232/3
PHYSICS
PRACTICAL
PAPER 3
May/June 2014

EKSIKA JOINT EVALUATION TEST

Kenya Certificate of Secondary Education

This document must not be seen by the candidates whatsoever.

QUESTION 1

Each student should be provided with the following;

- Concave mirror focal length 15cm and a holder.
- Metre rule
- Candle (Non –drip) about 7cm long
- A voltmeter (0-3 or 0-5v)
- An ammeter (0 -1A)
- 10 Ω Carbon resistor
- A switch
- One dry cell and a cell holder
- Six connecting wires

QUESTION 2

Each student to be provided with the following;

- A triangular prism (60^0 x 60^0 x 60^0)
- A piece of soft board
- Four optical pins
- A sheet of plain paper
- Four thumb pins
- Metre rule
- Retort stand, clamp and boss
- 500ml beaker ¾ full of water
- 100g mass and 50g mass
- Three pieces of thread.
- Complete mathematical set

NAME……INDEX NO……

CANDIDATES' SIGNATURE……DATE…….

SCHOOL……..

232/3
Physics
Paper 3
May/ June 2014
Time: 2 hours 30 min

EKSIKA JOINT EVALUATION TEST

Kenya certificate of secondary Education (K.C.S.E)

Physics
Practical

INSTRUCTIONS TO CANDIDATES

- Write your name and index in the spaces provided above.
- Answer all the questions in the spaces provided in the question paper
- You are supposed to spend the first 15 minutes of the $2^1/_2$ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Marks are give for a clear record of the observations actually made, their suitability, accuracy and the use made of them
- Candidates are advised to record their observations as soon as they are made.

Question 1

For examiners use only

M	a	d	e	g	A (ix)	(iii)	(iv)	Total
Maximum score	1	6	5	1	1	1	3	20
Candidates score								

Question 2

	a	e	F(i)	(ii)	a	B(i)	(ii)	(iii)	Total

1. PART A

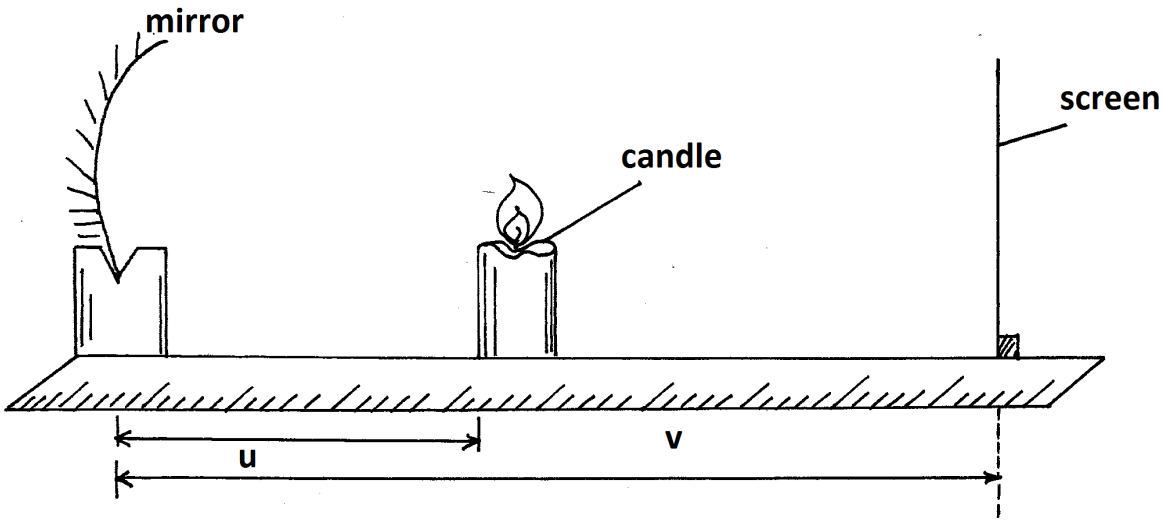
You are provided with the following apparatus

- Concave mirror and a holder
- Meter rule
- Candle (about 7cm)
- White screen

a) Determine the focal length of the mirror by focusing a distant object

f = ……(1mk)

b) Arrange the apparatus as shown in figure 1 below



c) Place the candle at a distance u =22cm from the mirror. Move the screen along the meter rule until a sharp image is formed on the screen. Measure and record the image distance V.

d) Repeat the experiments for other values of u and record your result in table 1 below..

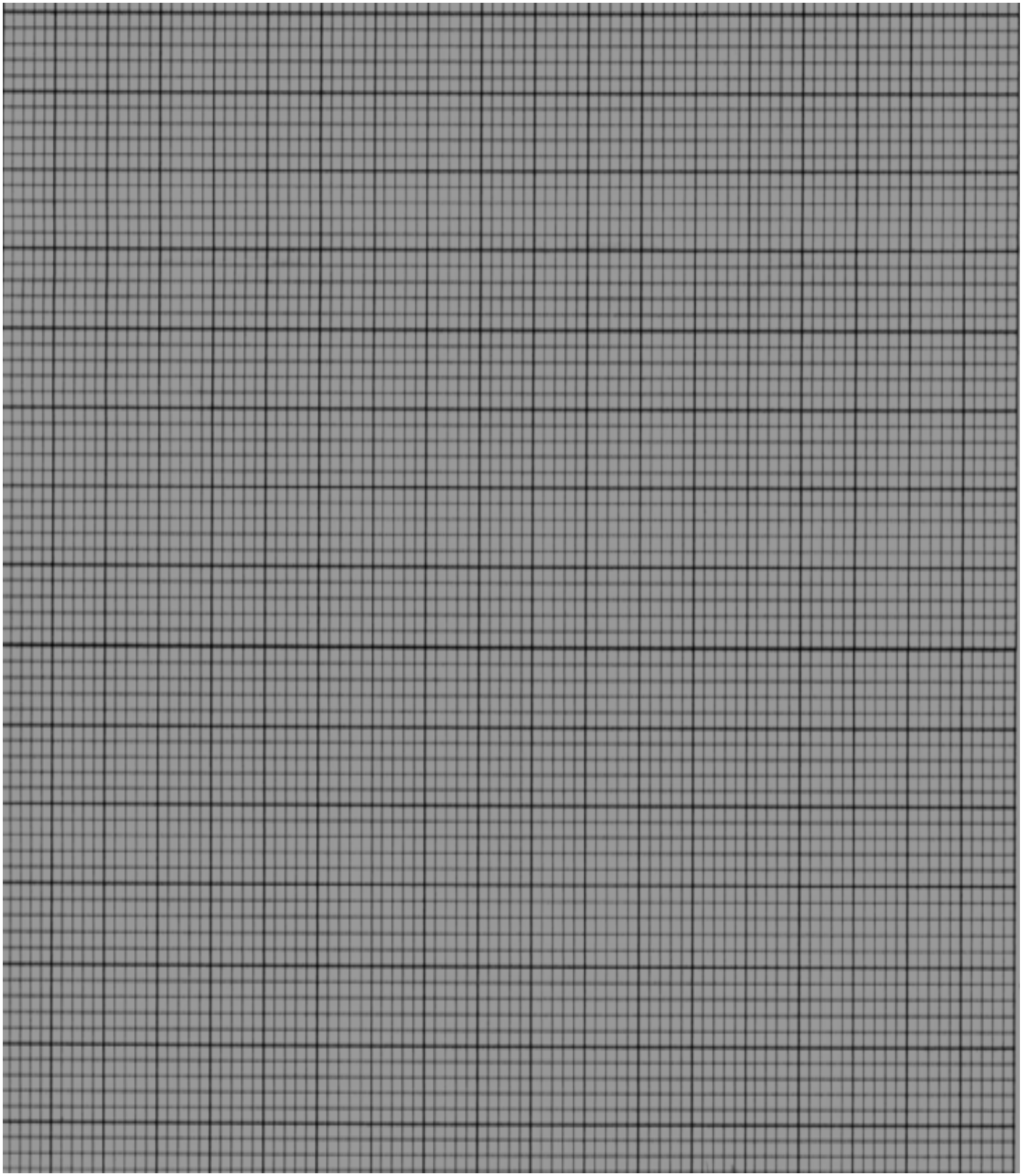
Object distance u(cm)	22	24	26	28	30	32	34
Image distance V (cm)							
Magnification (v/u)							

(6mks)

e) Plot a graph of magnification , m(y-axis)against image distance v (5mks)

f) Given that $m = {}^{v}/_{f} - 1$. Determine the focal length, f.

(3mks)



Part B

You are provided with the following apparatus

- A voltmeter 0-3 or 0-5v
- An ammeter (0-1A)
- 10Ω resister (fixed)
- A switch
- One dry cell and a cell holder
- Six connecting wires

a) (i) Connect the above apparatus as shown in the circuit diagram below with the switch s open.

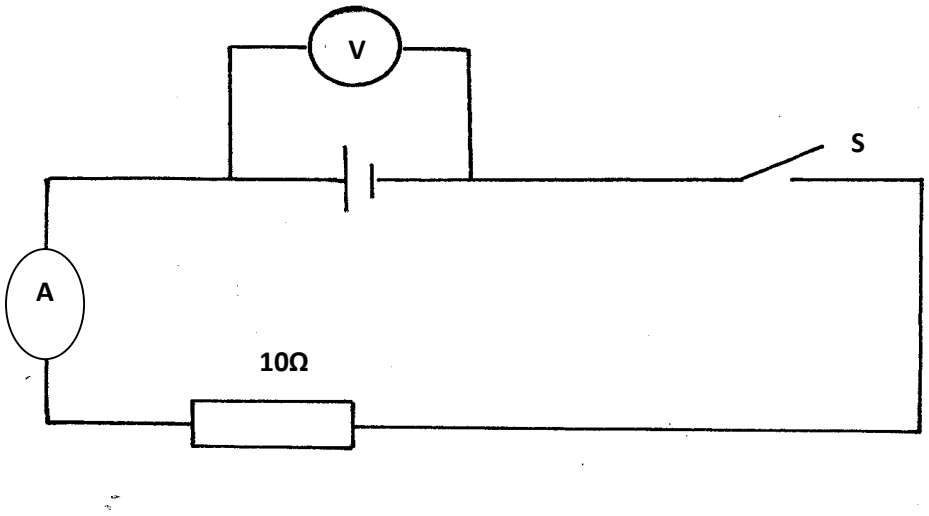


Figure 2

ii) With the switch S open, record E the voltmeter reading (1 mk)

E =

……

iii) Close the switch and record V, the voltmeter reading and I the ammeter reading

v = (1mk)

……..

I

=……

iv) Given that E –V = Ir, Find r the fro the dry cell. (2mks)

Queston 2

Part A

You are provided with the folowng

- A triangular prism
- A piece of soft board
- Four (4) optical pins
- A sheet of plain paper
- Thumb pins

Proceed as follows:

a) Place the plain sheet of paper on the soft board . Trace the triangular outline of the prism on the sheet of paper. Remove the prism and use a ruler to extend the three sides of the outline

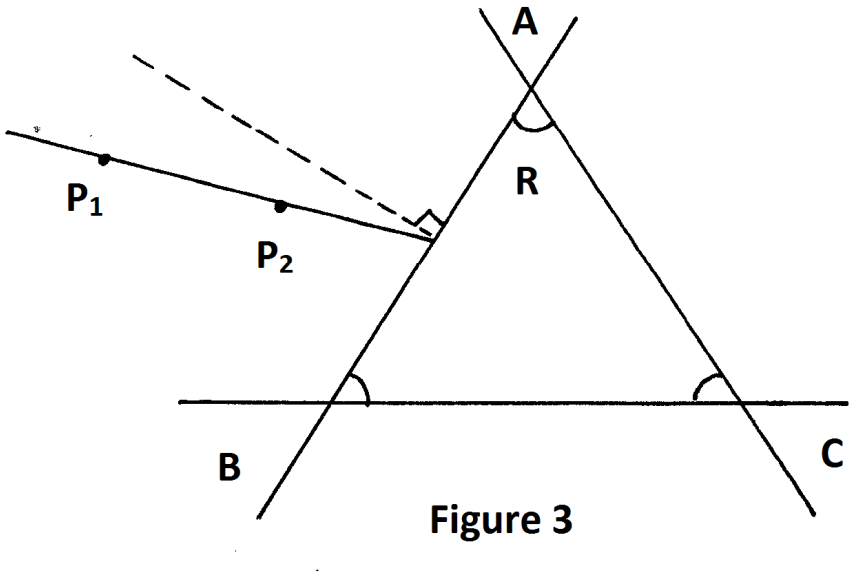


Figure 3

Use a protractor to measure the refracting angle R of the prism.

R =……(1mk)

b) On the side AB of the triangular prism outline,. Draw a normal at a point half-way between A and B. (This normal will be used for the rest of the experiment).

c) Draw a line at an angle i-30^0 to the normal. Stick two pins P_1 and P_2 vertically on this line. See figure 3 above.

d) Place the prism accurately on the outline. By viewing through the prism from side AC. Stick two other pins P_3 and P_4 vertically such that they are in line with the images of pins P_1 and P_2

Remove the prism and the pins. Draw a line joining marks made by P_3 and P4 . Extending this line to meet AC. See figure 4 below.

Measure and record in tale 2 below the value of angle o

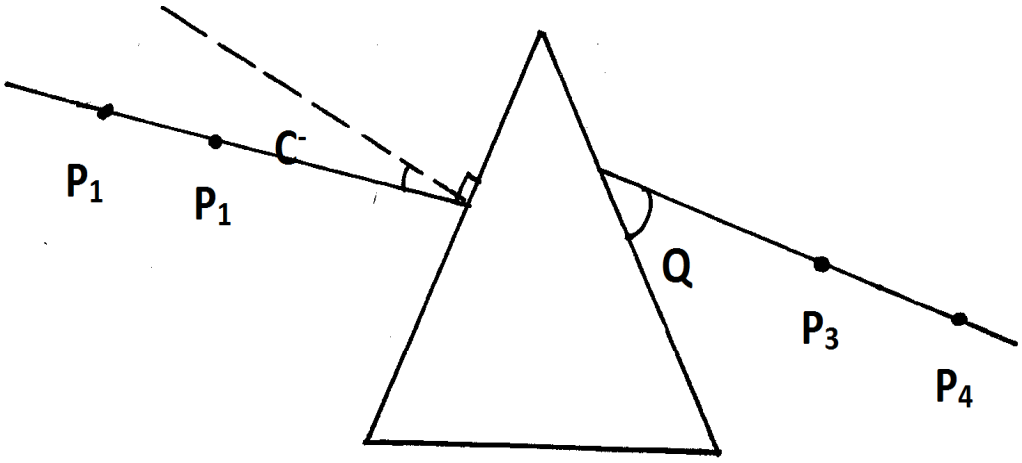


Figure 4.

e) Repeat the procedures in © and (d) above for other values of I shown in table 2. Complete the table.

Table 2

Angle of incidence i(degree)							
Angle ø (degree							
Angle f emergence E =90- ø(deg)							

(6mks)

F) On the grid provided plot the graph of the angle of the emergency E(yaxis) against the

Angle of incidence i

(5mks)

ii) Use the graph to find i(the angle of incidence at which i=E) (1mk)

(The teacher to collect the plane papers used for this experiment showing how the

øis got.).

PART B

You are provided with the following

- Meter rule
- Report stand, clamp and boss
- 500ml beaker ¾ full of water
- 100g mas
- 50g mass
- Three pieces of thread

Proceed as follows

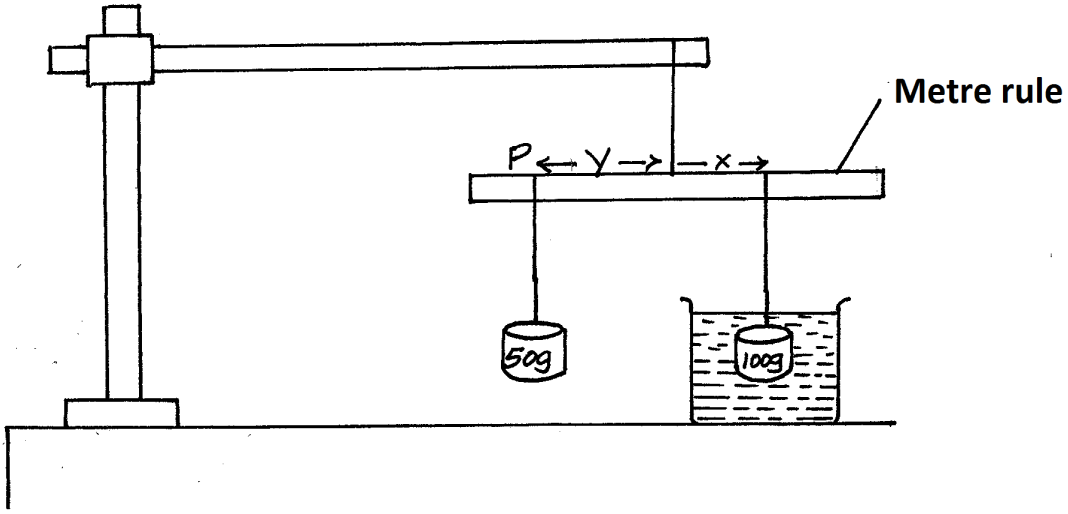
a) Balance the meter rule horizontally by suspending it from the stand and clap with one of the threads . Record the balance point G.
G =…….(cm) (1mk)

b) 9i) Suspend the 100g mass from the meter rule at a point x such that x = 10cm from pont G. With l00g mass completely immersed in water in the beaker, hang the 50 g mass from

the meter rule and adjust its position until the system is in equilibrium as shown in the diagram below.

Note the point of suspensuion P of the mass (50g)

P =……. (1mk)



ii) Find the value of Y.

Y……..(1mk)

(iii) Using the information above, calculate the up thrust on the 100g mass if the density of water is 1000kg/m^3. (3mks)

EKSIKA JET JOINT EVALUATION TEST

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232/3
MAY/JUNE 2014

MARKING SCHEME

1. a) f = 15 cm±2

b)

Object distance (u cm)	22	24	26	28	30	32	34
Image distance (vcm)	32.9	34.2	36.0	38.9	39.5	41.0	42.1
Magnification $\frac{v}{u}$							

- For u±0.2 cm values a ward 4 marks for all values within range. See accuracy above otherwise a ward ½ mark for each.
- For m award 2 marks for all values correct but 4- 5 values correct a ward 1 mark and less than 4 values correct a ward 0 marks.

c) Axes 1mk – both quantity and unit on V axis
Scale (1mk) simple and uniform
Plotting (2mks) atleast four correctly plotted points
Line (1mk) - line passing through atleast three correctly points.

d) Gradient/ slope = $\frac{1}{f}$

$$f = \frac{1}{slope}$$

$$= 15 \pm 0.2cm$$

PART B

ii) E=1.5±01
iii) V=1.4±0.1
iv) I = 0.12±0.01A
E-V=Ir
0.1 = 0.12 x 8

$$R = \frac{0.1}{0.12}$$

= 0.83Ω

Question 2

PART A

a) $R = 60^0 \pm 1^0$

On presence of plain paper showing how r is got

Angle of incidence (Deg)	30	35	40	45	50	55	60
Angle (degree)	14	22	34	39	43	48	51
$E = 90 - \theta$							

f) Axes 1mk – must be labeled
scale 1mk) – simple and uniform
plotting (1mk) – atleast four correctly plotted points curve (1mk)- passing through 3 points and smooth.

ii) $i^0 = 47^0$

PART B

a) $G = 50 \pm 0.5$cm

b) i) $P = 67.3 \pm 0.5$cm

ii) $Y = 67.3 - 50$
$= 17.3$ cm

iii) Clockwise moments = Anti clockwise moments
$(50x - 17.3) + u = (100x\ 10)$
$U = 1000 - 865$
$= 135$ N