THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

031/2C

PHYSICS 2C
ACTUAL PRACTICAL C
(For Both School and Private Candidates)

Time: 2:30 Hours ***Friday, 21st October 2011 a.m.***

Instructions

1. This paper consists of **two (2)** questions. Answer **all** the questions.
2. Whenever calculations are involved show your work clearly.
3. Marks for questions are indicated at the end of each question.
4. Calculators and cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).
6. Use $\pi = 3.14$.

1. The aim of this experiment is to determine the relationship between tension and extension using a spiral spring. Proceed as follows:

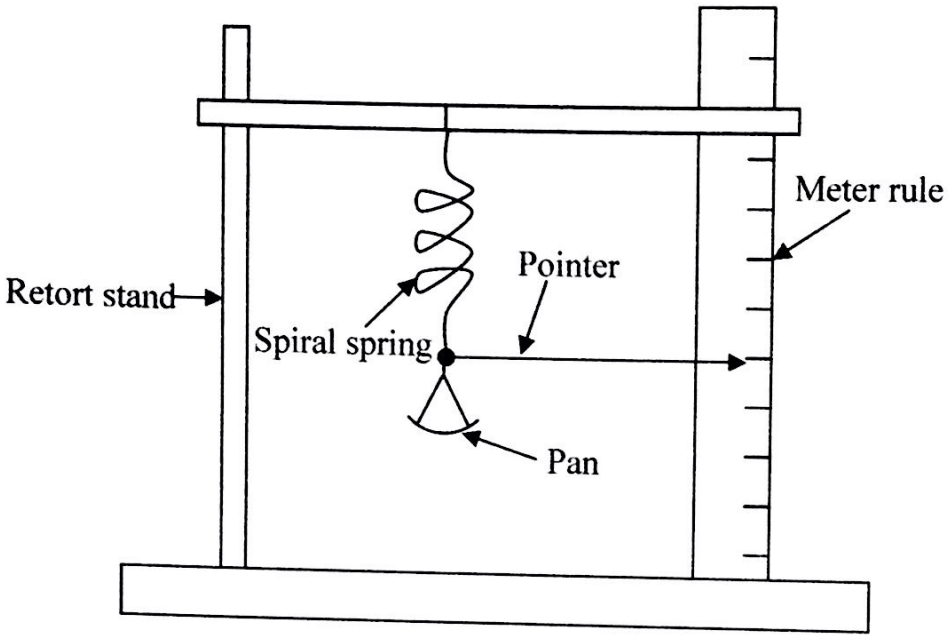

Figure 1

(a) Arrange the apparatus as shown in Figure 1.
(b) Read and record the position of the pointer shown from the metre rule when the pan is empty, call it T_o.
(c) Put a 26g weight on the pan and read the new length from the metre rule, call it T. Find the extension $e = T-T_o$.
(d) Repeat the procedure in (c) above using weights of 52g, 78g, 104g, and 130g.

Table of results

Mass on pan (g)	26	52	78	104	130
Pointer reading (cm)					
Extension $e = T-T_o$					

(e) Complete the table of results.
(f) Plot a graph of mass against extension.
(g) Determine the slope of your graph.
(h) What is the physical significance of the slope obtained in (g) above?
(i) From the graph, determine the extension when the mass is 65g.
(j) Write the equation governing this experiment.
(k) Does the spring obey Hook's law? Give reason for your answer.
(l) State the law in (k) above.
(m) What will happen when the load greater than elastic limit is added on the scale pan?
(n) State a source of error in this experiment and show how it can be minimized.

(25 marks)

2. You are provided with a Battery, E, Rheostat, Rh, Switch, S, Ammeter, A, Voltmeter, V and Resistor, R. Proceed as follows:

(a) Connect the Battery, Rheostat, Switch, Ammeter and Resistor in series as shown in Figure 2. The Voltmeter must be connected across R.

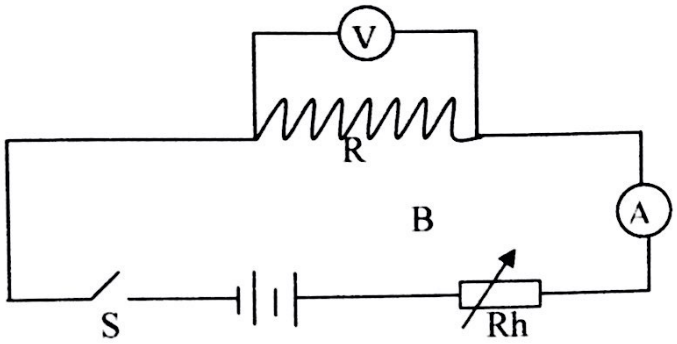

Figure 2

(b) Switch on the current and adjust the Rheostat to obtain six (6) different values of Voltmeter readings (V) and corresponding values of Ammeter reading (A).

Note: To improve the accuracy, adjust the rheostat each time so that the voltmeter pointer (or ammeter pointer) is exactly on a division of the meter scale before taking your readings.

(c) Tabulate your results including the value of $\frac{V}{I}$.

(d) Deduce the aim of the experiment.

(e) Draw a graph of Voltage (V) against current I.

(f) Determine the slope of your graph.

(g) Calculate the average value of R.

(h) Comment on the values obtained in (f) and (g).

(i) State the law governing this experiment.

(j) Give a limitation of the law stated in (i).

(25 marks)