RELATION-EXTENSION OF A SPRING ND LOAD

1 (a) An IGCSE student is investigating the relationship between the extension of a spring of unstretched length l_0 and the load hung on the spring. The apparatus is shown in Fig. 5.1 below. The spring is shown larger than its actual size.

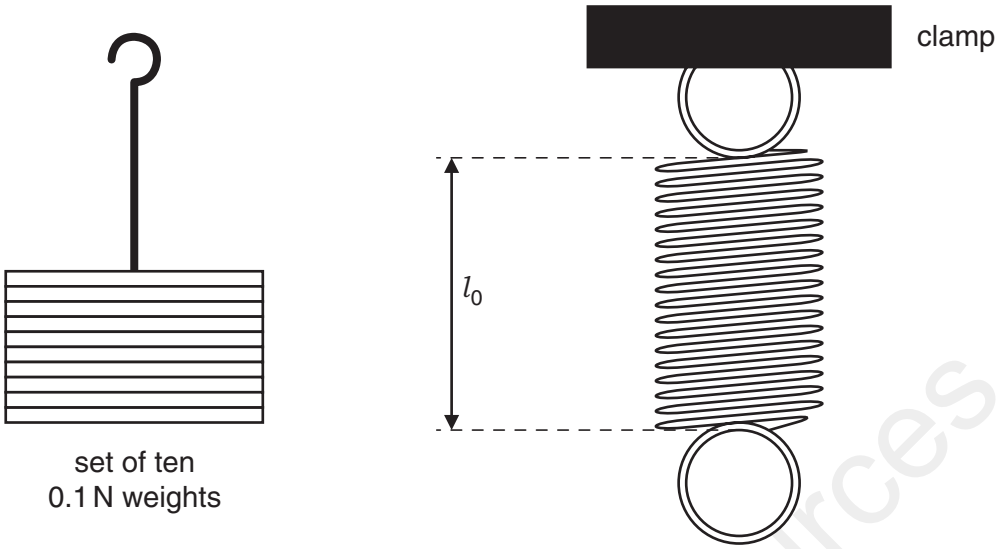

Fig. 5.1

Consider the readings that the student should take and write appropriate column headings, with units, in the table below.

$l_0 = 25\,\text{mm}$

0.0	25	0
0.1	30	5
0.2	36	11
0.3	43	18
0.4	50	25

[4]

(b) The student decides to repeat the experiment using a spring made of a different metal in order to study how the extension may be affected by the metal from which the spring is made. To make a fair comparison, other variables must be kept constant. Suggest three variables that the student should keep constant.

1. .....

2. .....

3. ..... [3]

[Total: 7]

----------Marking Scheme----------

(a) weight / load / force / W / L / F [1]
length / l [1]
extension / e / x / $(l - l_0)$ [1]
units N, mm, mm [1]

(b) any three from
length of spring / l_0
diameter/thickness of spring
range of loads
length of wire
diameter / thickness of wire
number of coils
coil spacing [3]
do NOT allow 'size' or room temperature

[Total: 7]