FORM FOUR CLUSTER KCSE MODEL6

PHYSICS PAPER 3 QUESTIONS

1. You are provided with the following:
-An ammeter (0 -2.5A)

-A voltmeter (0-5v)

-Two size D drY cells

-Mounted michrome wire (SWG 28) labeled X 1 metre long

-A switch

- Six connecting wires (four with crocodile clips)

-Cell holder

Proceed as follows:-

a) Connect the apparatus provided as shown below:-

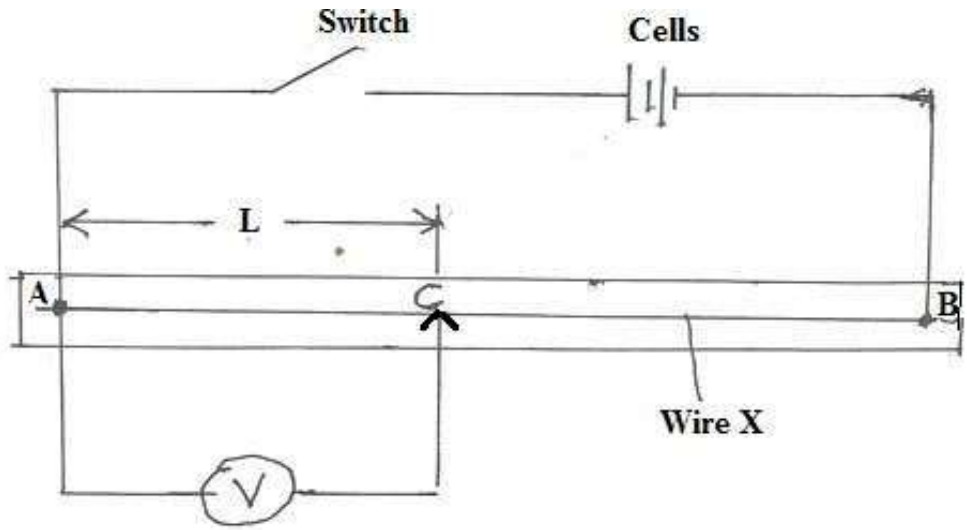


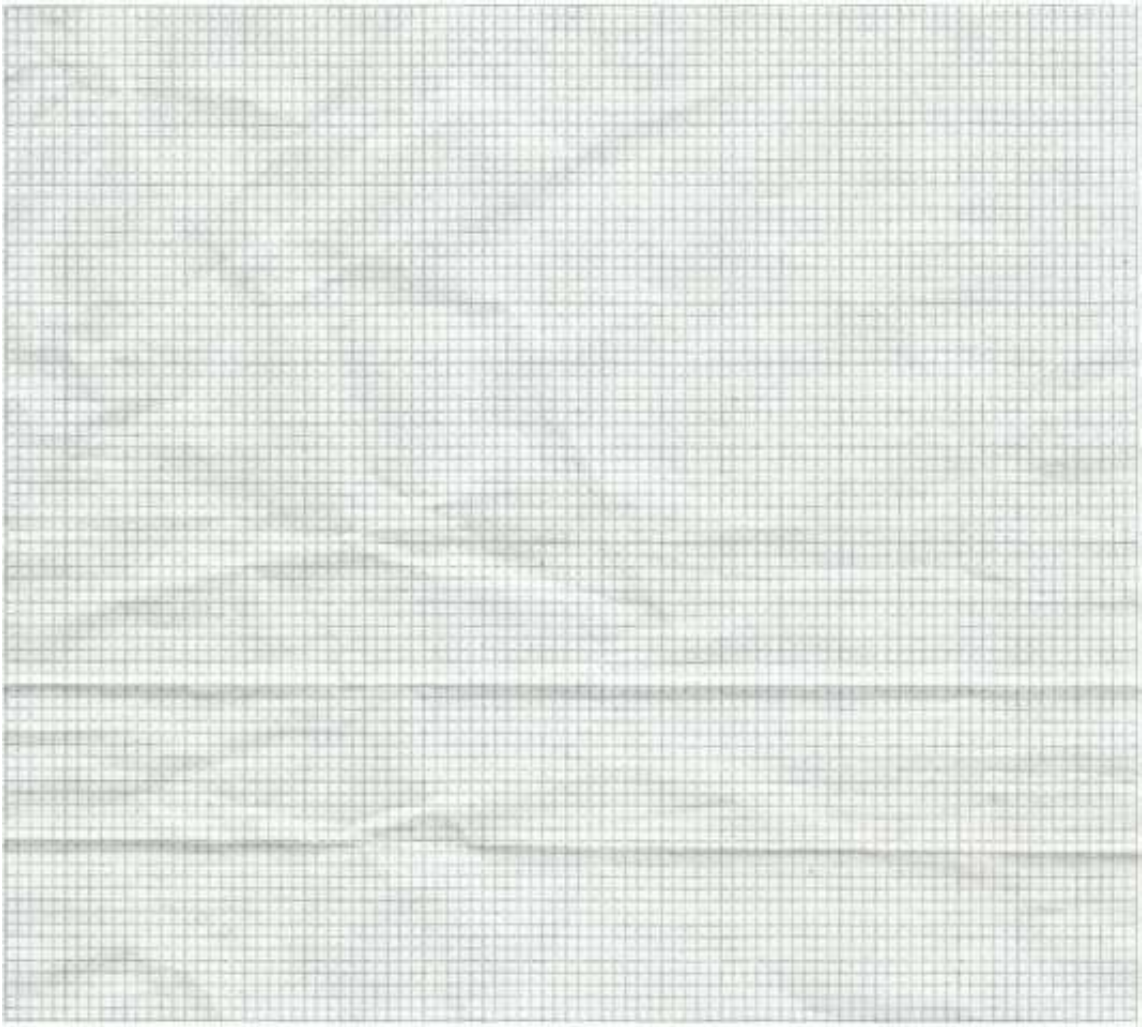
Fig 1

b) With the crocodile clip at C=20cm from A and the switch closed, record the voltmeter reading V in the table below:-

c) Repeat the procedure in (b) above the values of L=30cm, 45 cm, 60cm, 70cm and 90cm (2mks)

Length (L) cm	*20*	*30*	*45*	*60*	*70*	*90*
p.d (v)						

d) Plot a graph of P.d (V) against length L (cm) (5mks)



e) Determine the slope S of the graph (2mks)

f) Replace the voltmeter with an ammeter.

g) Read and record the ammeter reading I1, I2 and I3 for corresponding values of length L1 = 30cm, L2 = 50cm and L3 = 70cmrespectively.

I.	When	$L_1 = 30cm$	I_1 ———— A	1mk
II.	.	$L_2 = 50cm$	I_2 ———— A	1mk
III.	.	$L_3 = 70cm$	I_3 ———— A	1mk

h) Given that V=SL where V is the p.d across the length AC wire X, S is the slope of the graph in (d) above and L is the length of the wire X Using V=SL determine the p.d V1, V2 and V3 across the lengths AC, L of the wire for lengths L1, L2 and L3 in (g) above.

i. When $L_1 = 30cm$

$V_1 =$ (1mk)

ii. When $L_2 = 50cm$

$V_2 =$ (1mk)

iii. When $L_3 = 70$ cm

$V_3 =$ (1mk)

i) Using the values of V1, V2 and V3 and the corresponding I1, I2, I3, calculate the corresponding resistances R1, R2 and R3 of thebulb.

a) R_1 (1mk)

b) R_2 (1mk)

c) R_3 (1mk)

j) Complete the average of the resistances of the bulb from (I) above (2mks)

2. PART 1:

You are provided with the following
- A pendulum bob

-A stop watch

-1.5m long cotton thread

-Two small pieces of wood

- A retort stand and clamp

Proceed as follows:-

a) Suspended the pendulum bob from a retort stand such that L = 1.2 m the set up below:-

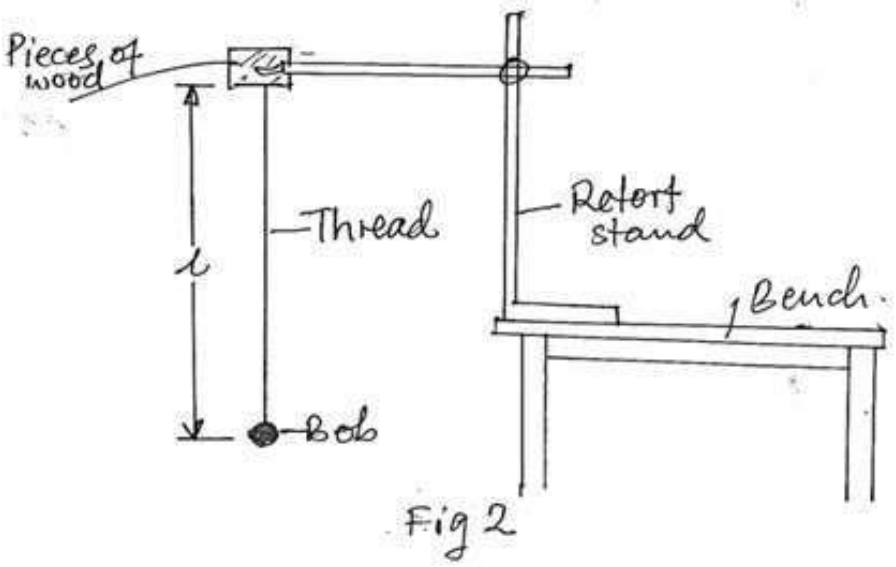


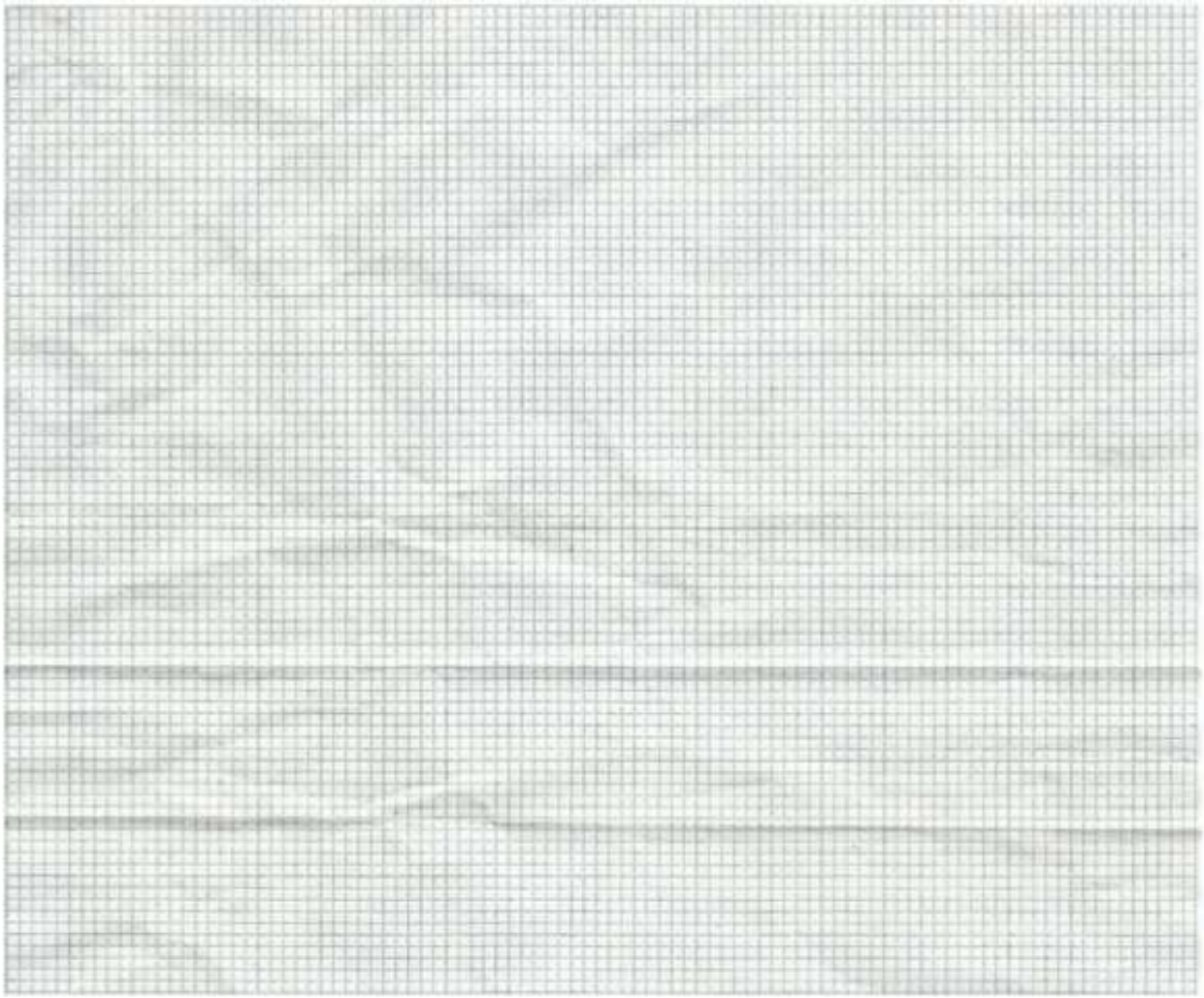
Fig 2

b) Displace the bob trough a small angle θ less than 100 and release it to oscillate in a vertical plane.
c) Determine the time for 20 oscillations
d) Record the values in table 2 below
e) Repeat the experiment for different lengths and complete the table below:

Table 2

Length L (m)	Time t for 20 oscillation (s)	Periodic time T (s)	T^2 (S^2)
1.2			
1.0			
0.8			
0.6			
0.4			

f) Plot a graph of T2 (y-axis) against L (m) (5mks)



g) Determine gradient S of the graph. (3mks)

h) Given that T2= 4π2l/g is the equation of the graph. Use the graph to determine the value of acceleration due to gravity, g. (3mks)

PART II

You are provided with the following

- Concave mirror

- Mirror holder

- Metre ruler

- Candle

- Screen

Proceed as follows:-

a) Determine the focal length of the mirror by focusing of a distant object on the screen and measure the length between the mirror and screen.

Repeat these three times.

f(1) =

f(2) =

f(3) = (1mk)

Calculate the average focal length.

f (av) = (1mk)

b) Place candle light at a distance U=40cm from the concave mirror. Image I is formed by reflection in the mirror obtained by moving the screen to and from to obtain a sharp image. Measure distance V of the image from the mirror.

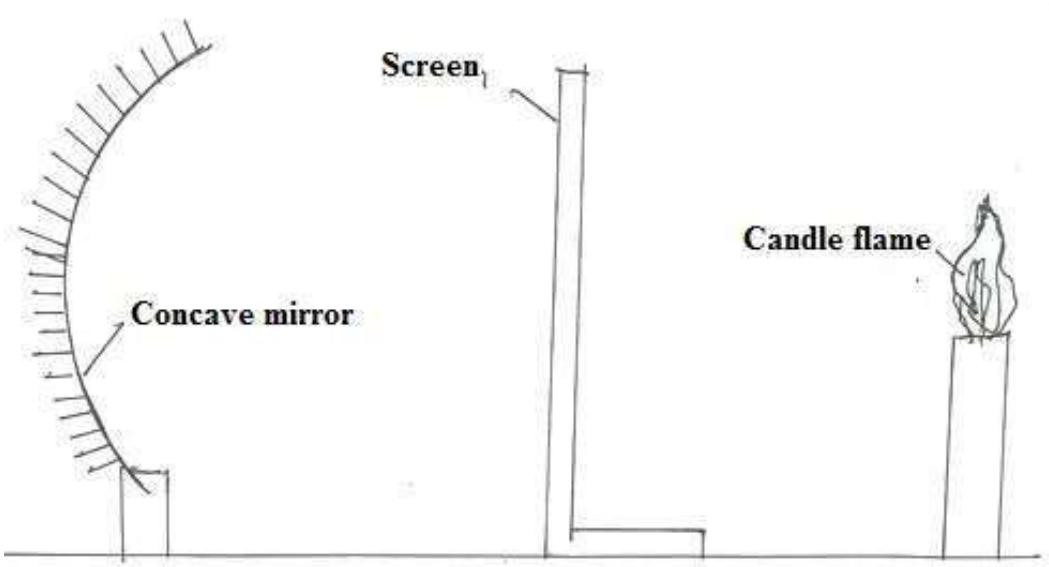


Fig 3

c) Adjust object distance U = 50 and repeat the procedure to obtain the corresponding value V. Record your values in the table 3below.

U (cm)	V (cm)	M = v/u
40		
50		

(2mks)

Given that the focal length of the mirror satisfies the equation.

$$f = \frac{V}{1 + M}$$ determine the average.

Value of focal length f (2mks)