Republic Rwanda

Ministry of education

Eastern province

Kirehe District

Exam: PHYSICS PRACTICAL

Maximum: 40 MARKS

Class: SENIOR FIVE

Date: 19/03/2024

Duration: 1.5Hours

INSTRUCTION TO CANDIDATES:

-The test is composed of ONE section

-Attempt ALL questions

COMBINATIONS:

PHYSICS-CHEMISTRY-MATHEMATICS (PCM)

MATHEMATICS- PHYSICS- COMPUTER SCIENCE (MPC)

PHYSICS –CHEMISTRY- BIOLOGY (PCB)

MATHEMATICS –PHYSICS- GEOGRAPHY (MPG)

PHYSICS-ECONOMICS-MATHEMATICS (PEM)

ATTEMPT ALL QUESTIONS (40 MARKS)

In this experiment you will determine the spring constant K of a spring provided.

Apparatus required

1 spring with pointer or without pointer

1 metre rule

1 retort stand set

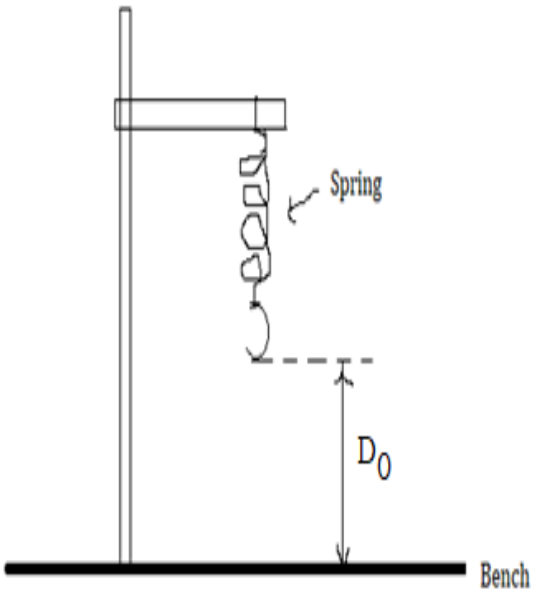
1 set of 20 g slotted masses comprising 9 slotted masses and 1 mass hanger of 20 g

1 set of geometrical instruments

Procedures

a) From the following figure, measure the vertical distance D_0 in mm, between the bottom of the spring and the surface of the bench.

D_0 must be greater than 30 mm on the figure.



(1mark)

b) The diagram is drawn $1/10^{th}$ actual size.

Calculate the actual distance D_0 in mm, between the bottom of the

spring and the surface of the bench. **(2 marks)**

c) Set up the apparatus as shown above using actual distance D_0

d) Hang a 20g load L on the spring .Measure and record the distance D between the bottom of the spring and the surface of the bench.

The weight of the load L must be in N.

Acceleration due to gravity g = 10 m/s^2.

e) Repeat the procedure d) using loads of 40g, 60g, 80g, 100g and 120 g.

f) Calculate the extension e= (D_0-D) of the spring for each set of readings

g) Record your results in a suitable table as shown below

Mass of the load /g	L/N	D/mm	e=(D_0-D) /mm
20			
40			
60			
80			
100			
120			

(18 marks)

Questions

(i)Plot a graph of e (vertical axis) against L (horizontal axis). **(11 marks)**

(ii)Determine the gradient/slope G of the graph. Show clearly on the graph how you obtained the necessary information.**(3 marks)**

(iii)Interpret your result. **(3 marks)**

(iv)Suggest the precautions that should be taken when carrying out this experiment. **(2 marks)**