FORM FOUR CLUSTER KCSE MODEL8

PHYSICS PAPER 3 ANSWER

1. b) Measure the length, L0……60…… mm (½mk)

c) Hang the mass M given from the lower end of the spring. Measure the length L1 of the loaded spring. L1…120…… mm (½mk)

d) Find the value of L1-L10 in centimeters. L=L1-L10… 6… cm (1mk)

e) Use the balance given find the mass of the objects M. Mass of M = ……100… .... g

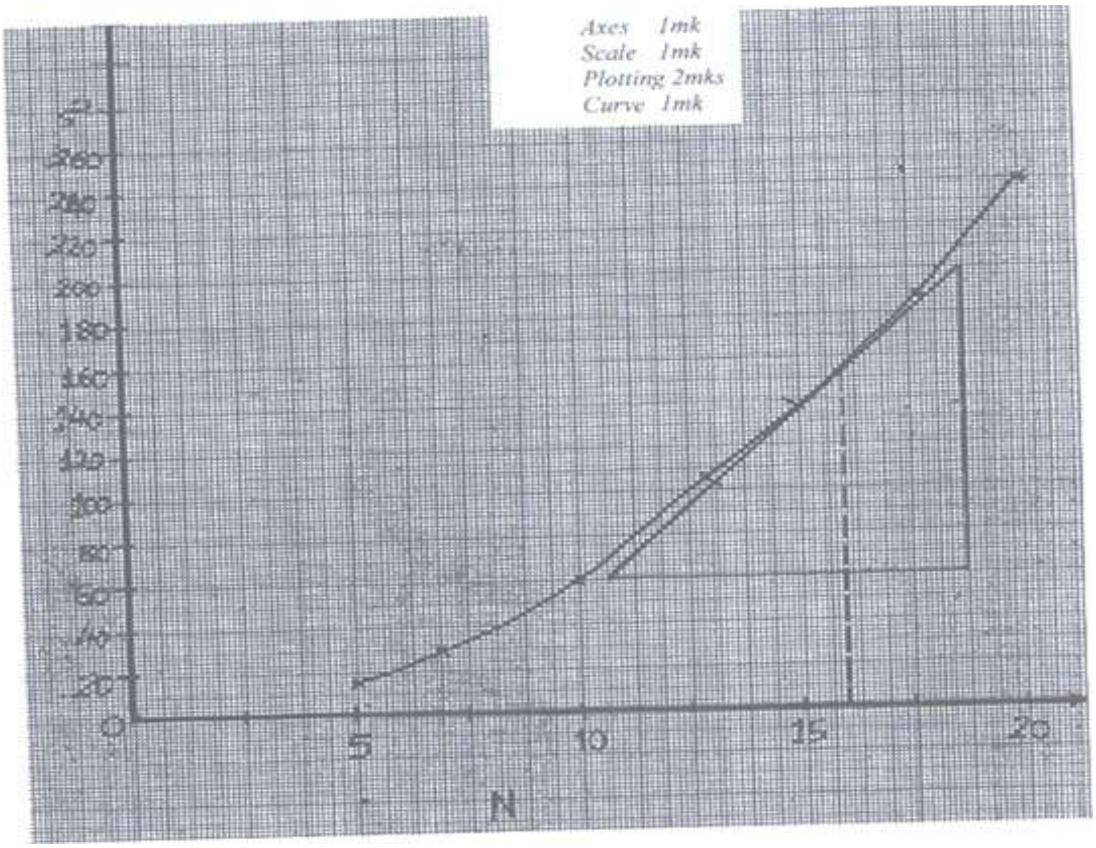
f) Hang the mass M from the lower end of the spring. Displace it by a small vertical distance and release so that the spring makes vertical oscillations. Measure and record, time for the number of oscillations given in the oscillations. Oscillations

Oscillations, N	5	7	10	13	15	18	20
Time in seconds, t (s)	**3.46**	**4.97**	**7.06**	**9.27**	**10.59**	**12.54**	**14.10**
$\frac{(N+10t)(s)}{10}$	**3.80.6**	**5.467**	**7.766**	**10.20**	**11.65**	**13.80**	**15.51**
$\frac{(N+10t)^2(s^2)}{10}$	**14.49**	**29.90**	**60.31**	**104.0**	**135.7**	**190.3**	**240.6**

Complete the table above (7mks)

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

$\frac{(N+100)^2}{10}$ (s^2)



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

Tangent 1 mk

$$\frac{15.5-0}{8.2-6.5} \quad (1mk)$$

$$= 9.12\ S^2 \quad (1mk)$$

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

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

$$K=\frac{100\times 9.12}{13\times 6}=11.70\surd \quad \textbf{(2mks)}$$

2. 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)	**0.30**	**0.48**	**0.66**	**0.90**	**1.00**	**1.30**	**1.50**

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

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

$$slope = \frac{0.9-1.3}{1.50} = \frac{-0.4}{0.84} = -0.4762\Omega(1mks)$$

f) If the equation the voltage (V), the internal resistance(r), and the e.m.f (E) of the cell is given byE=V+Ir, from the determine the values of; (2mks)

(i) The e.m.f (E) of the cell. (2mks)

E=Y-Intercept =1.64 V√(1mk)

(ii) The internal resistance, r, of the cell. (3mks)

r= slope √ (1mk)

$$r = 0.4762\Omega\surd$$

(iii)

Scale 1mk
Plotting 2mks
Line 1mk