

PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
KIBAKHA TC, BAGAMOYO DC AND KINONDONI MC,
(KIBAKI)



FORM FOUR JOINT PRE NATIONAL EXAMINATION, 2023

CODE:031/2A

PHYSICS 2A

ACTUAL PRACTICAL

Time:2:30Hours

Year:2023

INSTRUCTIONS

1. This paper consists of two questions. Answer all questions
2. Each questions carries twenty five (25) marks
3. Calculations should be shown clearly
4. All writing must be in blue or black ink except drawings must be in pencil
5. Non-programmable calculators and mathematical tables may be used
6. Cellular phones and any unauthorized materials are not allowed in the examination room
7. Write your examination number on every page of your answer booklet (s)
8. Where necessary, the following constant may be used

$$\pi = 3.14$$

$$g = 10\text{m/s}^2$$

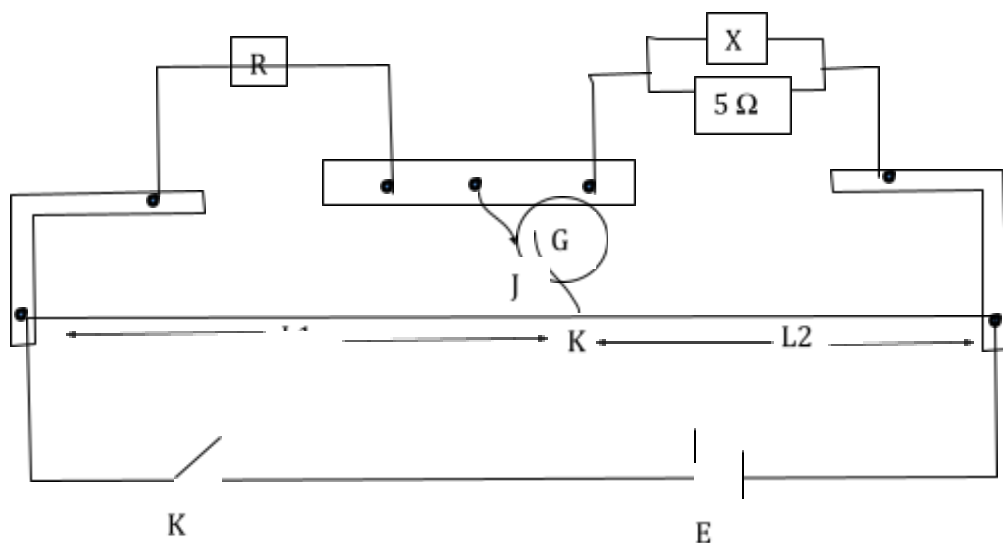
1. You are provided with a metre rule, knife edge and two strings of length 30cm each, a mass of 20g and a piece of wood labelled B of unknown mass

Proceed as follows;

- Locate the centre of gravity G of the metre rule by using the knife edge
- Suspend a 20g mass on the left side 10cm from G, record this as "a" and adjust B on the right side until the rule balances horizontally, record its distance from G as "b"
- Repeat the procedure in (b) above for "a" = 16cm, 26.5cm, 31cm and 36.5cm
- Draw the diagram of your experiment
- Tabulate your results
- Use the graphical method to find the value of B in newton
- Name and state the principle that governs this experiment
- Suggest the aim of this experiment

(25 marks)

2. You are required to determine the value of unknown resistance x using a metre bridge



Proceed as follows;

- Connect the given components as shown in the figure above
- Set $R = 1\Omega$, close the key K, then slide the jockey over the metre bridge wire until the galvanometer reads zero. Read and record length L_1 and the corresponding length L_2
- Repeat the procedure in 2(b) for $R = 2\Omega, 3\Omega, 4\Omega$ and 5Ω , record the values for L_1 and L_2 in each case

(d) Tabulate your results including the value of $\frac{L_1}{L_2}$

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

(f) Deduce the slope S of the graph

(g) Find the value of unknown resistance x. show clearly how you arrived to your answer

(25 marks)