GURU'S END OF TERM II JOINT EVALUATION

Kenya Certificate of Secondary Education (KCSE)

- PHYSICS-

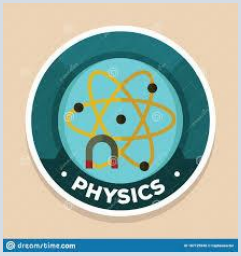
PAPER 232/3

FORM THREE

MARCH 2021 - 2:30 hours

NAME: …….. ADM NO…..……

Candidate's Signature ……Date ……



INSTRUCTIONS TO CANDIDATES

Write your name in the spaces provided at the top of this page.
Write your admission, date and sign on the spaces provided above
This paper consists of two questions; QUESTION 1 and QUESTION 2
Answer ***ALL*** questions in the spaces provided.
All answers and workings must be written on the question paper in the spaces provided below each question.
Show all the steps in your calculation, giving your answer at each stage in the spaces below each question.
Non – Programmable silent electronic calculators and KNEC mathematical tables may be used, except where stated otherwise.
You are required to take the first 15 minutes to go through the paper and ensure all the apparatus required are provided.

FOR EXAMINERS USE ONLY

QUESTION	MAXIMUM SCORE	STUDENT'S SCORE
QUESTION 1	20	
QUESTION 2	20	
TOTAL	**40**	

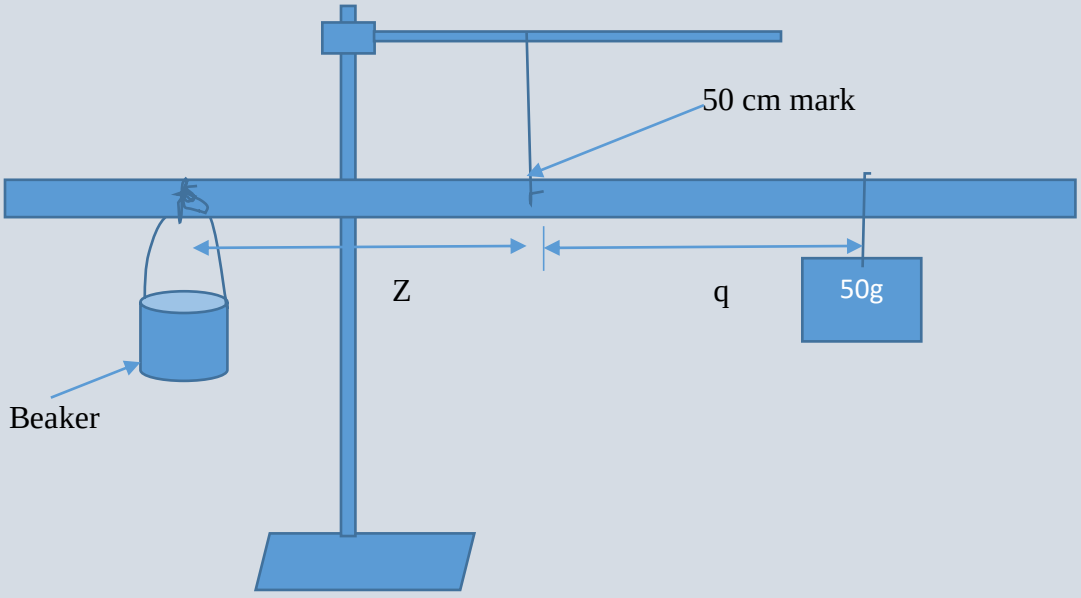
QUESTION ONE

You are provided with the following apparatus:

- A metre rule
- Small piece of plasticine
- 250ml beaker
- Three pieces of cotton thread, 30cm long each.
- A piece of cellotape 5cm
- 100ml measuring cylinder
- A stand and clamp
- Water in a wash bottle
- 50g mass

(a) Using the 30 cm thread, suspend the metre rule at the 50cm mark. You may use some plasticine to ensure the metre rule balances exactly at 50cm mark.

(b) Suspend the empty beaker at 40cm mark and hang the 50g mass to the other side.



(c) Move the 50g mass until the metre rule balances horizontally. Record the distance q.

q = …… cm (1mk)

Use the cellotape provided to fix the position of the 50g mass. Note that the point of suspension must remain the same throughout the experiment.

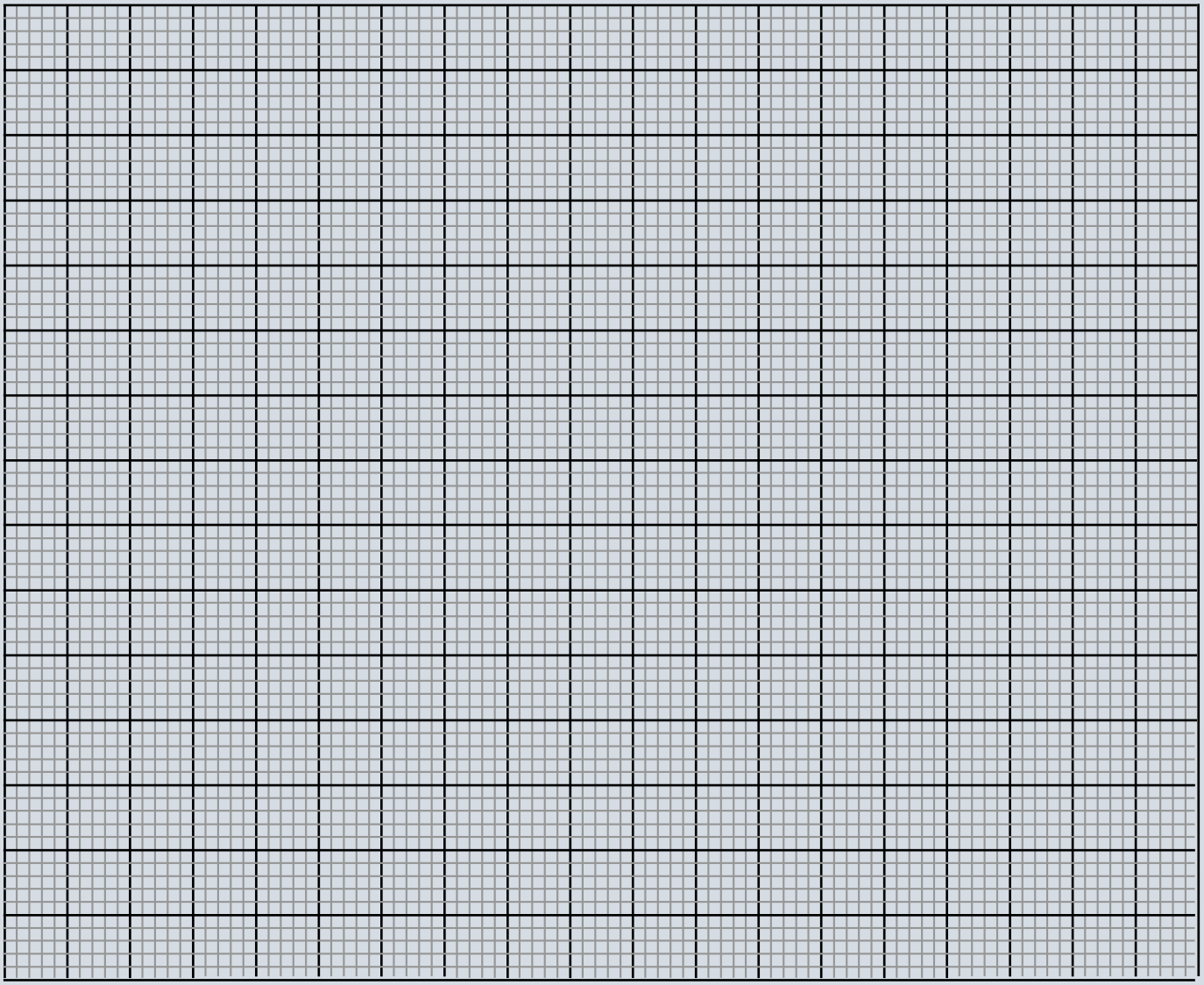
(d) Using the measuring cylinder, measure 20cm3 of water and add it to the beaker. By varying the length Z, obtain the new point of lenth Z and record it in the table below.

(e) Repeat the procedure in (d) above for other values of of volumes as shown in the table, hence complete it.

Volume V (cm^3)	0	20	40	60	80	100	120
Length Z (cm)							
1/Z (cm^{-1})							

(7mks)

(f) Plot a graph of volume V against 1/Z (5mk)



(g) Determine the slope S of the graph (3mks)

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(h) From the equation $V = \frac{1000\,(50q)}{\mathbf{d}Z} - 1000\mathbf{m}$

Determine the values of

(I) **d** (2mks)

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(II) **m** (2mks)

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QUESTION TWO

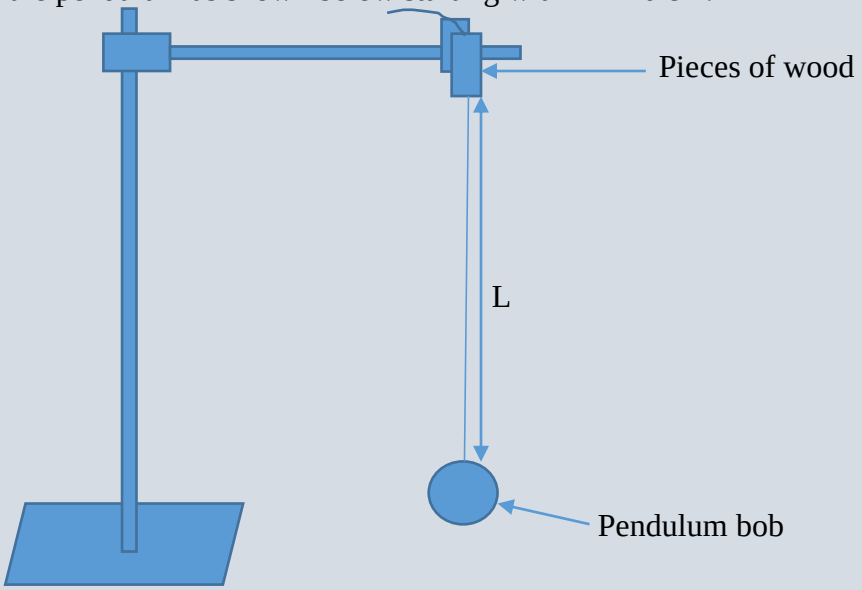
You are provided with the following apparatus:

- a pendulum bob
- a cotton thread, 1m long
- two small pieces of wood
- a retort stand and clamp
- a metre rule
- a stop watch
- some cello tape

You are required to determine the constant ‘b’ using a simple pendulum.

Proceed as follows:

(a) Clamp the pendulum as shown below starting with L = 70 cm.



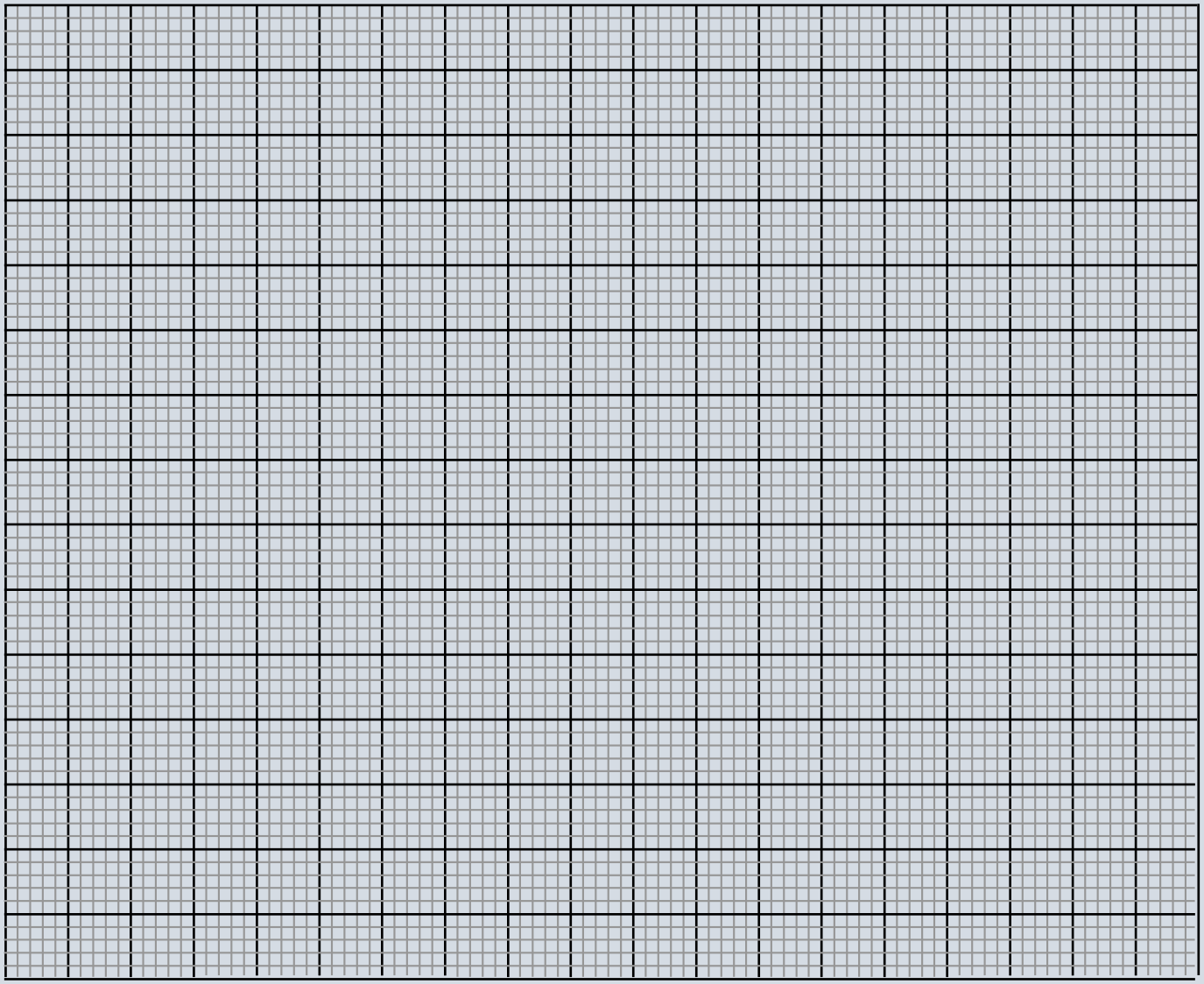
(b) Give the bob a small displacement and record the time t, for 20 oscillations.

(c) Repeat the procedure above for values of L as shown in the table. Enter your reading and complete the table.

Length L (m)	Time for 20 ocsillations	Period T (s)	T^2 (s^2)
0.7			
0.6			
0.5			
0.4			
0.3			
0.2			
0.1			

(9 mks)

(d) Plot a graph of T^2 against L (m) (5mks



(e) Dertermine the slope of the graph and state its SI units (4 mks)

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(f) The equation for the graph is given by;

$$T^2 = \frac{4\pi^2 L}{g} + C$$

Where g and c are constants. Determine the value g and state its significance.

(2mks)

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