EXAMINATION NO. .....

THE MALAWI NATIONAL EXAMINATIONS BOARD

2000 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

PHYSICAL SCIENCE

Subject No:M0162/II

Wednesday, 3 January

Time Allowed:
2 hour sessions.
9 am onwards

PAPER II
Practical (50 marks)

Instructions:

1. This paper contains 6 pages. Please check.

2. Before beginning fill in your examination number at the top of each page.

3. Write your answers on the question paper.

4. This paper consists of two sections, A and B. In Section A there are two practical questions to be answered in 1 hour. You should spend 30 minutes on each question. The 30 minute period allowed for each question includes 3 minutes to tidy up the apparatus and have it checked by the supervisor. Marks for this section will be given for observation, accuracy and interpretation of results.

   Section B consists of two descriptive questions on practical work to be answered in 1 hour. Marks will be given for accurate and orderly presentation of facts supported by relevant diagrams.

Q1. You are provided with dropper bottles labeled K, L, M, N which contain chloroalkane, alkane, sodium bicarbonate solution and sodium hydroxide not necessarily in that order. You are also given the following: a spatula, a burner, phenolphthalein indicator, and dilute hydrochloric acid (HCl).

On each unknown compound perform the test shown in table 1 and record your observations in the appropriate spaces. Remember to wash the tube with distilled water after each test.

Table 1

TEST / SUBSTANCE	add 5 drops Phenolphthalein to to 15 drops unknown	add 5 drops HCl (acid) to 15 drops unknown	Put 2 drops of unknown on spatula and bring burner flames
	RESULTS	RESULTS	RESULTS
K			
L			
M			
N			

(8 marks)

On the basis of your results identify the unknowns.

K _____

L _____

M _____

N _____

(4 marks)

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2. You are provided with a retort stand, spring, metre rule, carriage weight, 50g masses, and 100g masses.

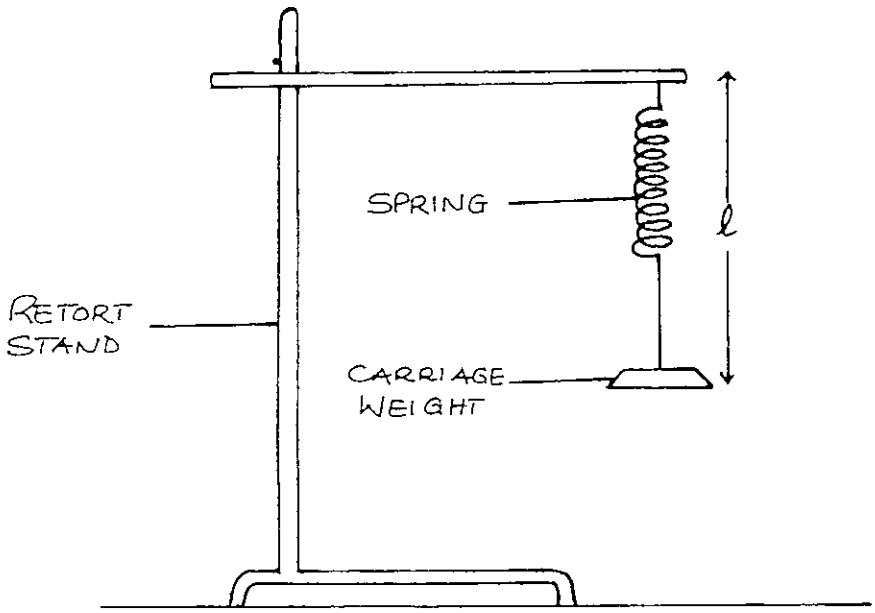

Figure 1

a. Hang the spring and attach the carriage weight to its lower end as shown in figure 1 above.

b. Measure the initial length, *l* (initial) of the spring and carriage weight and record under zero mass in the appropriate row in table 2 below.

c. Add the 50g mass to the carriage weight.

d. Measure the new length, *l* (new) and record it in the table under the 50g mass.

e. Subtract the initial length, *l* (initial) from the new length, *l* (new) and record it in the appropriate place.

f. Repeat steps c, d, and e for masses 100g, 150g and 200g to complete the table of results

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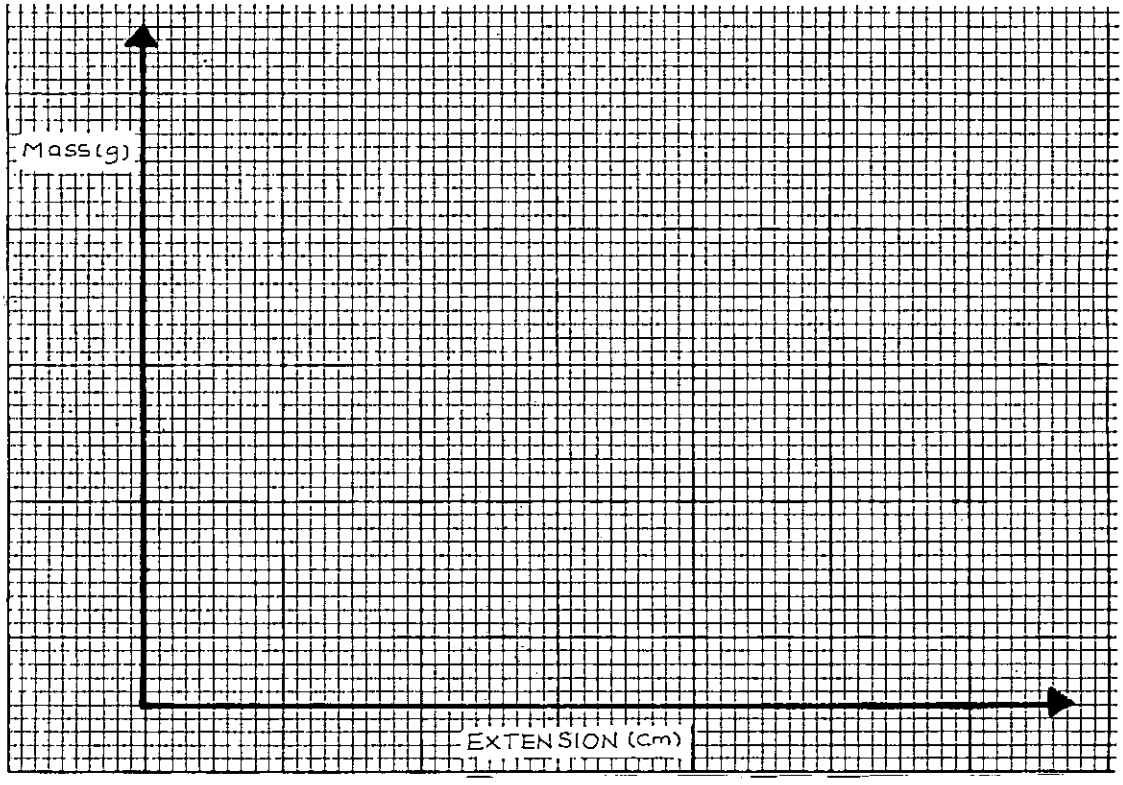
Table 2

Mass (g)	0	50	100	150	200
Length (cm)					
Change in length (extension) cm l (new) - l (initial)					

(9 marks)



(3 marks)

(g) From the values in the table, plot a graph of mass (g) against extension (cm)

(h) Calculate the gradient of your graph.

(1 mark)

3. a. What is a solution?

(2 marks)

b. Write any two ways of expressing the concentration of a solution.

(2 marks)

c. Describe how you would prepare 250 ml of a 0.2 M solution of sodium hydroxide, NaOH using solid sodium hydroxide (Relative Formula Mass of sodium hydroxide is 40)

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(9 marks)

4. With the aid of a clearly labelled diagram describe the arrangement you would use to produce a pure spectrum of white light on a screen. In your description include an explantion on why each component is used.

(12 marks)

END OF QUESTION PAPER

This paper contains 6 pages.