

c) Replace lens A with lens B. Fix the plane mirror at the back of lens B. Repeat the procedure in (b) above. Measure the distance l_2 between the screen and lens B.

$l_2 =$ _____ cm

d) Remove the mirror from the lens holder.

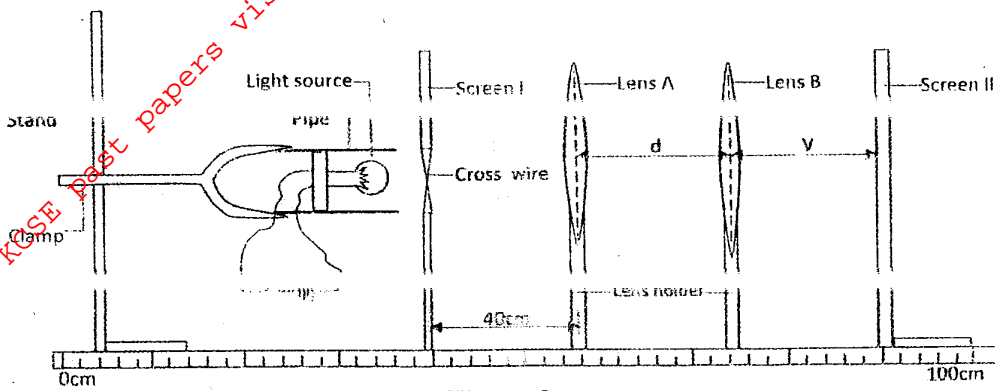


Figure 2

Set the distance d between lens A and lens B to be 65cm. Adjust the position of screen II to obtain a sharp image of the cross wires on it. Measure the distance V between lens B and screen II.

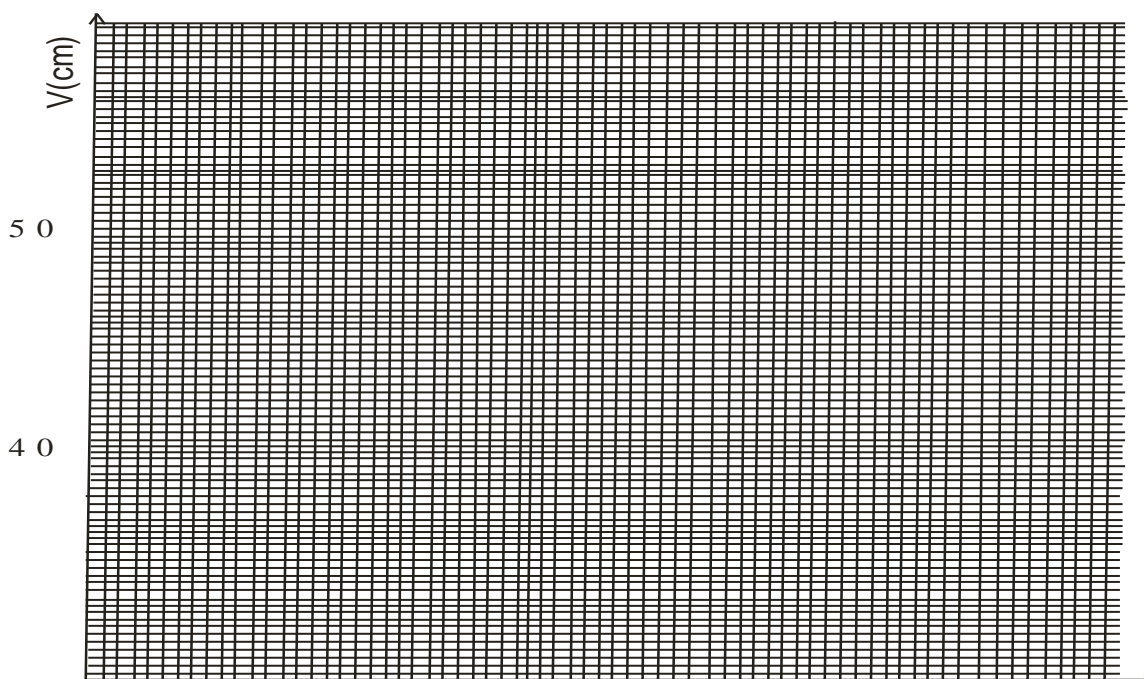
Repeat the experiment

D(cm)	65	67	69	71	73	77	80
V(cm)							

(7marks)

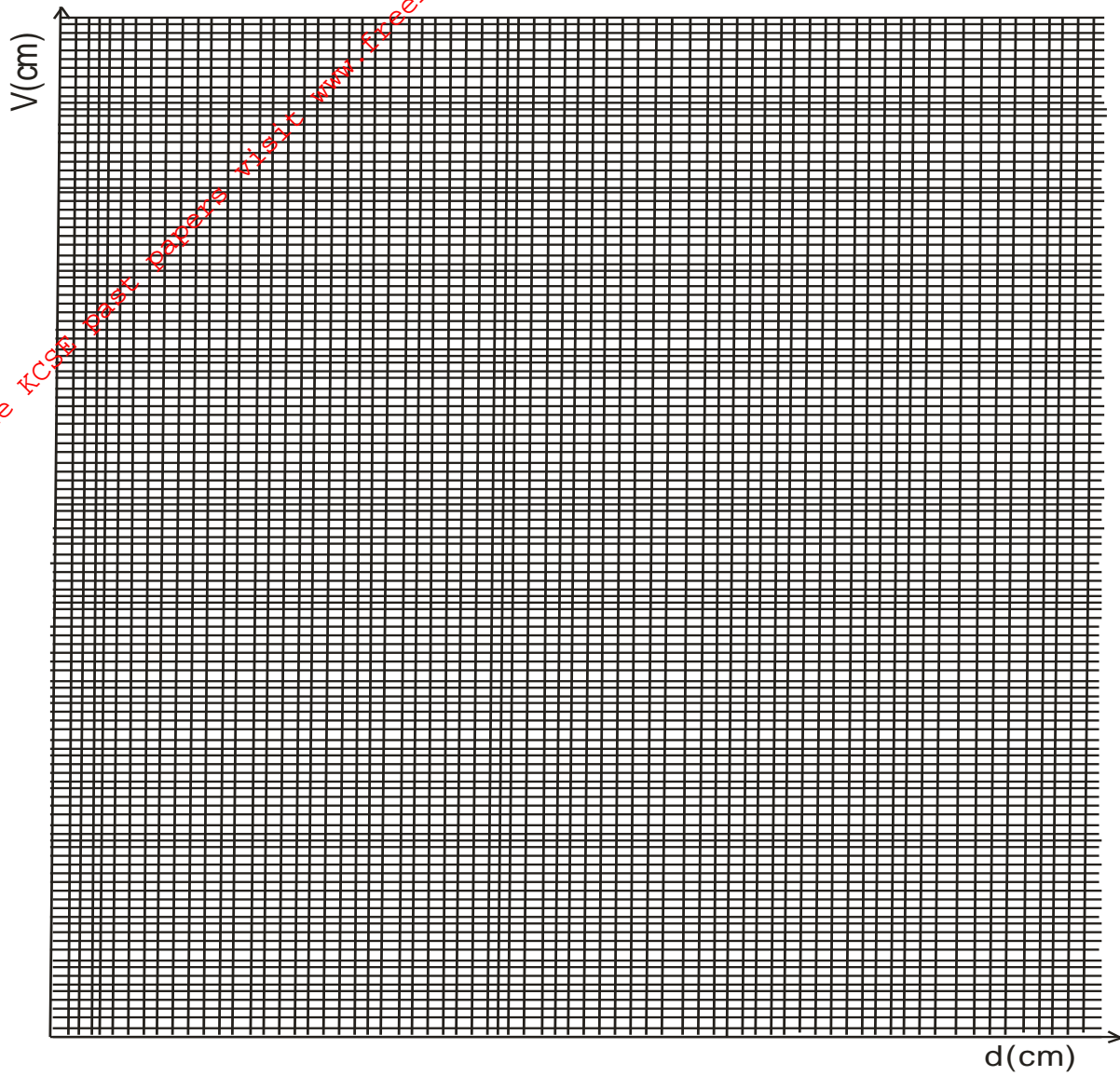
f) On the axes provided below, plot the graph of v (y-axis) against d .

(3marks)



f) On the axis provided below, plot the graph of v (y – axis) against d .

(3marks)



g) I) From the graph, at $d = 70\text{cm}$. determine;

I. the value of v .

(1mark)

II. the slope S of the graph.

(3marks)

ii) Given that $K = \frac{S}{K}$
determine the value of K (2marks)

iii) determine the value of m given that $m = \frac{S}{K}$ (2marks)

Question 2

You are provided with the following;

- A voltmeter
- A diode with ends labelled B and C
- A $1k\Omega$ resistor
- A 50Ω potentiometer
- 3 dry cells and a cell holder
- A switch
- 8 connecting wires (at least 4 with crocodile clips)
- Proceed as follows;

a) Set up the circuit as shown in figure 3.

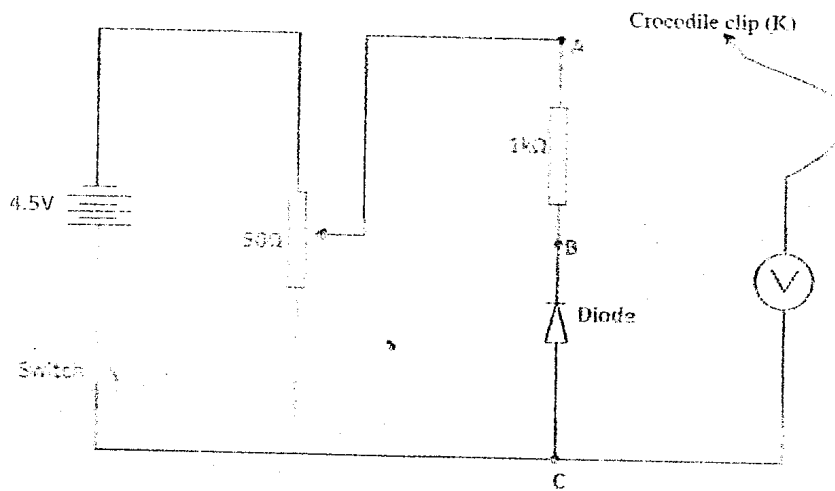


Figure 3

b) i) Connect the crocodile clip K to point A. Adjust the potentiometer by turning the knob until the voltmeter reading is maximum.

Maximum voltmeter reading = _____ volts. (1mark)

- ii) Without adjusting the potentiometer, disconnect the crocodile clip K from point A and connect it to point B. record the voltmeter reading.

Voltmeter reading = _____ volts. (1mark)

- iii) Explain why the voltmeter reading in b(i) is different from that in b(ii). (2marks)

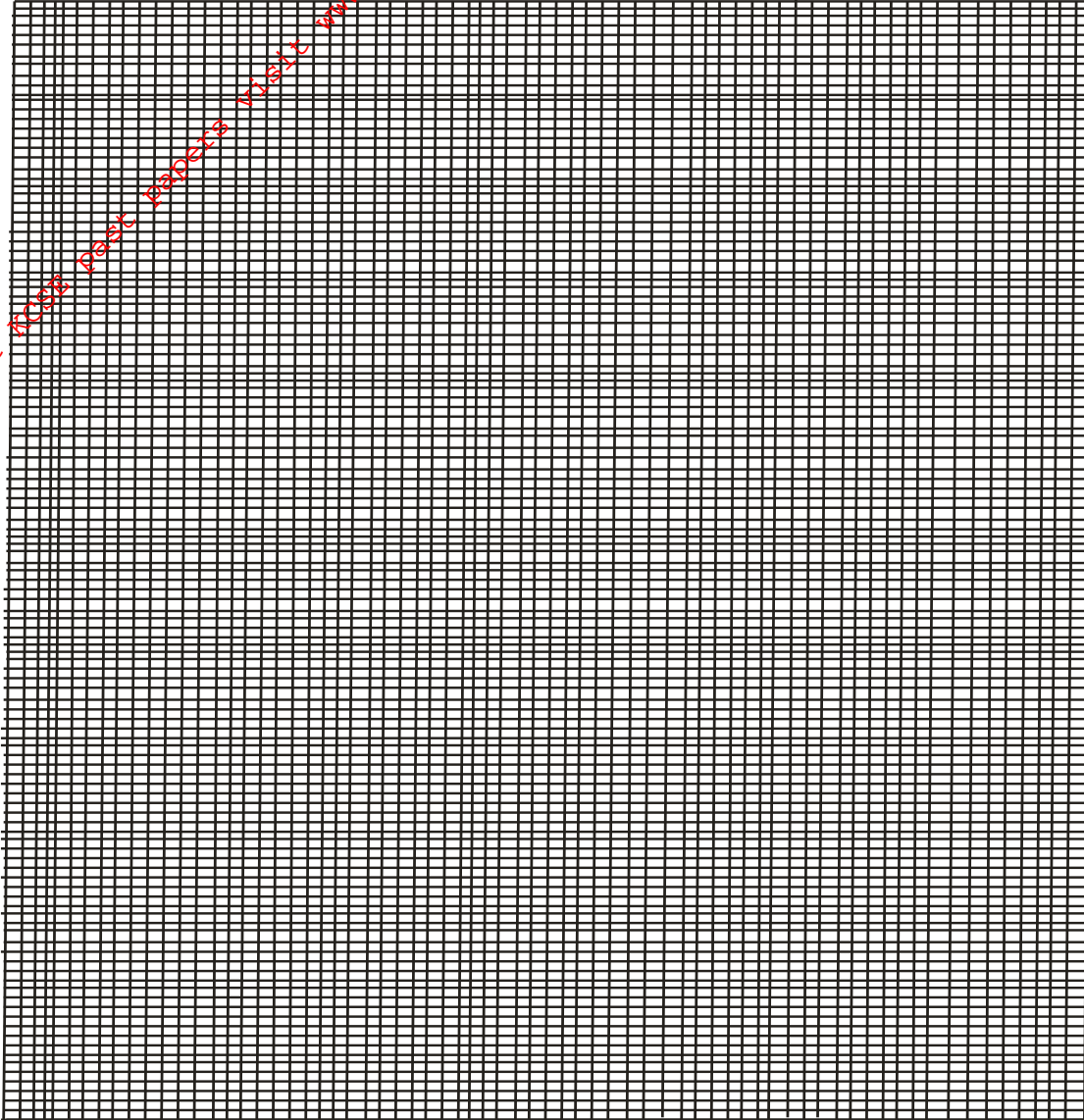
- c) Disconnect the crocodile clip K from point B and connect it to point A. Adjust the potentiometer so that the voltmeter reading V_A is 1.0V. Disconnect the crocodile clip K from A and connect it to point B. Record the voltmeter reading V_B .

V_B = _____ volts. (1mark)

- d) By adjusting the potentiometer to obtain other values of V_A (when K is at A) shown in table 2, repeat the procedure in (c) to obtain the corresponding values of V_B (when K is at B) and complete the table.

$V_A(V)$	$V_B(V)$	$I = \left(\frac{\quad}{\quad} \right) ($
1.5		
2.0		
2.5		
3.0		
3.5		
4.0		

c) On the grid provided, plot a graph of I (y – axis) against V_B .



f) Use the graph to determine the resistance of the diode when the current is 0.45A.
(3marks)