**Name: ……** **Index No. ……**

**School: ……** **Candidate's Sign. …….....**

**Date: ……..…….....**

**232/3**
**PHYSICS**
**PAPER 3**
**JULY /AUGUST 2011**
**TIME: 2 ½ HOURS**

# RACHUONYO SOUTH DISTRICT JOINT EVALUATION TEST

***Kenya Certificate of Secondary Education (K.C.S.E.)***

**Physics**
**Practical**

**INSTRUCTIONS TO THE CANDIDATES:**

- *Write your **name** and **index number** in the spaces provided above.*
- *Sign and write the **date** of the examination in the spaces provided above.*
- *You are supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the whole paper carefully.*
- *Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them.*

**For Examiners' Use Only**

| | | |
|---|---|---|
| **Question 1** | 20 | |
| **Question 2** | 20 | |
| GRAND TOTAL | 40 | |

*This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

1. You are provided with the following apparatus:
   - A metre rule
   - One stopwatch
   - One stand, clamp and boss
   - One spring
   - Two pieces of wood
   - A beam balance or electronic balance (to be shared)
   - One mass labeled M

**Proceed as follows:**

a) Hang the spring vertically by clamping one end as shown in figure 1.
(the small pieces of wood to clamp the spring)

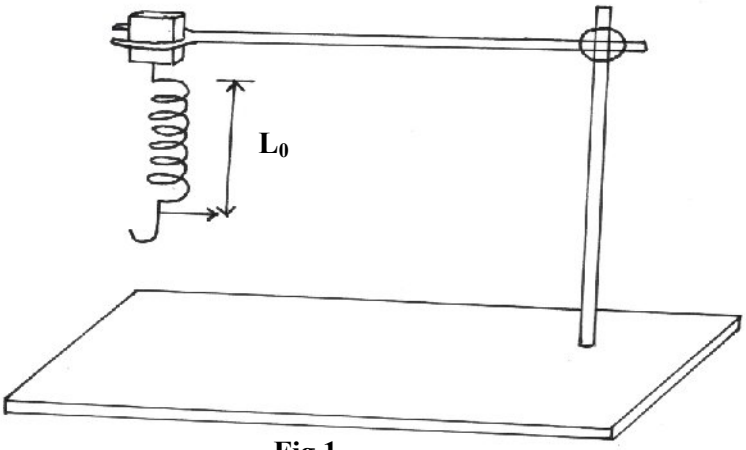



**Fig.1**

b) Measure the length, Lo, of the unloaded spring, and record below.

Lo=_____mm ( ½ mk)

c) Hang the mass M given from the lower end of the spring. Measure the length,$L_1$ of the loaded spring.

$L_1$=_____mm ( ½ mk)

d) Find the value of $L_1$-$L_o$ in centimeters.

L= $L_1$- $L_o$ _____ cm 1mrk

e) Using the balance given find the mass of the object M.

Mass of M=_____g (1mk)

f) Hang the mass M from the lower end of the spring. Displace it by a small vertical distance and release so that the spring makes vertical oscillations.

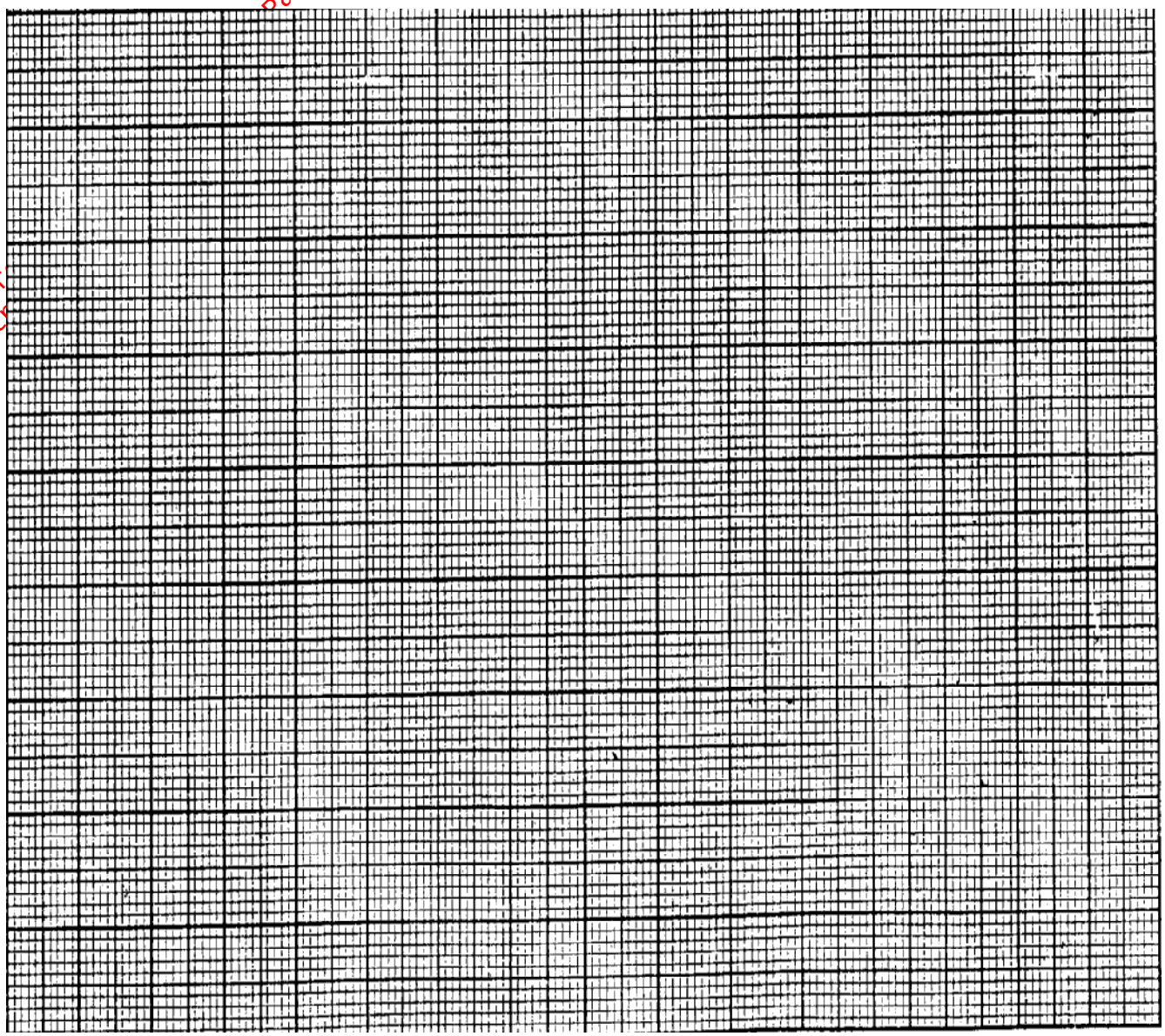
Measure and record, time for the number of oscillations given in the table below

| Oscillations, N | 5 | 7 | 10 | 13 | 15 | 18 | 20 |
|---|---|---|---|---|---|---|---|
| Time in seconds, t (s) | | | | | | | |
| $\left(\frac{N+10}{10}t\right)$ (s) | | | | | | | |
| $\left(\frac{N+10}{10}t\right)^2$ ($s^2$) | | | | | | | |

(7mks)

Complete the table above

g) On the grid provided plot a graph of $\left(\frac{N+10t}{10}\right)^2$ (y-axis) against N. (5mks)





h)(i) Determine the slope S, of the graph at N= 16 (3mks)

(ii)Find the constant k, given that (2mks)

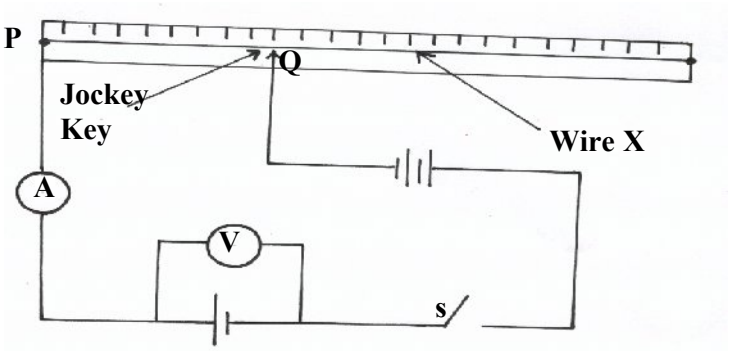
$$K = \frac{MS}{13L}$$

2. **You are provided with the following.**

- A wire mounted on a millimeter scale and labeled X
- A switch
- Ammeter
- Voltermeter
- 2 cell holders
- 3 New size D dry cells
- Seven connecting wires, three with crocodile clips at both ends.
- Jockey Key.

**Proceed as follows:**

a)Connect the circuit as shown in the figure below.




b) Adjust the contact Q so that the reading on the voltmeter is 1.5V, note the reading of the current and record in the table below.

c) Repeat the procedure above for the values of voltage given in the table and record the corresponding values of the current. (7mks)

| P.d V (v) | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 | 1.0 | 0.9 |
|---|---|---|---|---|---|---|---|
| Current,I (A) | | | | | | | |

d) Plot a graph of voltage (V) (y-axis) against current , I (A) (5mks

e) Determine the slope of the graph. (3mks)

f) State the equation relating the voltage (V), the internal resistance r, and the e.m.f of the cell. (2mks)

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g) From the graph determine the values of;

i) The e.m.f (E) of the cell. (1mk)

ii) The internal resistance , r, of the cell. (2mks)