Name……. **Index No**……/…….

School…… **Date** ……..…

Candidate's Signature……

232/3
PHYSICS
Paper 3
(PRACTICAL)
JULY / AUGUST 2012
Time: 2 ½ Hours

KWANZA DISTRICT JOINT EVALUATION TEST – 2012

Kenya Certificate of Secondary Education (K.C.S.E)

232/3
PHYSICS
Paper 3
(PRACTICAL)
JULY / AUGUST 2012
Time: 2 ½ Hours

INSTRUCTIONS TO CANDIDATES

1. Write your name and Index Number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above
3. Answer all the questions in the spaces provided in the question paper.
4. You are supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the whole paper carefully before commencing your work.
5. Marks are given for a clear record of the observations actually made, their suitability, accuracy and the use made of them.
6. Candidates are advised to record their observations as soon as they are made.
7. Non-programmable silent electronic calculators and KNEC mathematical tables may be used.

QUESTION I

PART A	II	IV	V	VI
MAXIMUM SCORE	1	1	1	2
CANDIDATES SCORE				

TOTAL ☐

PART B	II	III	IV	V
MAXIMUM SCORE	5	5	3	2
CANDIDATES SCORE				

TOTAL ☐

QUESTION 2

PART C	a	g	h(i)	h(ii)	i
MAXIMUM SCORE	2	6	5	3	4
CANDIDATES SCORE					

TOTAL ☐

GRAND TOTAL ☐

This paper consists of 8 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

Question 1

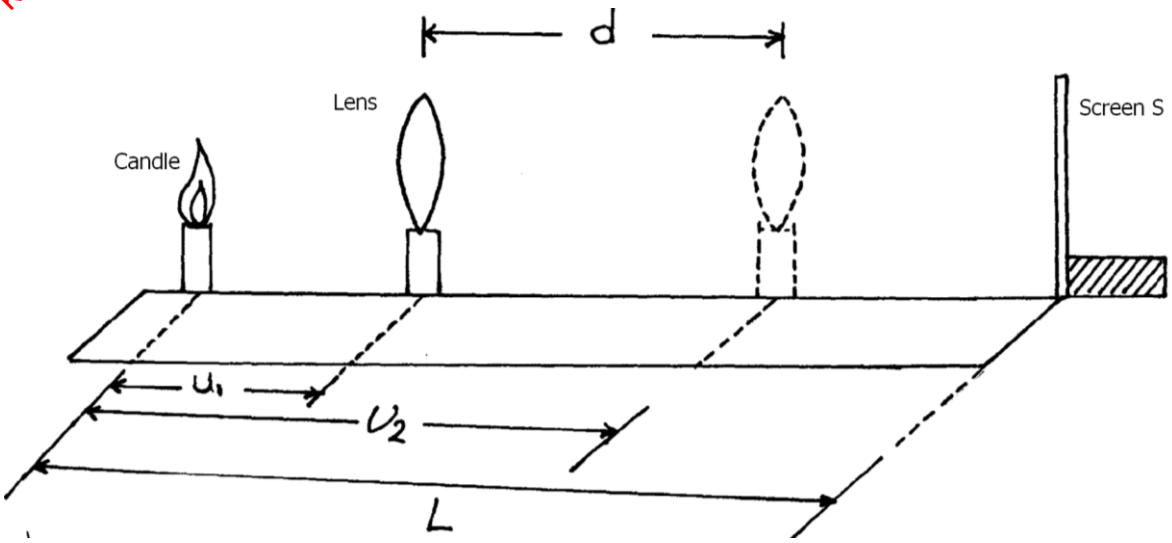
You are provided with the following:

- a metre rule
- a lens (Convex) mounted on a lens holder
- a candle
- a white screen

Proceed as follows

Part A

i) Set up the apparatus as shown in figure 1 below. (Ensure that the burning candle and the lens are in a straight line)



ii) With the candle placed at a distance L = 100cm from the screen, determine the position of a sharply focused magnified image of the candle on the screen by moving the lens towards the screen.

iii) Measure the distance U_1 between the lens and the candle

U_1 = …… cm. (1mk)

iv) Now move the lens towards the screen until you get a sharply focused diminished image. Measure the new distance, U_2 between the lens and the candle.

U_2 = ……cm (1mk)

v) Calculate the displacement d of the lens given that $d = U_2 - U_1$

d = ……..

……cm (1mk)

vi) Given that $f = \frac{L^2 - d^2}{4L}$, calculate the value of f. (2mks)

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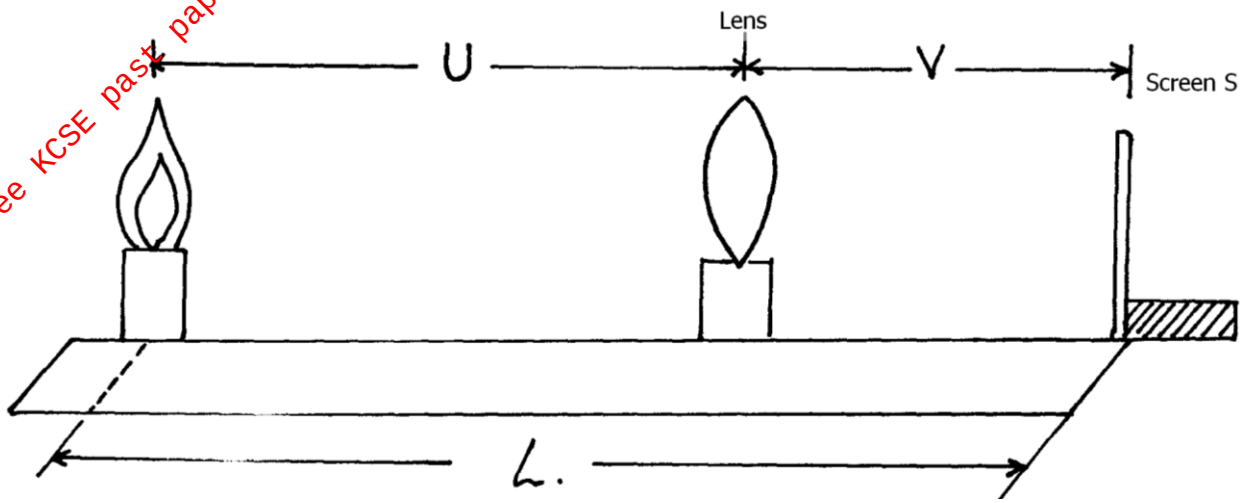
Part B

i) With the same set up, ensuring that L = 100cm, adjust the lens until you get a sharp diminished image on the screen. Measure the object distance U and the image distance V.



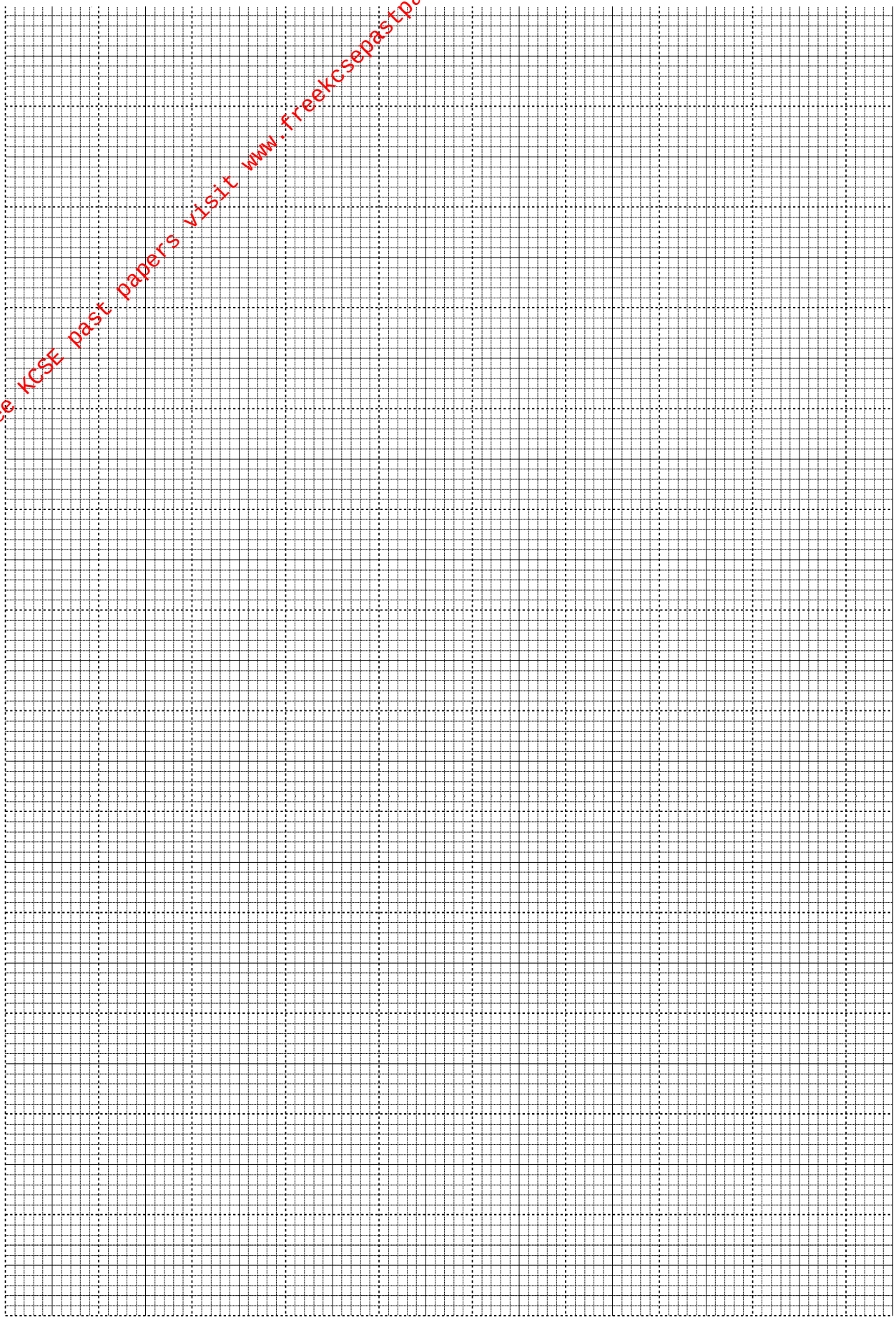
ii) Repeat the procedure in (i) with L = 95cm, 90cm, 85cm and 80cm each time recording the values of U and V and tabulating the results in the table I below.

Table I

L (cm)	100	95	90	85	80
U (cm)					
V (cm)					
$M = \frac{V}{U}$					

(5mks)

iii) Plot the graph of M against V (5mks)



iv) Determine the slope of the graph (3mks)

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v) Given that V = fm + f, determine the focal length, f of the lens from the graph above (2mks)

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Question 2

You are provided with the following

A measuring cylinder

Glycerine

Two rubber bands

One metre ruler

Steel ball bearing

A magnet

A micrometer screw gauge

A stop watch

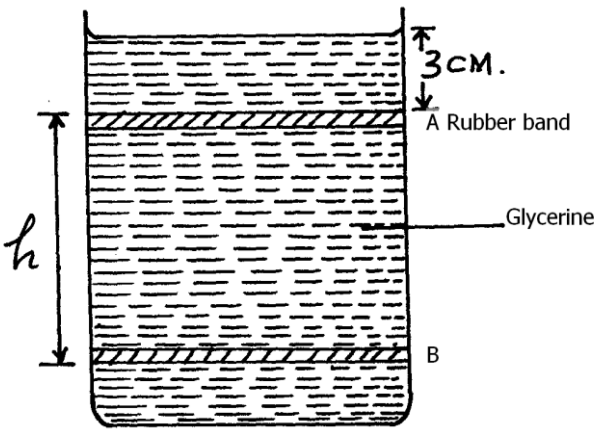
Proceed as follows.

a) Measure the diameter D of the steel ball using the micrometer screw gauge.

D = ……mm (1mk)

D = ……m (1mk)

b) Take a measuring cylinder and fill it with glycerine. Fix the bands A and B such that band A is 3cm from the surface of glycerine as shown in the fig. 2 below.



c) Adjust the lower rubber band B so that h = 35cm.

d) Release the steel ball from the surface of the liquid and obtain the time, t it takes to travel the distance h = 35cm. Record this value in the table 2 shown below.

e) Use the magnet provided to remove the steel ball from the liquid,

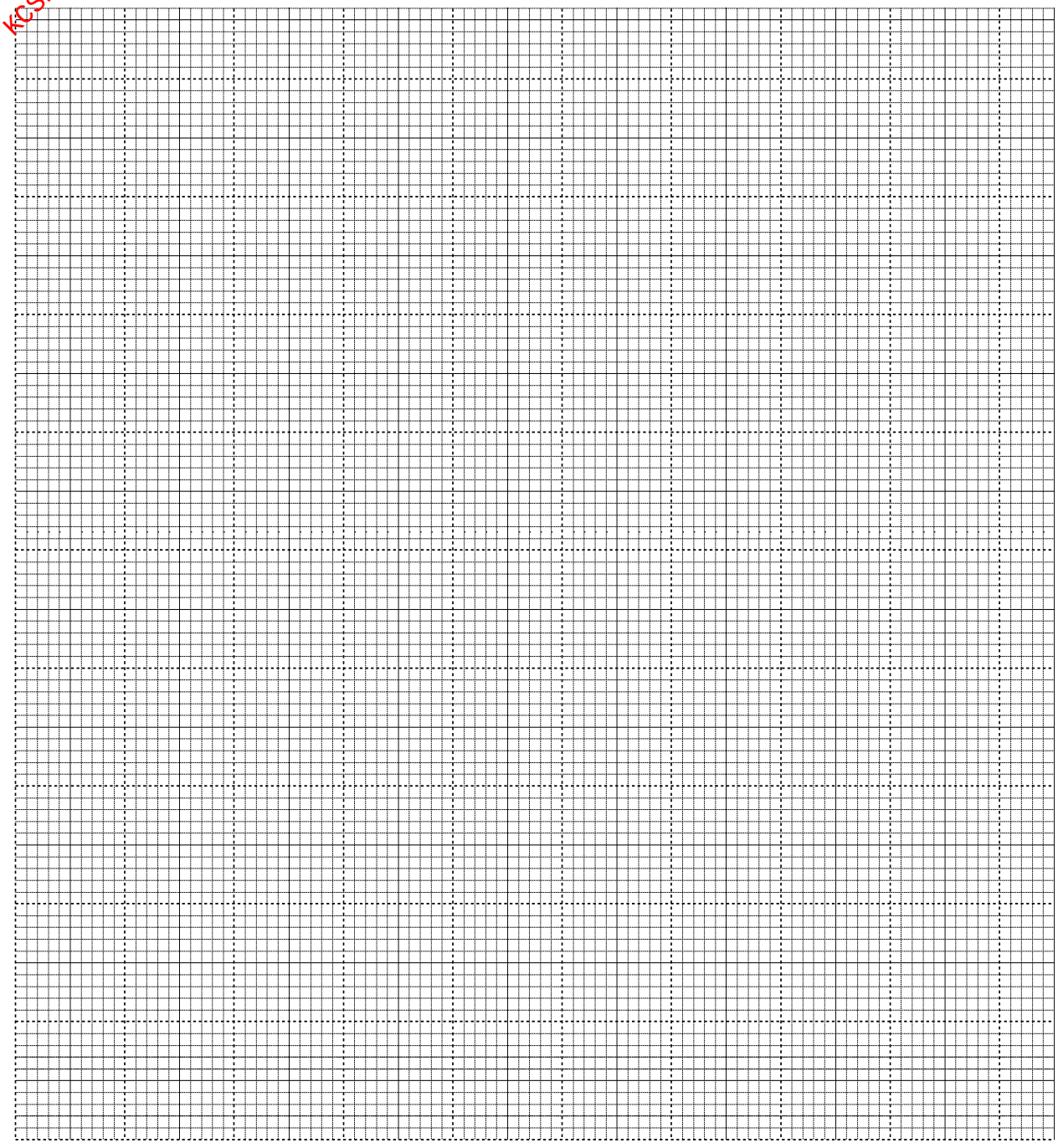
f) Repeat procedures (b), (c) and (d) for values of h given in the table below.

g) Record the values in the table below.

Table 2

h (cm)	35	30	25	20	15	10
t(s)						

h) i) Plot the graph of t (vertical axis) against h. (5mks)



ii) Determine the slope S of your graph (3mks)

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i) The equation of the graph is given by

$$K = \frac{D^2 g\,(\rho)(a-b)}{18h}$$

Determine the value of K given that (4mks)

g = 10m/s^2

a = 7.0 x 10^{3}kg/m^3

b = 1.26 x 10^{3}kg/m^3

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End