EXAMINATION NO.:_____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2024 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

PHYSICS

Subject Number: M164/II

Friday, 5 July

Time Allowed: 2 hours
10:00 am onwards

PAPER II
Practical
(40 marks)

Instructions

1. **This paper contains 6 printed pages. Please check.**
2. Write your **Examination Number** at the top of each page.
3. Answer **all** the **four** questions in the spaces provided.
4. Use of scientific calculators is allowed.
5. The maximum number of marks for each answer is indicated against each question.
6. In the table provided on this page, **tick** against the question number you have answered.
7. Hand in your paper to the invigilator when time is called to stop writing.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			

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Section A (20 marks)

1. With the aid of a well labelled diagram, describe an experiment that could be carried out to show that sound requires a medium to travel using an electric bell, power source, a jar and a vacuum pump.

(10 marks)

Continued/...

2. Describe an experiment that could be carried out to determine the average speed of an athlete using a stop watch, chalk and a tape measure.

(10 marks)

Continued/...

Section B (20 marks)

3. You are provided with a spring balance and a bag of sand with a string tied to it.

a. Make sure the apparatus have been arranged as shown in **Figure 1.**

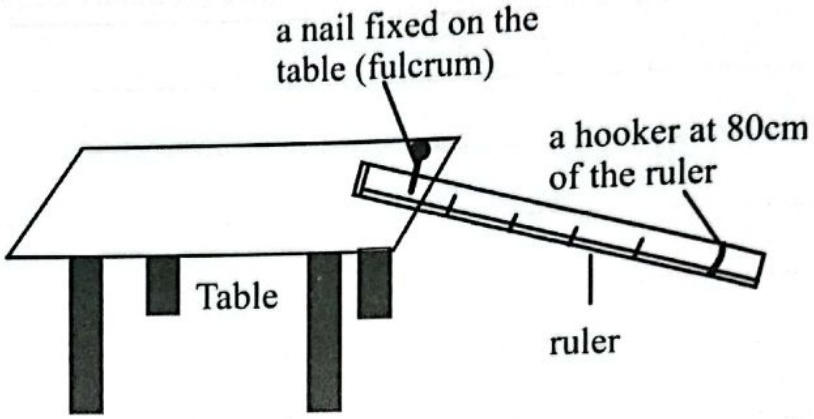


Figure 1

b. Tie the 500 g bag of sand at 25 cm mark on the ruler using the string.

c. Hook the spring balance at 80 cm mark of the metre ruler where there is a hooker.

d. Pull the spring balance upwards until the ruler is horizontal to the table.

e. Record the reading of the spring in **Table 1**.

f. Repeat steps **b, c, d** and **e** with the bag of sand at 40 cm, 55 cm and 70 cm marks on the ruler.

Table 1

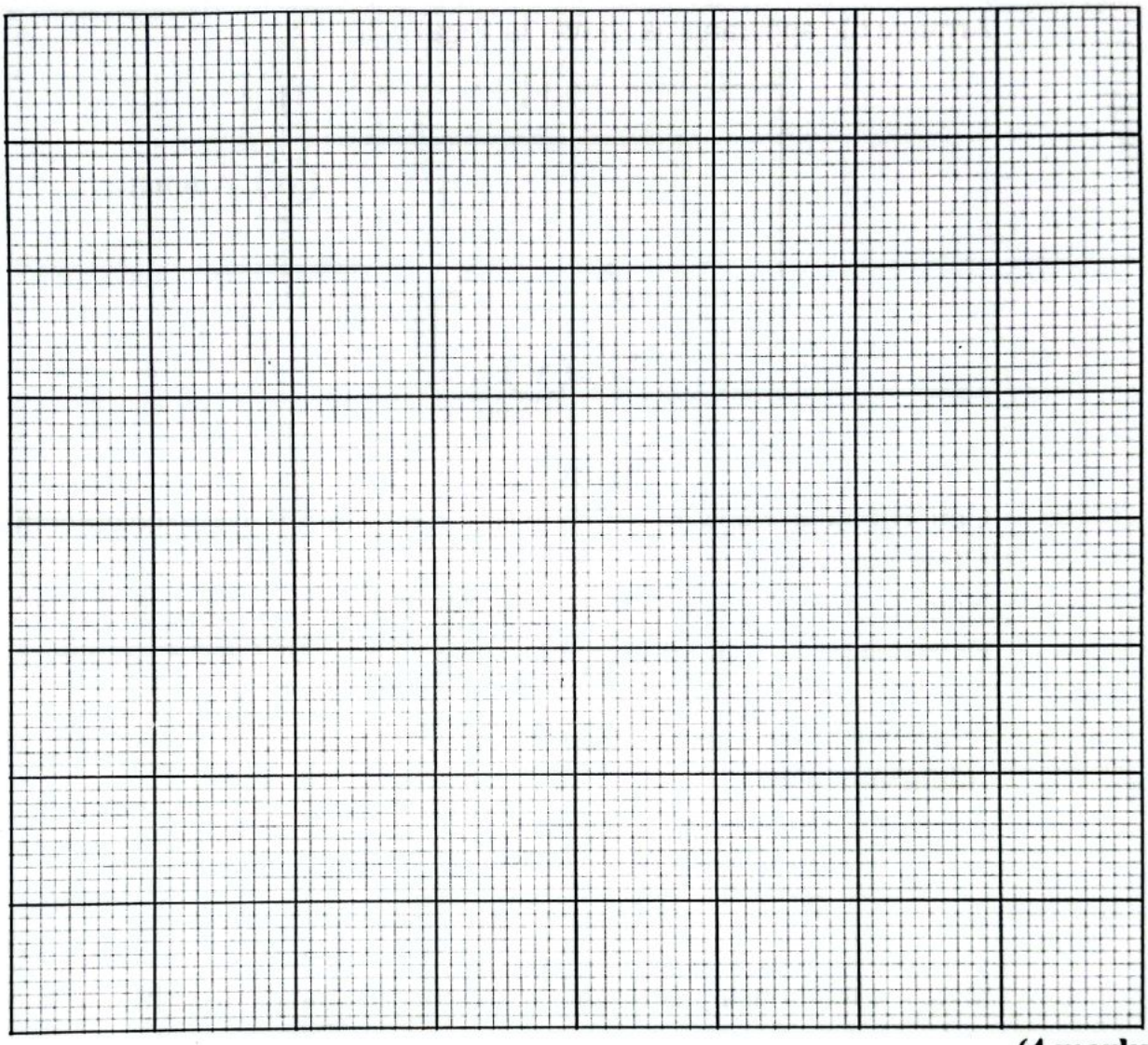
Distance of the load (500 g bag of sand) from fulcrum (cm)	**Effort (Reading on the spring, N)**
25	
40	
55	
70	

(4 marks)

Continued/…

3. (Continued)

g. Plot a graph of effort against distance of the load from the fulcrum.



(4 marks)

h. Using the graph:

(i) find the effort when distance of the load from the fulcrum is 50 cm.

_____

(1 mark)

(ii) state the relationship between the effort and the distance of the load from the fulcrum.

_____

_____

(1 mark)

Continued/...

4. You are provided with 2 dry cells in a holder, an ammeter, a voltmeter, 1 strand, 2 strands and 3 strands of nichrome wires, a switch, 2 crocodile clips and 6 connecting wires.

a. Arrange the apparatus as shown in **Figure 2.**

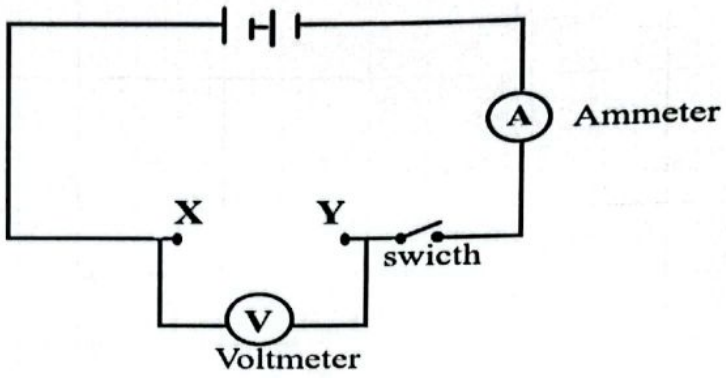


Figure 2

b. Connect nichrome wire with one strand on gap **XY** using the crocodile clips.

c. Close the switch.

d. Note the ammeter and voltmeter readings and record them in **Table 2.**

e. Repeat steps **b**, **c** and **d** using nichrome wires with 2 and 3 strands.

Table 2

Number of strands of nichrome wire	Voltage (V)	Current (I)	Resistance (Ω)
1			
2			
3			

(7 marks)

f. State the relationship between the number of strands of nichrome wire and resistance.

_____

(1 mark)

g. Which number of strands of nichrome wire would be suitable for use in a circuit in order to reduce power loss?

_____

(1 mark)

h. Mention any **one** variable that was kept constant during the experiment.

_____

(1 mark)

END OF QUESTION PAPER

NB: This paper contains 6 printed pages.