THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

031/2C **PHYSICS 2C**

(ACTUAL PRACTICAL C)

(For Both School and Private candidates)

Time: 2:30 Hours **Year: 2020**

Instructions

1. This paper consists of **two (2)** questions**.**
2. Answer **all** questions**.**
3. Each question carries twenty **five (25)** marks**.**
4. All writing must be in **blue** or **black** ink **except** drawing which must be in pencil.
5. Cellular phones, and any unauthorized materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet (s)

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1. Find the values of unknown masses $\mathbf{m_1}$ and $\mathbf{m_2}$.

Proceed as follows:

(a) Clamp a metre rule vertically with the zero mark uppermost. Suspend the spring as shown in Figure 1 using a plasticine. Attach an optical pin to its lower end so that its point will move over the vertical scale. Read and record the scale reading X_o.

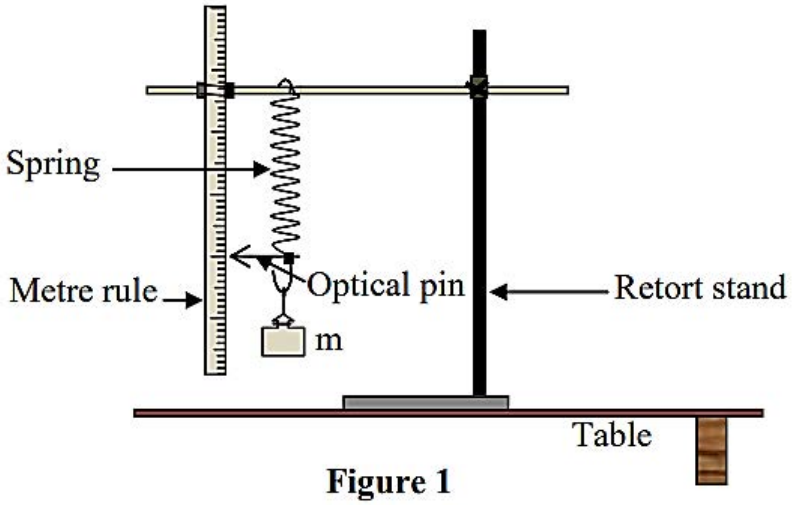


Figure 1

(b) Hang the mass = 50 g, to extend the spring. Read and record the new scale reading hence calculate the extension, $e = X_1 - X_0$

(c) Without removing the 50g mass and put the unknown mass m_1, repeat the procedures in 1(b) for the values of mass m =100 g, 150 g, 200 g and 250 g to obtain a total of five readings, and calculate the extension in each observation.

(d) Remove the last 250 g mass and put the unknown mass$_1$, record the new reading x_1 and the corresponding extension $e = X_1 - X_0$

(e) Replace m_1 by m_2 and repeat the procedure 1(d), record the reading x_2 and the corresponding extension e_2

Questions

(i) Tabulate your results of m, x and e

(ii) Plot a graph of mass (g) against extension e (cm).

(iii) Find the slope S of the graph

(iv) From the graph determine the unknown masses m1 and m_2

(v) State the physical meaning of the slope S.

2. Determine the resistance per unit length ρ of the wire provided through the following procedures:

(a) Set up the circuit as shown in the diagram below, where R is the resistance box, E is a dry cell, K is a key, G is a centre-zero galvanometer, J is a jockey and x is a wire of unknown resistance.

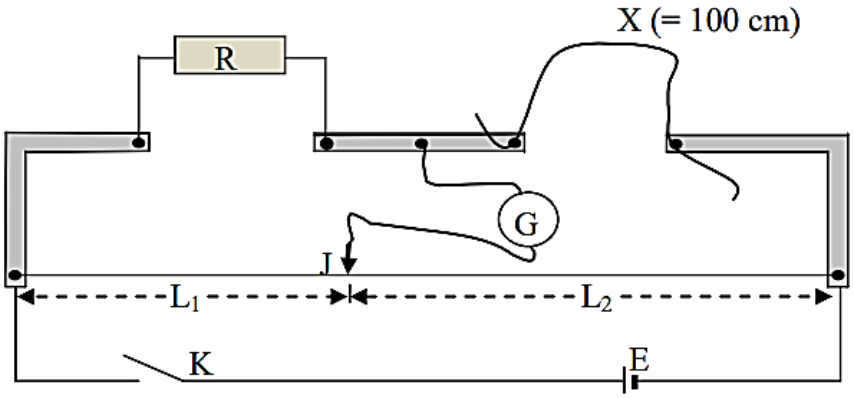


Figure 2

(b) Measure the length x of the wire provided equal to 100 cm, fit it to the metre bridge as shown in Figure 2 .Close the key and slide a jockey over the resistance wire of the metre bridge until the galvanometer reads zero. Read and record L_1 and its corresponding L_2

(c) Repeat the procedures in 2(b) without changing the length x, setting R=2 Ω, 3 Ω, 4 Ω and 5 Ω and record the values for L_1 and the corresponding values of L_2 in each case.

(i) Tabulate your results including the values of $\frac{L_1}{L_2}$

(ii) Plot a graph of R against $\frac{L_1}{L_2}$

(iii) Compute the slope of the graph

(iv) Determine the value for the resistance per unit length ρ of the wire provided. Show clearly how you arrive to your answer.