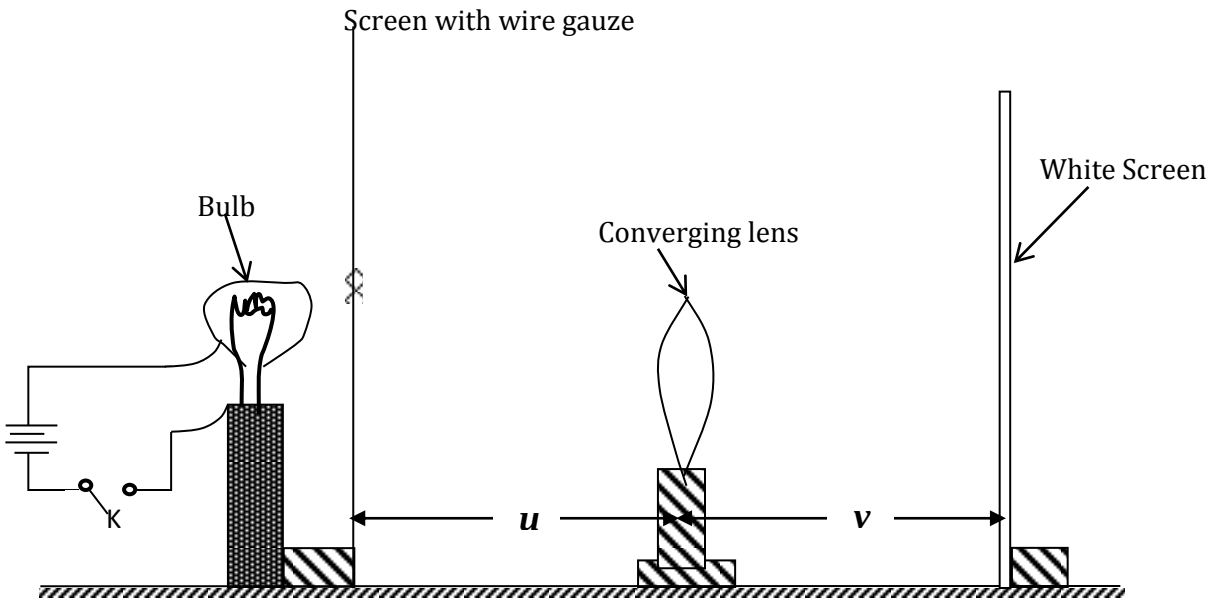

Fig. 2

(e) Starting with u = 1.5F close the switch **K** and adjust the position of the screen to obtain a sharp/clear image of the wire gauze on the screen
(f) Measure and record the distance, **V**, between the wire gauze and the wire screen.
(g) Repeat procedures (e) to (f), for values of u = 2.0F, 2.5F, 3.0F, 3.0F and 4.0F
(h) Put your results in a suitable table including values of uv and (u + v)
(i) Plot a graph of uv against (u + v)
(j) Determine the slope **S** of the graph.
(k) State the focal length **f** of the converging lens.

DISMANTLE THE SET UP

Qn.3 In this experiment, you will determine the resistivity, ρ, of the material of the bare wire labeled **W**, provided. (30 marks)

(a) Connect the dry cell across the voltmeter and take the reading, E, of the voltmeter.

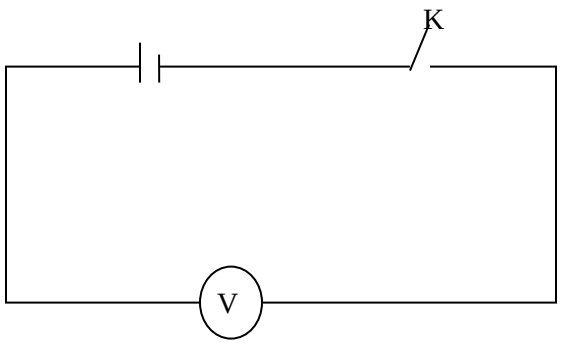

Fig. 3

(b) Disconnect the circuit.

(c) Fix the bare wire, W, provided on the bench using cellotape.

(d) Connect the circuit shown in the figure 4 starting with length y = 20.0cm.

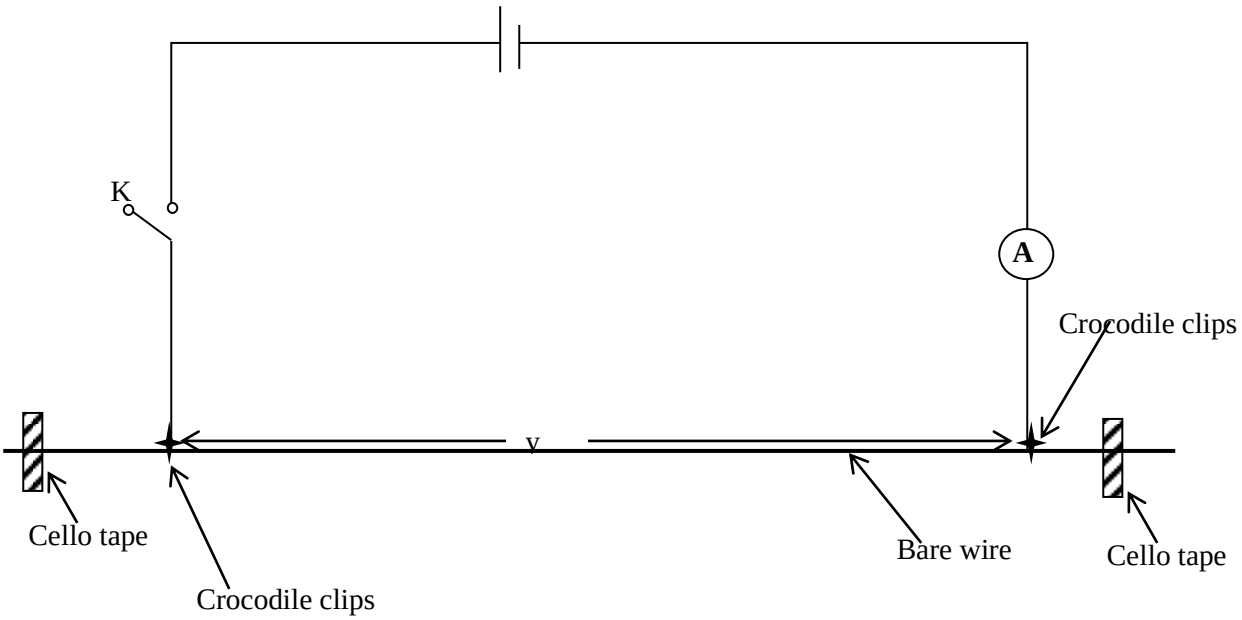

Fig. 4

(e) Close switch K.

(f) Read and record the ammeter reading I

(g) Open switch K.

(h) Repeat procedures (d) to (g) for values of y = 30.0cm, 40.0cm, 50.0cm, 60.0cm and 70.0cm.

(i) Put your results in a suitable table, including values of $\frac{1}{I}$

(j) Plot a graph of $\frac{1}{I}$ against y.

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

(l) Calculate the values of the resistivity, ρ, of the bare wire, labeled, W, from the expression.

$$\frac{SE}{\rho} = 1.2 \text{ X } 10^7$$

DISMANTLE THE SET UP

END