



EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2003 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

PHYSICAL SCIENCE

Subject Number: M162/II

Tuesday, 4th November

Time Allowed: 2 hour sessions
8:30 am onwards

PAPER II

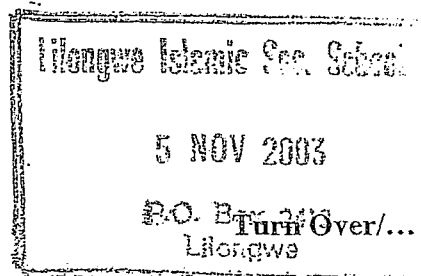
(50 marks)

PRACTICAL

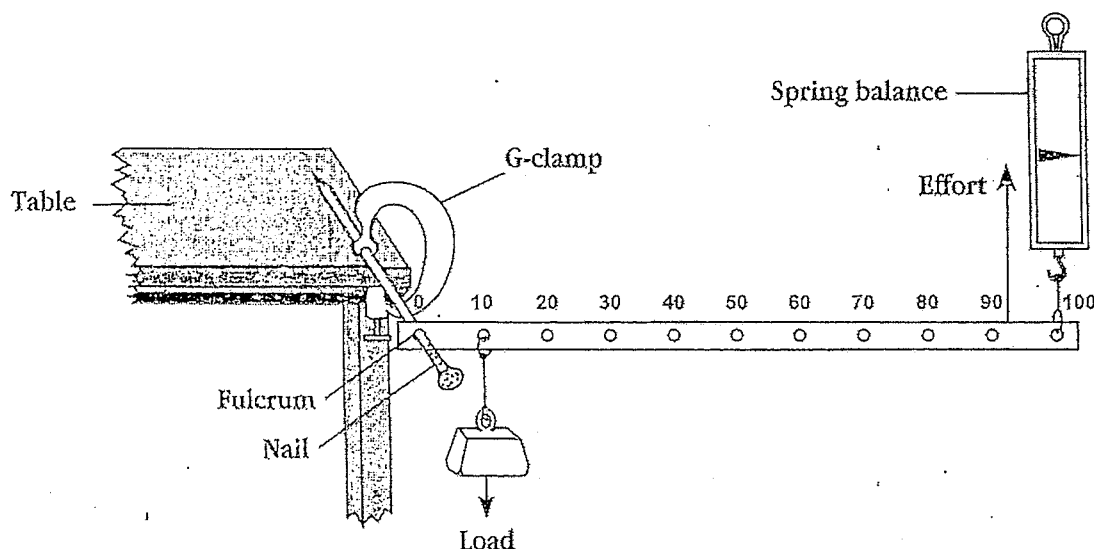
INSTRUCTIONS

1. This paper contains 6 pages. Please check.
2. Before beginning, fill your examination number at the top of each page of the question paper.
3. Write your answers on the question paper.
4. This paper consists of **two** sections, A and B.
5. In Section A there are **two** practical questions to be answered in 1 hour.
6. 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.
7. Marks for this section will be given for observation, accuracy and interpretation of results.
8. 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.

©2003 MANEB



1. You are provided with a 500g mass, a clamp, a spring balance, a nail, a metre rule with holes drilled into it at regular intervals of 10cm and a wire hook or a string.
 - a. Arrange the apparatus as shown in the diagram.



- b. Hook the 500g mass 10cm from the fulcrum.
 - c. Hook the spring balance on the last hole (100cm from the fulcrum).
 - d. Lift the spring balance so that the metre rule is in a horizontal position.
 - e. Record the reading on the spring balance in the appropriate space in the table.

Distance between mass and fulcrum (cm)	Effort (N)
10	
20	
30	
40	
50	
60	

(6 marks)

- f. Repeat procedures b to e using the distances shown in the table.
 - g. Plot a graph of effort against distance between mass and fulcrum. (Scale: 2cm to represent 0.5N on the vertical axis and 2cm to represent 10cm on the horizontal axis).

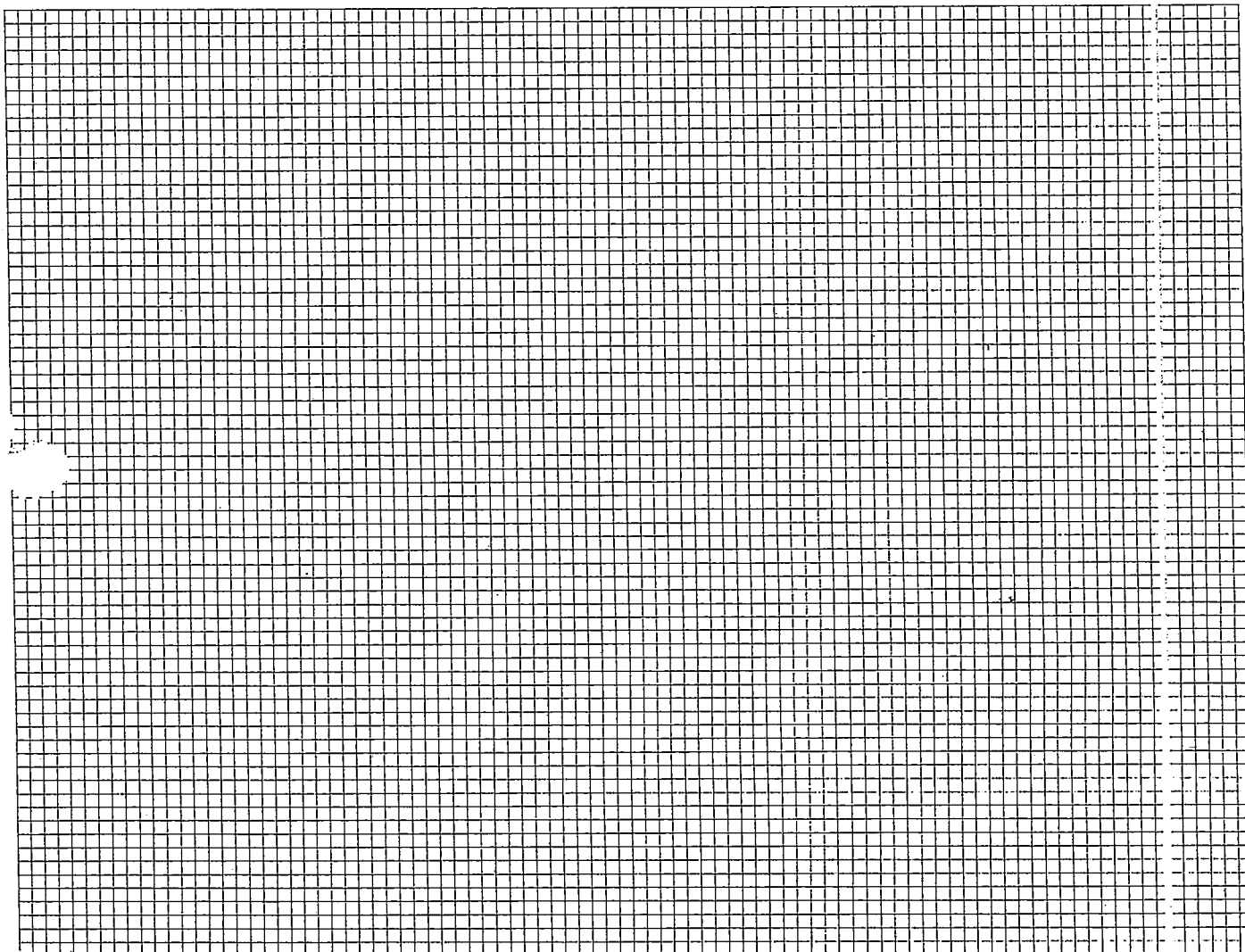
Continued/...

2003

1. (Continued)

EXAMINATION NO.: _____
Page 3 of 6

M162/II



(6 marks)

- h. What is the relationship between the effort applied and the distance from the mass to the fulcrum?

(1 mark)

2. You are provided with hydrated copper sulphate, an evaporating basin, a gas burner, a triple beam balance, a tripod stand and a wire gauze.

- a. Weigh the evaporating basin on the triple beam balance and record the mass.

(1 mark)

Continued/...

2. (Continued)

- Add crystals of hydrated copper sulphate until the reading increases by approximately 5g.
- Record the mass of the evaporating basin plus hydrated copper sulphate.

(1 mark)

- d. Mass of hydrated copper sulphate=_____ (1 mark)
- e. Heat the evaporating basin gently until the hydrated copper sulphate turns into a white powder.

(1 mark)

- f. Weigh the evaporating basin plus white powder and record the results.

(1 mark)

- g. Subtract mass of empty evaporating basin from the mass of evaporating basin and white powder and record the results. _____

(1 mark)

- h. Mass of hydrated copper sulphate minus mass of white powder=.

(1 mark)

- i. Calculate the percentage of water in the hydrated copper sulphate.

(3 marks)

- j. What name is given to water found in crystals?

(1 mark)

- k. Mention any **two** sources of error in this experiment.

(2 marks)

Continued/...

- Support your answer by giving relevant ionic equations and explanations for the reactions that take place at the anode and cathode during the electrolysis of dilute sulphuric acid.

[illegible]

4. a. A resistor with unknown resistance is connected in parallel to a 40hm resistor. The voltage across the resistors and the total current in the circuit are measured

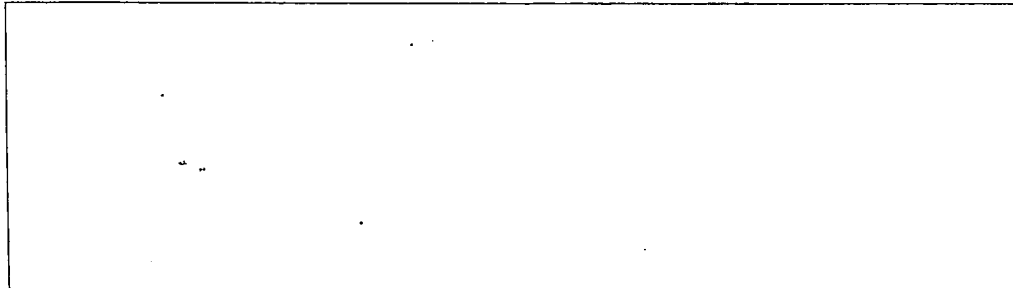
- (i) Draw a circuit diagram for this experiment.

17. *Other comments:*

Continued/...

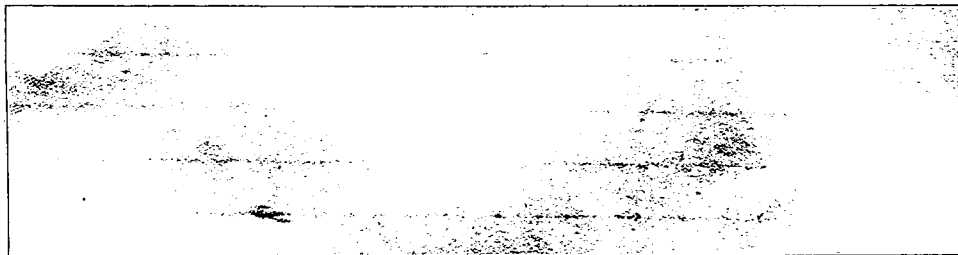
4.a. (Continued)

- (ii) Calculate the value of the unknown resistor if the effective resistance is 2ohms.



(3 marks)

- b. (i) Draw an electric circuit comprising a diode, a cell and a bulb such that the diode is forward biased.



(3 marks)

- (ii) Explain the effect of reversing the cell on the bulb.

(3 marks)

END OF QUESTION PAPER

NB: This paper contains 6 pages.