

Candidate's Index Number



**THE UNITED REPUBLIC OF TANZANIA
THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL
GOVERNMENT
TANGANYIKA DISTRICT COUNCIL
FORM FOUR MOCK EXAMINATIONS**



**PHYSICS 2A
ACTUAL PRACTICAL 2A**

031/2A

Time: 2:30 Hours

April, 2023

INSTRUCTIONS

1. This paper consists of two questions. Answer all questions.
2. Each question carries 25 marks.
3. Non-programmable calculators and mathematical tables may be used.
4. Cellular phones and other unauthorized materials are not allowed in the examination room.
5. Write your index number on every page of your answer booklet(s) provided
6. The following information may be useful:
 - (i) Pie (II) = 3.14
 - (ii) Acceleration due gravity (g) = 10m/s^2

FOR EXAMINERS' USE ONLY

QUESTION NUMBER	SCORE	EXAMINER'S INITIALS
01		
02		
TOTAL		
CHECKER'S INITIALS		

1. Assemble the apparatus as shown in figure 1 with the zero mark of the scale of the ruler at the bottom of the retort stand.

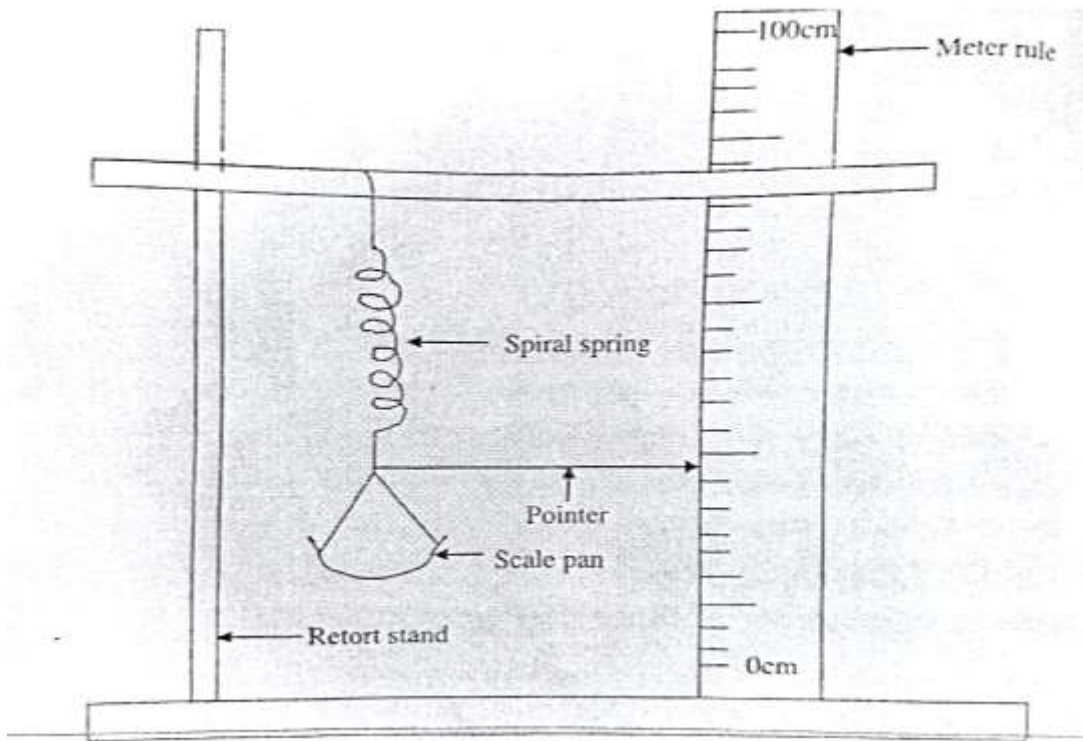


Figure 1

Record the reading at the pointer on the scale of the meter rule when the scale pan is empty.

Record it as d_0 put the mass of 20g to the scale pan and record the pointer reading pointer d .

Find the extension $e = d_0 - d$.

Repeat the above procedure for the masses of 40g, 60g, 80g, and 100g.

(a) Tabulate your values by making a column of mass on the scale pan, pointer reading d and extension $e = d_0 - d$.

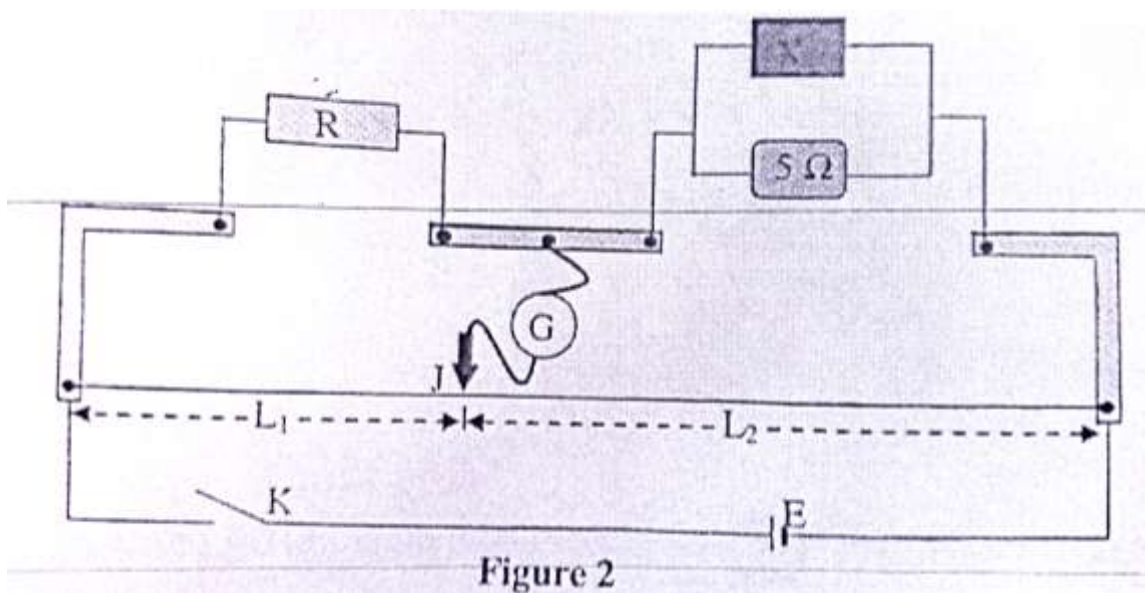
(b) Plot a graph of mass against extension.

- (c) Find the slope S of the graph.
- (d) Read the extension when the value of the mass is equal to 55g.
- (e) Use the graph to determine the mass when the extension is 3cm.
- (f) Suggest a suitable title of the experiment.
- (g) What is your conclusion?
- (h) List two sources of errors and three ways of minimizing these errors.

2. You are required to determine the values of unknown resistance X using metre bridge.

Proceed as follows:

- (a) Connect the circuit as shown in figure 2, where R is a resistance box, E is a dry cell, K is a key, G is a centre-zero galvanometer, J is a jockey and X is unknown resistance.



- (b) Set $R = 1\Omega$, close the key K , slide the jockey over the metre bridge wire until the galvanometer reads zero. Read and record length L_1 . Also read and record the corresponding length L_2 .
- (c) Repeat the procedure in 2 (b) for $R = 2\Omega, 3\Omega, 4\Omega$ and 5Ω and record the value for L_1 in each case.

Questions

- (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) Deduce the slope S of the graph.
- (iv) Find the value of unknown resistance X . Show clearly how you arrived to your answer.