

NAME: _____ FORM 4: _____

ST. MARY'S SECONDARY SCHOOL

2021 MALAWI SCHOOL LEAVING CERTIFICATE OF EDUCATION



MOCK EXAMINATIONS

PHYSICS

Subject Number: M164/II

Time allowed: 2-hour sessions

08:00 am onwards

Date: 30th July, 2021.

PAPER II

(40 marks)

PRACTICAL

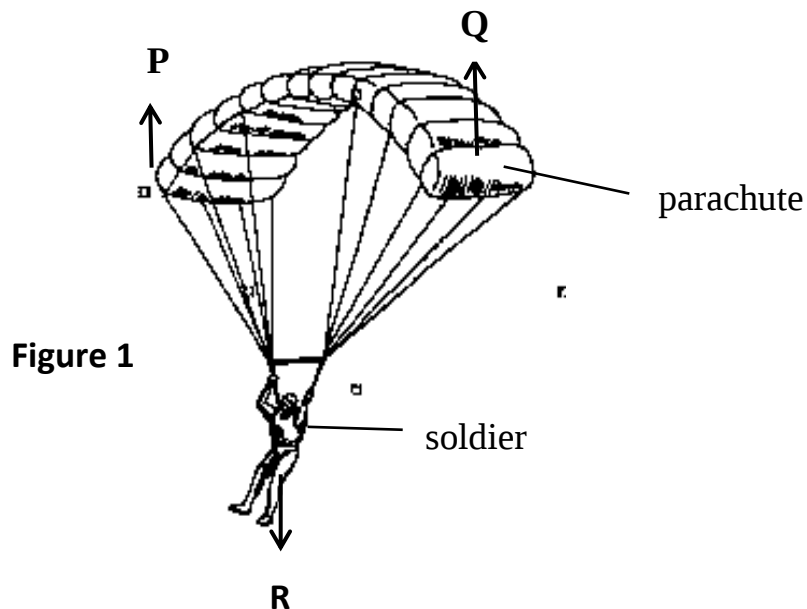
Instructions:

1. This paper contains 7 printed pages.
Please check.
2. Before beginning, write your **Full Name** at the top of each page of the question paper.
3. This paper contains **two** sections, **A** and **B**.
4. Section **A** 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.
5. In section **B** there are two practical questions to be answered in **1 hour**.
6. Marks for section **B** will be given for observation, accuracy and interpretation of results.
7. 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.
8. In the table provided on this page, **tick** against the question number you have answered.

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

SECTION A: (20 marks)

1. (a) **Figure 1** below shows forces **P**, **Q** and **R** acting on a soldier falling through air using a parachute after jumping from an airplane.



Name the forces labelled **P**, **Q** and **R**.

P: _____

Q: _____

R: _____

(3 marks)

- (b) With a well labelled sketch of velocity-time graph, describe the motion of the soldier in the sky before and after the parachute opens to show how he safely reaches the ground.

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This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

(7 marks)

2. Given **three** different metal rods labelled **M**, **N** and **O**, match sticks, a stand, Vaseline and source of heat, with an aid of a diagram describe an experiment that can be carried out to show that the metals conduct heat at different rates.

[illegible]

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(8 marks)

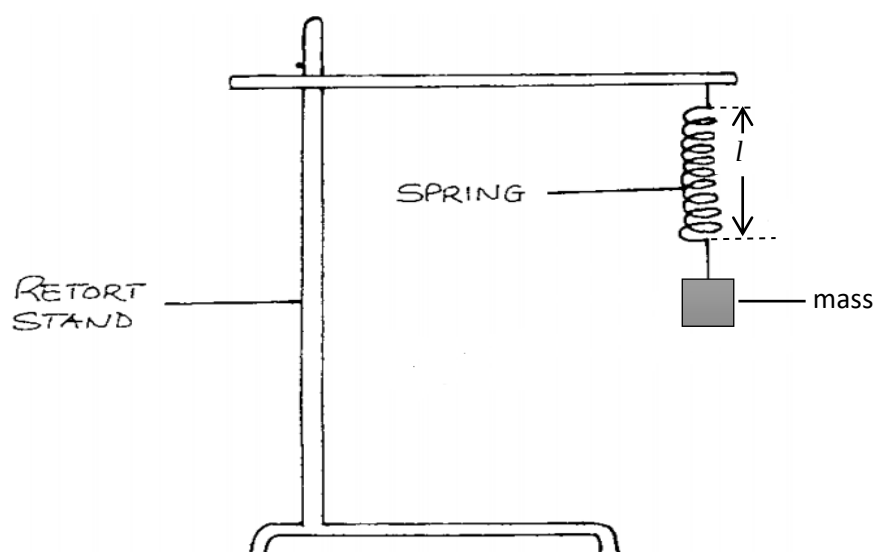
(b) Apart from type of material, mention any other **two** factors that affect the rate of heat transfer in solids.

- i. _____
- ii. _____

(2 marks)

SECTION B: (20 marks)

3. You are provided with a retort stand, spring, 30cm ruler and masses (50g, 100g, 150g, 200g and 250g).
- a. Arrange the apparatus as shown below
- b. Without mass on it, measure the length, l , of the spring using the ruler and record in the table below.



- c. Now hang the 50g mass to the spring.

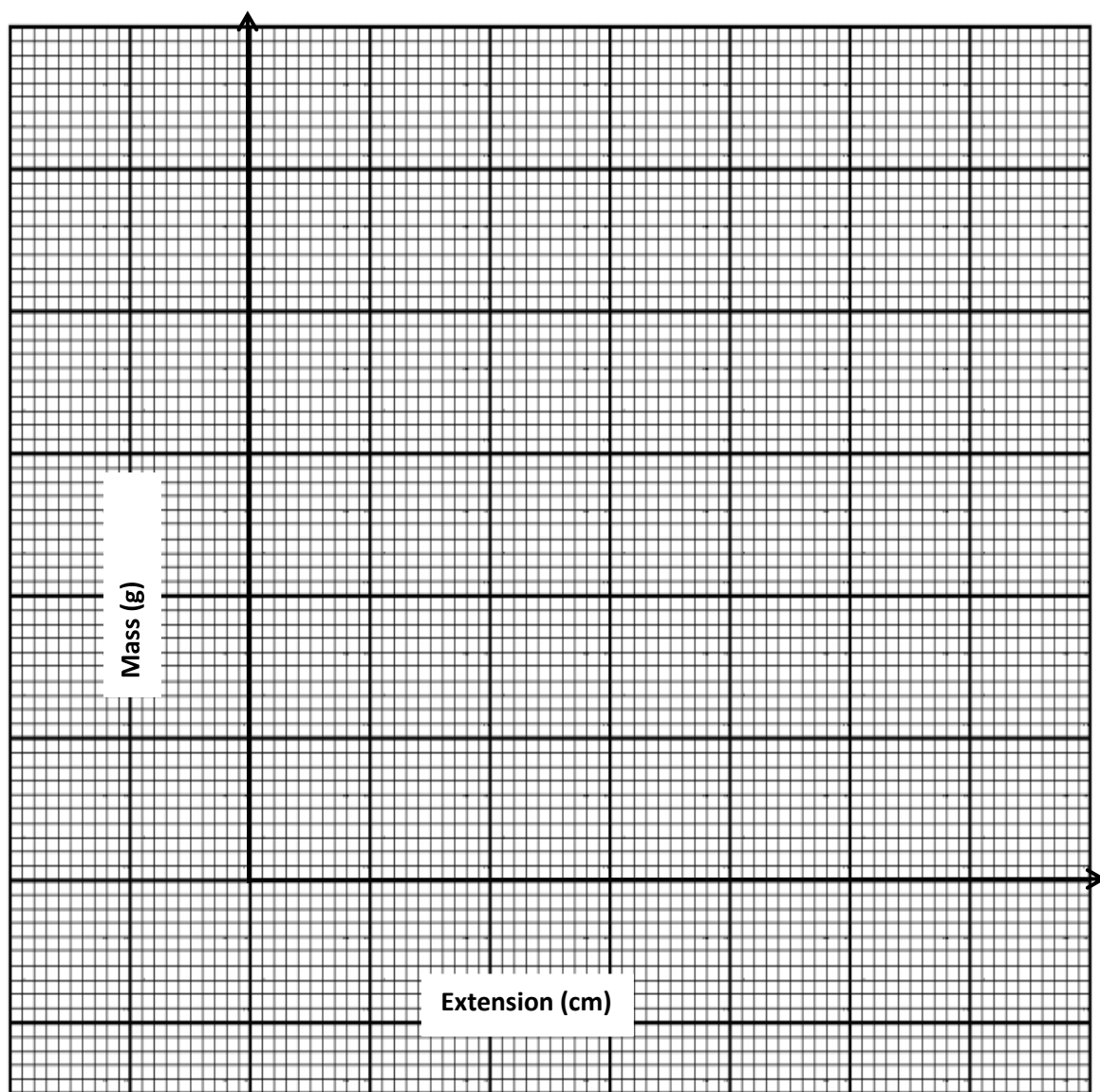
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- d. Measure the new length of the spring, l , and record it under 50g mass in the table.
- e. Subtract the initial length of the spring, l (initial) from the new length, l , to find extension of the spring and record the result in the appropriate place in the table below.
- f. Repeat steps c , d and e , for masses 100g, 150g, 200g and 250g.

Mass (g)	0	50	100	150	200	250
Length (cm)						
Extension (cm)						

(5 marks)

- g. Plot a graph of mass (m) against extension (e).

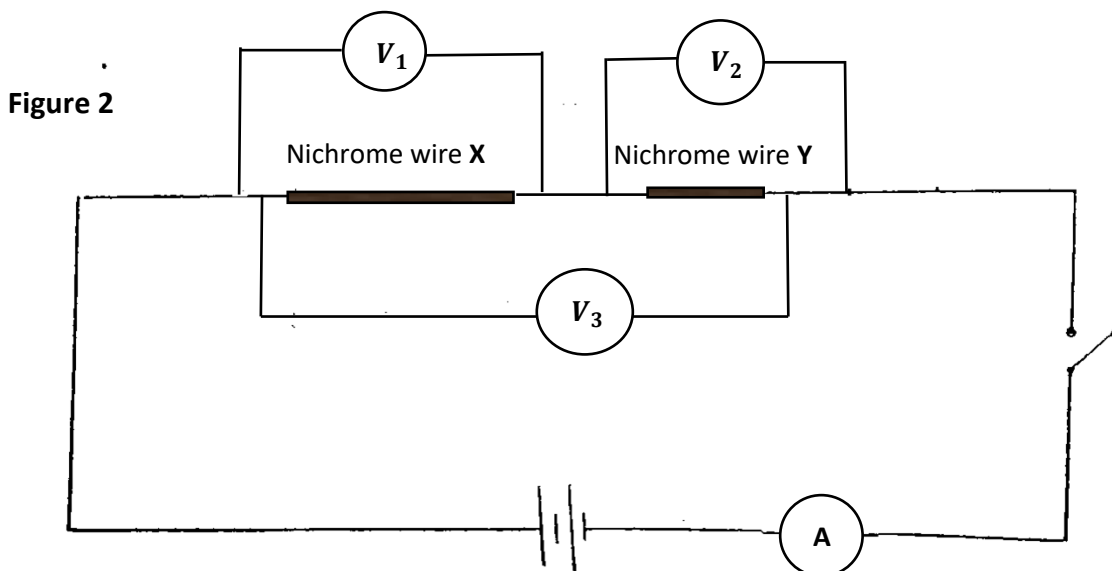


(3 marks)

- h. Find the gradient of the graph.

(2 marks)

4. You are provided with an ammeter, a voltmeter, a switch, two nichrome wires of different lengths labelled **X** and **Y**, two cells, cell holder and connecting wires.
- a. Connect the circuit as shown in **figure 2** below:



- b. Connect the voltmeter across nichrome **X** as shown in V_1 above.
- c. Close the switch.
- d. Note and record both the ammeter and voltmeter readings in the appropriate spaces in the table of results below.
- e. Open the switch.

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- f. Remove the voltmeter and connect it across nichrome wire **Y** as shown in V_2 .
- g. Again, note and record the ammeter and voltmeter readings in the table given below.
- h. Repeat steps (e) to (g) with the voltmeter across both **X** and **Y** as shown in V_3 .

Table of results

Position of voltmeter	Voltage across nichrome wires (v)	Current flowing in circuit (I)	Resistance (R) V/I (ohms)
V_1			
V_2			
V_3			

(6 marks)

- i. Using the values of resistance for V_1 and V_2 , calculate the total effective resistance offered by the two nichrome wires in the circuit.

(2 marks)

- j. Suggest any **two** sources of error in this experiment.

(2 mark)

END OF QUESTION PAPER