

FORM 3 TERM 3
232/3 PHYSICS PRACTICAL PAPER 3
TIME: 2 ¼ HOURS

NAME:.....ADM NO:.....

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided above.
- Answer all questions in the spaces provided in the question paper.
- You are supposed to spend the first 15minutes of the 2 ¼ hours allowed for the paper reading the whole paper carefully.
- Marks are awarded for clear record of the observations actually made, their suitability and accuracy.
- Candidates are advised to record their observations as soon as are made.
- Mathematical tables and calculators may be used.

	QUESTION 1	QUESTION 2	TOTAL
SCORES			
OUT OF	20	20	40

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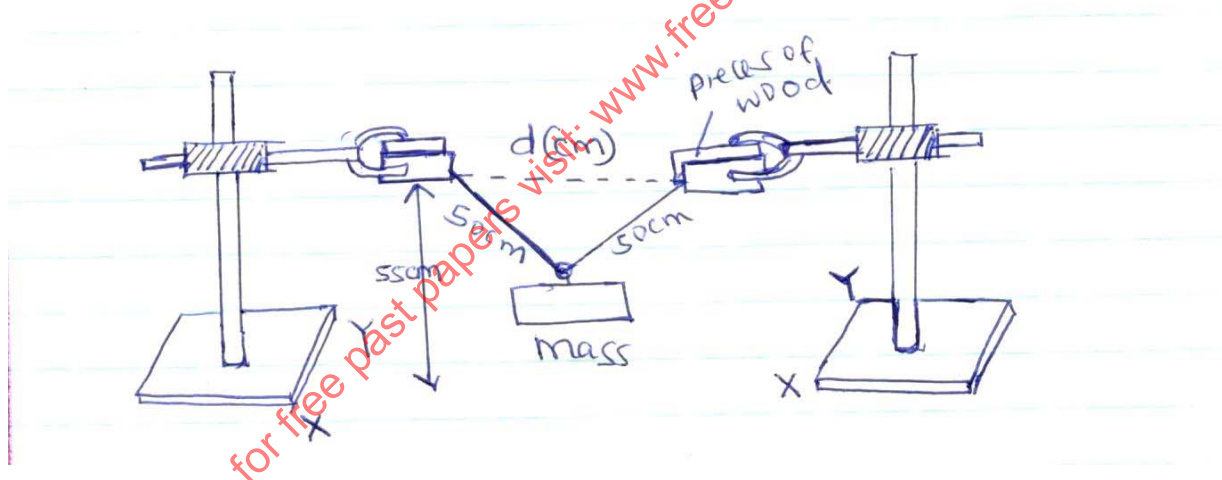
QUESTION 1

You are provided with the following apparatus

- A metre rule
- A cotton or a silk thread
- A stop watch or stop clock
- A 50g mass
- Four pieces of wood

Proceed as follows:

- Measure accurately 1 metre of thread and cut it leaving an allowance of 50cm on either end. Mark the centre of the thread
- Clamp the thread between two retort stands and suspend a 50g mass at the same level 55cm above the bench, as shown below.



- By moving one end of the retort stands, adjust d to value of 40cm.
- pull the mass slightly in a direction parallel to xy then release it to oscillate. Record the time t , for 20 oscillations.
- Repeat the procedure (c) and (d) with other values of d , increasing at intervals of 5cm and complete the table below. Where T is the periodic time.

d(cm)	40	45	50	55	60	65	70	75	85
t(s)									
T(s)									
T ² (s ²)									
d ² (cm ²)									

(7mrks)

f)plot a graph of T² against d² (5mrks)

g)Determine the slope of your graph.(3mrks)

h)Given that $T^2 = \frac{3d^2}{m} + C$ using your graph determine the values.

I. M (3mrks)

II. C (2mrks)

QUESTION TWO

PART A

You are provided with the following :

- Vernier calipers
- Micrometer screw gauge
- Masses; two 10g, 20g, 50g and 100g
- A helical spring
- Metre rule or half metre rule

Proceed as follows

a) Determine the number of complete turns of the helical spring.

N=.....(1mrk)

b) Measure the external diameter of the spring using the vernier calipers

D=.....m (1mrk)

c) Use the micrometer screw gauge to determine the diameter of the wire of the spring.

D=.....m (1mrk)

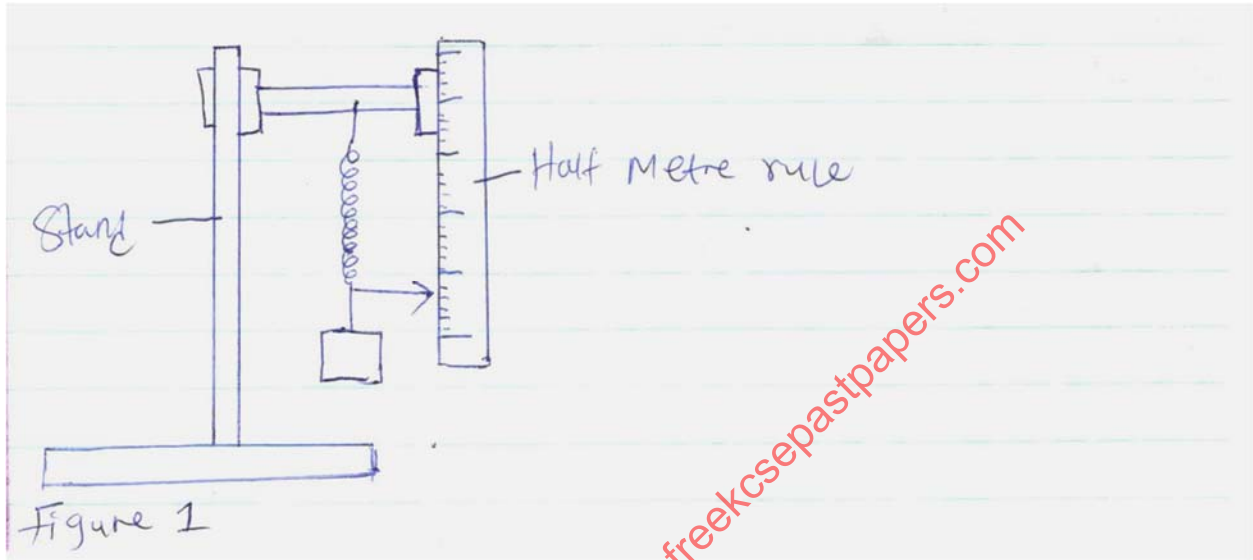
d) Determine the value of M $N = \frac{0.4D}{dM}$

(2mrk)

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e) Suspend the helical spring vertically alongside the clamped half metre rule as shown in figure 1 below. Determine the length L_0 of the spring before loading it.

$L_0 = \dots\dots\dots$ cm



f) Load the spring with a mass of 20g and determine the new reading on the metre. (L) record this in the table below. Calculate the extension $e = L - L_0$ due to the mass of 20g and record the value in the table given below. Repeat step f for other masses and complete the table.

Mass(g)	0	10	20	30	40	50	60	70	80	90	100
Weight(N)											
Reading(L)cm											
Extension e(cm)											
Ye (cm^{-1})											

g) Plot a graph of weight (N) against $1/e$ (cm^{-1}) (5mrks)

h) Determine the slope (s) of the graph at a mass of 45g (3mrks)

i) Given that $M = \frac{-255T}{(S+60)^2}$

Determine the value of T where S is the slope at 45g (3mrks)

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