THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

031/2B **PHYSICS 2B**

(ACTUAL PRACTICAL B)

(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)



1. You are provided with a retort stand with its accessories, two pieces of wood, a thread, pendulum bob, stop watch and a meter rule.

(a) Hang the pendulum bob on one end of a 90 cm length of thread and clamp the other end firmly between two small pieces of wood as shown in Figure 1.

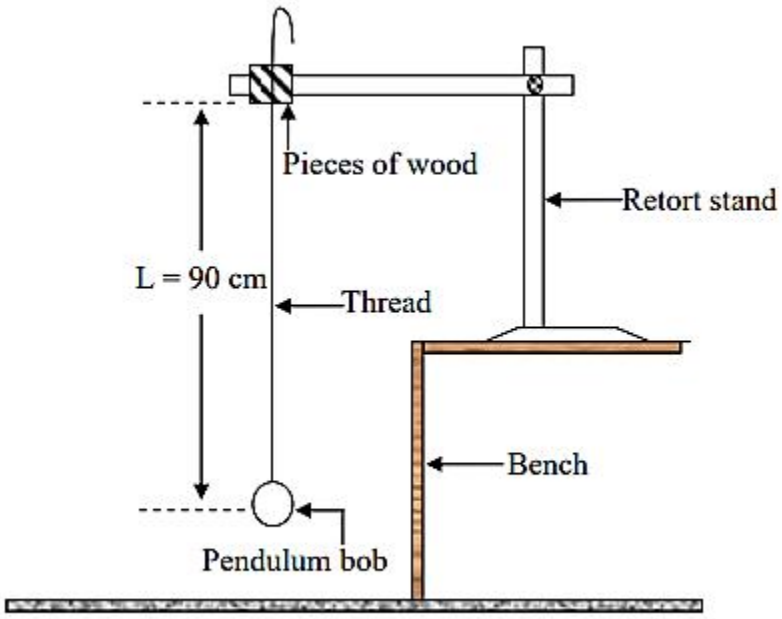

Figure 1

(b) Displace a pendulum bob to a small distance and release it such that, It begins to swing to and fro motion. Determine the time t for twenty (20) complete oscillations and hence the corresponding periodic time, T.

(c) Repeat the procedures in 1 (b) for the values of L=70 cm, 50 cm, 30 cm and 10 cm. Questions

(i) Construct a table of results that includes the values of T^2

(ii) Plot a graph of L (cm) against T^2 (sec^2)

(iii) From the graph determine the slope G

(iv) Find the value of the acceleration due to gravity, g.

(v) Give two importance of the value obtained in 1(iv) in daily life activities.

2. You are provided with a resistance box R, a dry cell E, a switch S, a jockey J and a centre- zero galvanometer. Determine the value of the unknown resistance X by means of a metre bridge as follows:

(a) Set up the circuit as shown in Figure 2.

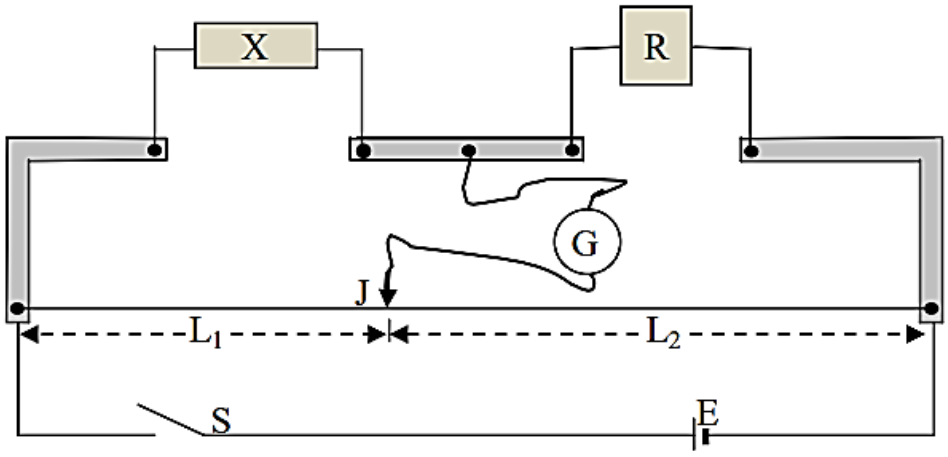

Figure 2

(b) Set R =1Ω, close the switch, slide the jockey over the metre bridge wire until the galvanometer reads zero. Read and record the length L_1.Also read and record the corresponding length L_2.

(c) Repeat the procedures in 2 (b) for values of R = 2Ω, 3Ω, 5Ω and 7Ω and record the values for L_1 and L_2 in each case.

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

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

(iii) Find the slope S of the graph

(iv) Determine the value of the unknown resistance X by showing clearly how you arrive at your answer.