NAME…….…. INDEX NO……...… CANDIDATE'S SIGNATURE……. DATE……..…….....

PHYSICS
PAPER 3
(PRACTICAL)
2½ HOURS

INSTRUCTIONS TO CANDIDATES:

Write your **Name** and **Index Number** in spaces provided **above**.
Sign and write the date of examination in spaces provided **above**.
Answer **ALL** the questions in spaces provided in the question paper.
You are **NOT** allowed to spend the fine 15 minutes of 2½ hours allowed for this paper reading
the whole carefully before commencing the work.
Candidates are advised to record their observations as soon as they are made.
Electronic calculators and Mathematical table may be used.

For examiner's use only

Question 1	(a)	(b)	(e)	(f)	(g)	(h)
Maximum Score	1	2	6	5	3	3
Candidate's Score						

Question 2	(b)	(c)	(d)	D(i)	(ii)	(iii)
Maximum Score	1	1	8	5	2	3
Candidate's Score						

QUESTION 1

1. You are provided with the following apparatus.
   - A metre rule
   - Log of plasticine
   - Bi-convex lens
   - A candle
   - A lens holder
   - Across wire mounted on a cardboard
   - A white screen

   (a) Determine the focal length of the lens using a distant object.
   (1 mark)

   f =

_____

   (b) Briefly explain the method you have used above.
   (2 marks)

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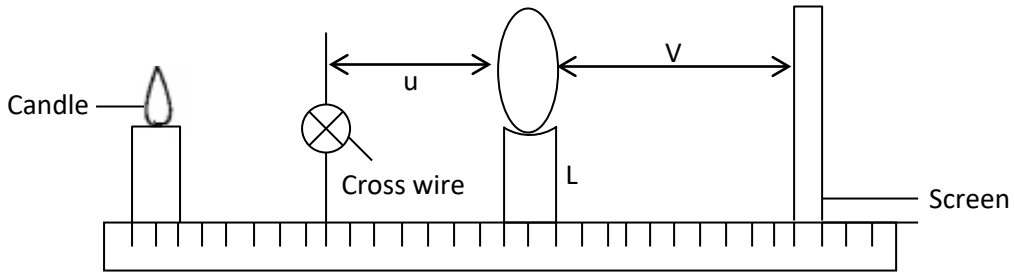
   (c) Set up the apparatus as shown.



   (d) Starting with U= 30cm vary the position of the screen S until a sharp image of the cross wire is observed on the screen. Measure and record the value of the image distance V.

   (e) Repeat the experiment above for other values of U = 35cm, 40cm, 50cm and 55cm.

Ucm	30	35	40	45	50	55
Vcm						
$M = V/U$						

(6 marks)

(f) Plot a graph of M agaist V. (5 marks)

(g) Determine the slope of the graph. (3 marks)

(h) The equation of the graph is given by $M = V/f - 1$. (3 marks)
Use your graph to obtain the value of f.

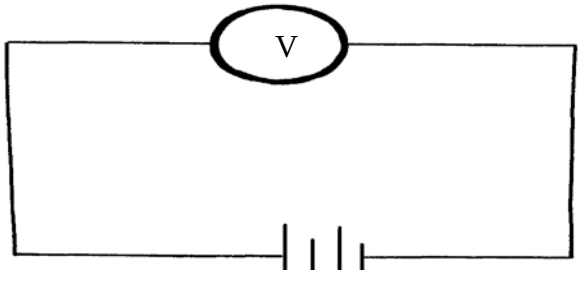
QUESTION 2:

- A resistance wire mounted on millimeter scale
- Two dry cells in a cell holder
- A voltmeter
- Four connecting wires, one with a crocodile clip at one end

Proceed as follows:-

(a) Set up the circuit as in the figure below and determine the total electromotive force E, of the cells.

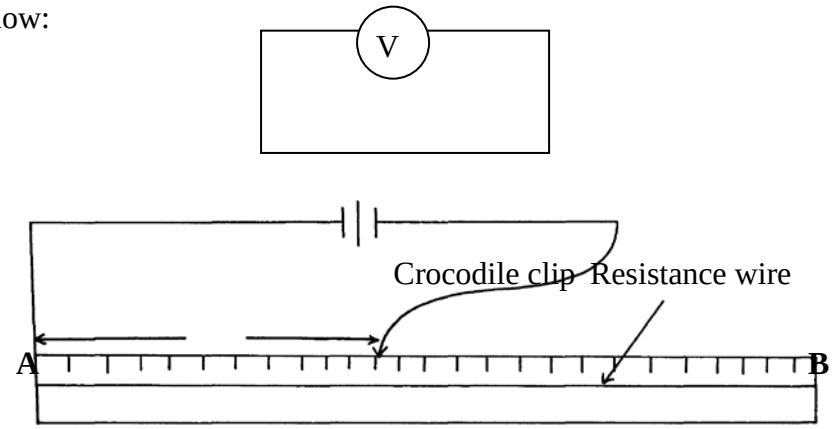
(1mk)



Electromotive force E, of the cells…….……..…..Volts

(b) Set up the circuit shown in the figure below, connect the wire with clip on the mounted wire at a length (L) of 10cm from the end marked A. Record the voltmeter reading in the table provided

in part (c) below:



(c) Repeat the procedure in (b) above for the following values of length L: 20cm, 30cm, 40cm,

50cm, and 60cm and complete the table below:

L(cm)	V(volts)	E-V(volts)	$\frac{V}{E-V}$
10			
20			
30			
40			
50			
60			

(d) Plot a graph of $\frac{V}{E-V}$ against L(cm) (5mks)

(e) Determine the slope of the graph. (3mks)

(f) Given the equation $\frac{V}{E-V} = K_1L_1 + K_2$

Determine the values of K_1 and K_2 (2mks)

K_1…… K_2…….

(g) Given that $4K_2r = 10$ where r is the internal resistance of the cells. Determine the value of r. (2mks)