REPUBLIC OF RWANDA
SOUTHERN PROVINCE
HUYE DISTRICT

THE END OF TERM TWO COMPREHENSIVE ASSESSMENT

ADVANCED LEVEL



Subject: PHYSICS PRACTICE

Class: S5

Date : 18 March 2024

Duration: 8h30-10h00

...../20 marks

INSTRUCTIONS :

This paper consists only one compulsory question.

1) **Do not open this paper until you are told to do so.**
2) **Write your names correctly.**
3) **Read each question carefully before answering it.**
4) **You must use a blue pen.**
5) **Do not make unnecessary changes.**
6) **Check if all pages are completed.**

Names :.....**Classs :**.....

1 A student investigates the extension of a spring and uses it to determine the weight of a metre rule.

The spring is shown full size in Fig. 1.1 and Fig. 1.2.

Fig. 1.1 shows the spring without any load.
Fig. 1.2 shows the spring with a load of 1.0 N suspended from it.

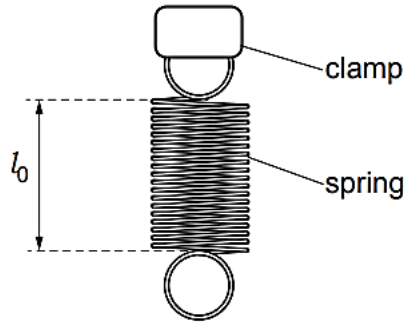


Fig. 1.1

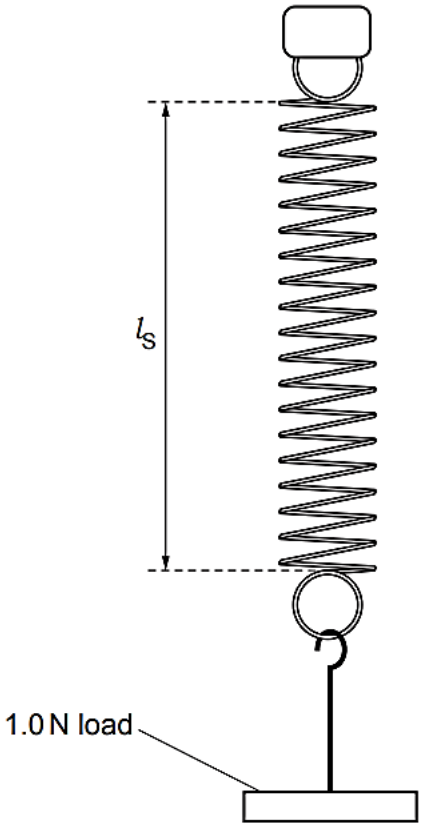


Fig. 1.2

(a) On Fig. 1.1, measure the length l_0 of the spring without any load.

l_0 = ... cm

On Fig. 1.2, measure the stretched length l_S of the spring.

l_S = ... cm **[2MARKS]**

(b) The student attaches a metre rule to the spring with a wire hook, as shown in Fig. 1.3. The scale of the metre rule faces upwards.

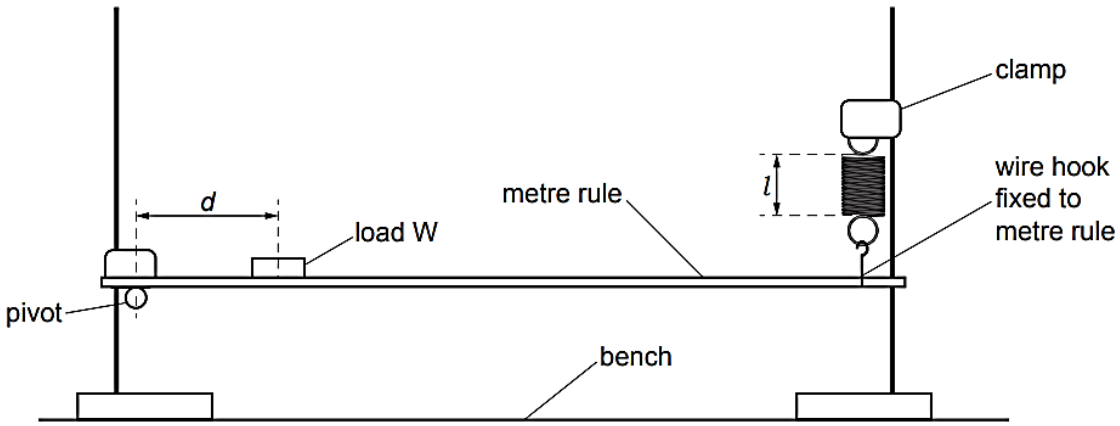


Fig. 1.3

She ensures that the metre rule is horizontal.

Briefly describe how to check that the rule is horizontal. You may draw a diagram if it helps to explain your answer.

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.....

..... **[2MARKS]**

(c) The student moves load W to distances d = 20.0 cm, d = 30.0 cm, d = 40.0 cm, d = 50.0 cm and d = 60.0 cm from the pivot.

She reads the length l of the spring for each value of d.
Her readings are shown in Table 1.1.

Table 1.1

d/cm	l/cm
20.0	6.2
30.0	7.1
40.0	7.6
50.0	8.3
60.0	9.0

(i) Using the values from Table 1.1, plot a graph of l/cm (y-axis) against d/cm (x-axis).
Start the axes at the origin (0,0).

.....[12MARKS]

(ii) From your graph, determine L, the value of l when d = 0.0 cm.

L=.....**[1MARK]**

(iii) Calculate W_R, the weight of the metre rule, using your value of L from **(c)(ii)**, the values of l_0 and l_S from **(a)** and the equation

$$W_R = \frac{2(L - l_0)}{(l_S - l_0)} \times k$$

where k = 1.0 N.

W_R=.....**[1MARK]**

(d) (i) It is sometimes difficult to position the load W on the scale of the metre rule at the correct distance d from the pivot.

Suggest **one** change to the apparatus to overcome this difficulty.

.....

..... **[1MARK]**

(ii) Suggest **one** possible source of inaccuracy other than the difficulty described in **(d)(i)**. Assume that the experiment is carried out carefully.

.....

.....**[1MARK]**

END !