

NAME:.....Index Number:.....

Candidates sign:..... Date:.....

232/3

PHYSICS (Practical)

JULY/ AUGUST 2014

2½ HOURS



RABAI SUB-COUNTY JOINT EVALUATION-2014

FORM 4

INSTRUCTIONS TO CANDIDATES

- Write your name, index number and the date in the space provided.
- You are required to spend 15 minutes of the 2¼ hours reading through the paper and make sure you have all the apparatus and chemical needed for the practical.
- Answer all the questions in the spaces provided after each question
- Electronic calculators and mathematical tables may be used
- All working must be clearly shown where necessary.

For Examiners Use Only

QUESTION 1

	a	b	c	d(i)	d(ii)	e	f	TOTAL
Maximum score	1	6	5	3	3	1	1	20
Candidate's score								

QUESTION 2

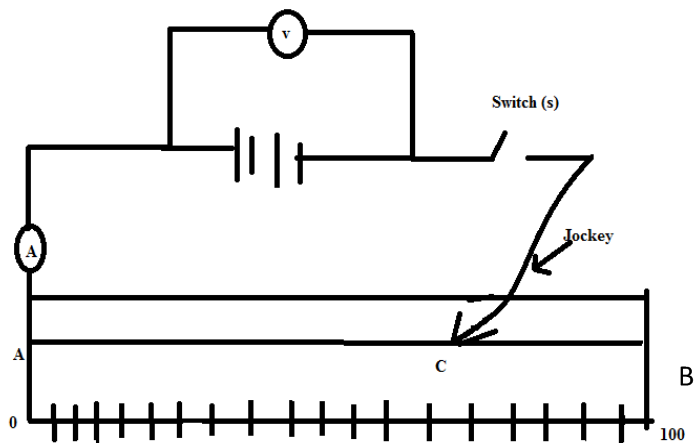
	b (i)	b (ii)	C	d(i)	e (i)	e (ii)	TOTAL
Maximum score	2	7	5	2	2	2	20
Candidate's score							

1. You are provided with the following apparatus.

- ❖ Two new dry cells (size D)
- ❖ An ammeter
- ❖ A voltmeter
- ❖ A cell holder (2 cells)
- ❖ Six connecting wires
- ❖ 1 nichrome wire mounted on a meter rule scale
- ❖ A micrometer screw gauge.

a) Use the micrometer screw gauge; determine the average diameter d of the wire AB, on the meter scale.

$d = \dots\dots\dots\text{mm}$ (1mk)

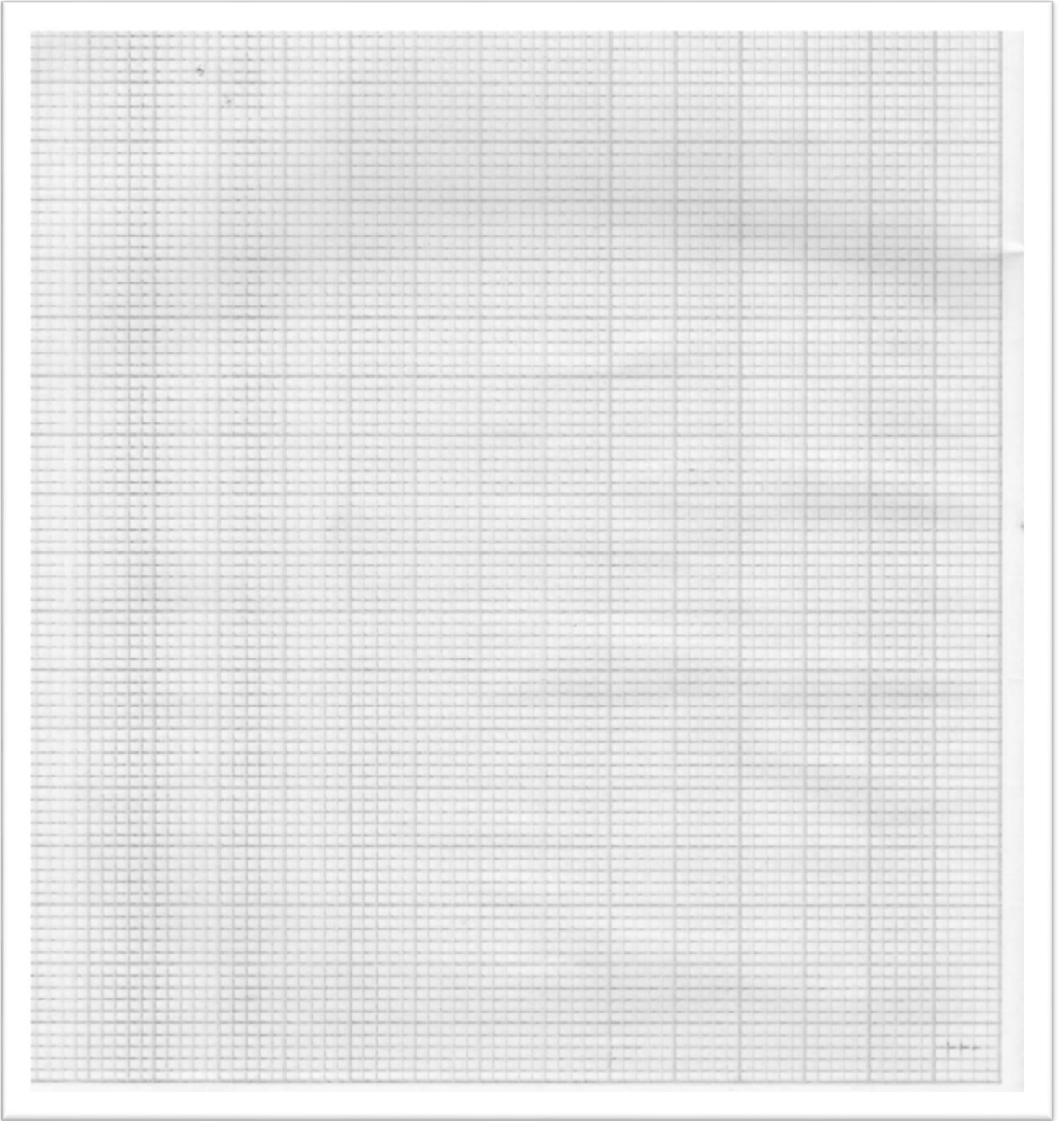


b) With the switch open record the voltmeter reading V and corresponding ammeter reading I . Record the values in the table below. Repeat the reading V and I for 1 values as shown in the table 1 (6mks)

Length(cm)	70	60	50	40	30	20	10
P.d(Volts)							
I(amps)							

Table 1

c) Plot a graph of potential difference (V) against I on the grid provided. (5mks)



d) i) At $L = 1.0$ m, obtain the values of current through the circuit(I_0) and the voltage(V_0)

I_0 (1mks)

V_0 (1mks)

Determine $R_0 = \frac{V_0}{I_0} = \dots\dots\dots\Omega$ (1mk)

(ii) Determine the resistivity e of the material for the wire AB given that $R_0 = \frac{eL}{A}$, where A is the cross section area of the wire in square meters and $L = 1.0$ m, R_0 is the resistance of the nichrome wire section AB. (3mks)

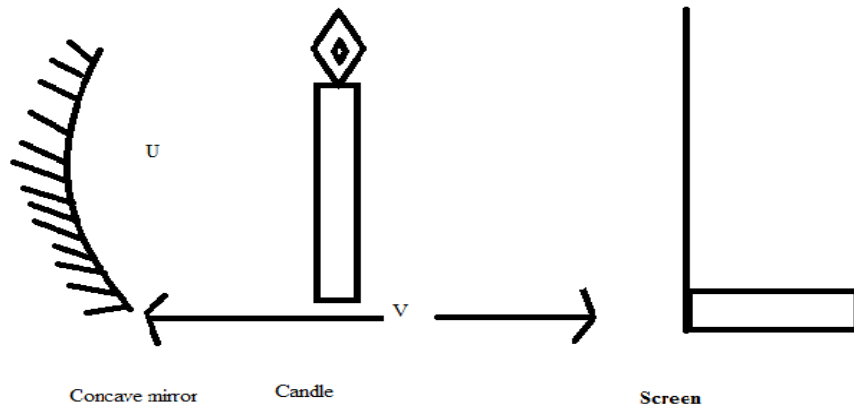
e) State an equation connecting $V, E, I,$ and R (1mrk)

f) The voltage (V) when the current $I = 0$ (1mrk)

2. You are given the following apparatus

- ❖ Concave mirror
- ❖ Candle
- ❖ Screen

a) Arrange the apparatus as shown below



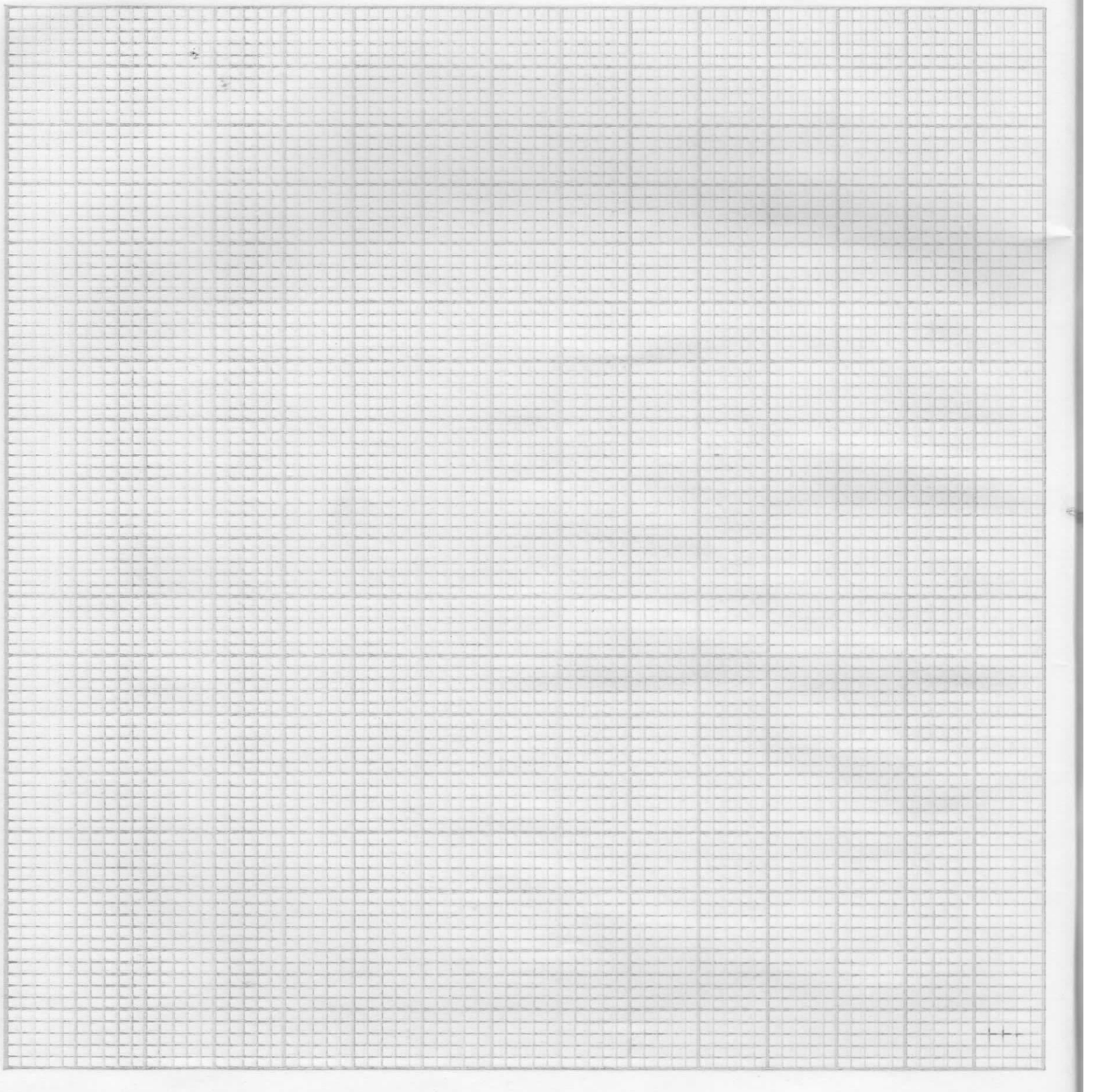
b) i) Place the candle at a distance $u = 16\text{cm}$, in front of a concave mirror. Adjust position of candle and screen so that a focused image forms on the screen, measure the image distance $V_0 = \dots\dots\dots$ (2mks)

ii) Repeat the values of U shown below and obtain the values of V . Complete table II

U cm	V cm	$m = \frac{v}{u}$
17		
19		
21		
23		

Table II

c) Plot a graph of m against v in the grid provided below. (5mks)



d) Use the graph to determine the image distance such that magnification is 1.4. (2mks)

e) Determine the gradient, hence the focal length of this concave mirror. (2mks)

i) Gradient

ii) Focal length (2mks)