NAME…….. **INDEX NO**……/……

SCHOOL…… **DATE** ……...

CANDIDATE'S SIGNATURE……..

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

BUTULA DISTRICT FORM FOUR JOINT MID YEAR EXAMINATION-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**, **Index Number** and **School** in the spaces provided above.
2. You are advised to spend the first **15 minutes** of the hours given reading the entire question paper
3. Answer **all** the questions in the spaces provided.
4. Marks are given for **clear record of the observations** actually made for their suitability, and accuracy for the use of them.
6. Candidates are advised to **record** their observations as soon as they are made.
7. **KNEC** mathematical tables and **Non-programmable silent electronic calculators** may be used.

FOR EXAMINER'S USE ONLY

Question	Maximum Score	Candidate's Score
1		
2		
TOTAL		

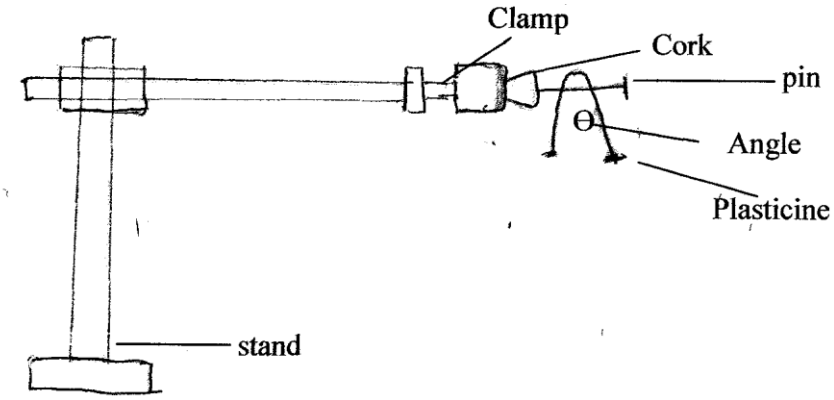
This paper consists of 8 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing.

QUESTION 1

You are provided with the following apparatus:

- clamp
- boss
- stand
- optical pin
- copper wire (15 cm long)
- protractor
- two pieces of plasticine
- cork

(a) Set up the apparatus as shown in the diagram below



(b) Bend the wire in the middle so as to make an angle of 50^0. Attach the two small pieces of plasticine at both ends of the bent wire as shown in the diagram.

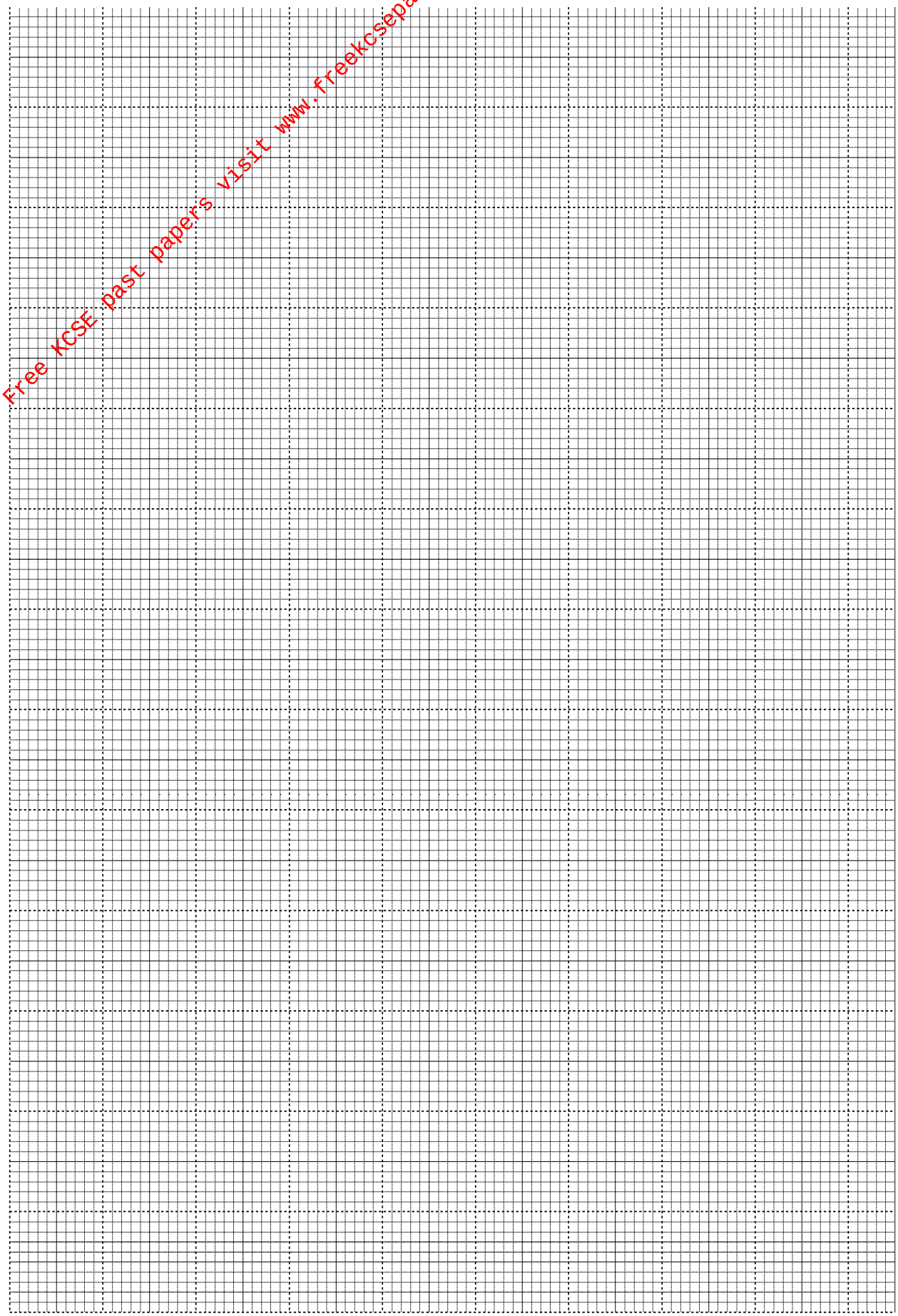
(c) Place the bent wire on the optical pin and give a small horizontal displacement. Take the time for 10 complete oscillations and record in the table below.

(d) Repeat the procedure above for other values of 0 and complete the table below.

(9 mks)

Angle θ	**Time't' for 10 oscillations (s)**	**Period T (s)**	**Frequency f (Hz)**	**F^2 $(Hz)^2$**	$Cos\left(\frac{\theta}{2}\right)$
50 60 70 80 90 100					

(i) On the graph paper provided, plot a graph of f2 (y-axis) against $Cos\left(\frac{\theta}{2}\right)$ (5 mks)



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

(ii) The equation for the oscillation of the wire is given by the formula:

$$f^2 = \frac{150}{4\prod^2 L} Z \cos\left(\frac{\theta}{2}\right)$$

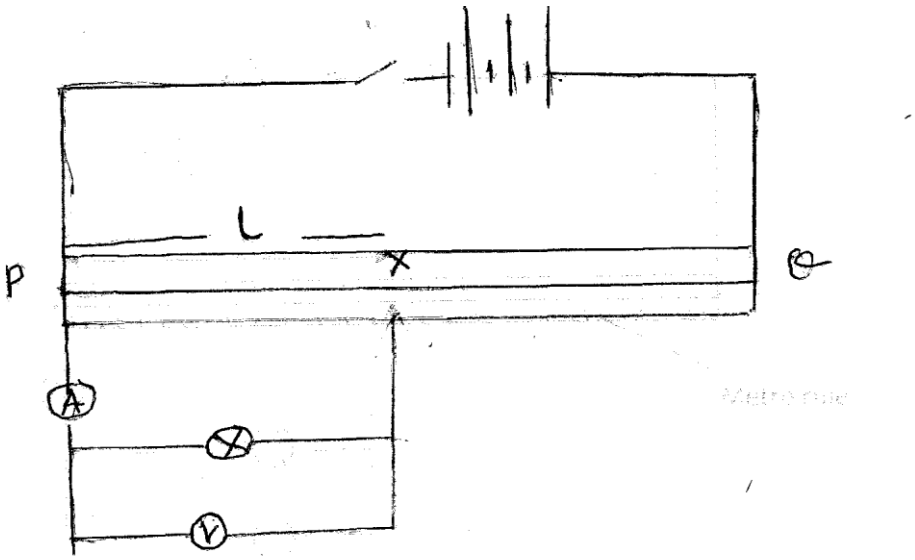
Given that L = 0.15m, use the gradient of the graph to determine the value of Z. (3 mks)

QUESTION 2

You are provided with the following

- A 100cm nichrome wire mounted on a metre rule **(Swg 32)**
- An ammeter
- 3 dry cells
- A cell holder
- A bulb of 2.5v
- Eight connecting wires (four with crocodile clips at one end)

a. Connect the apparatus provided as shown in the circuit



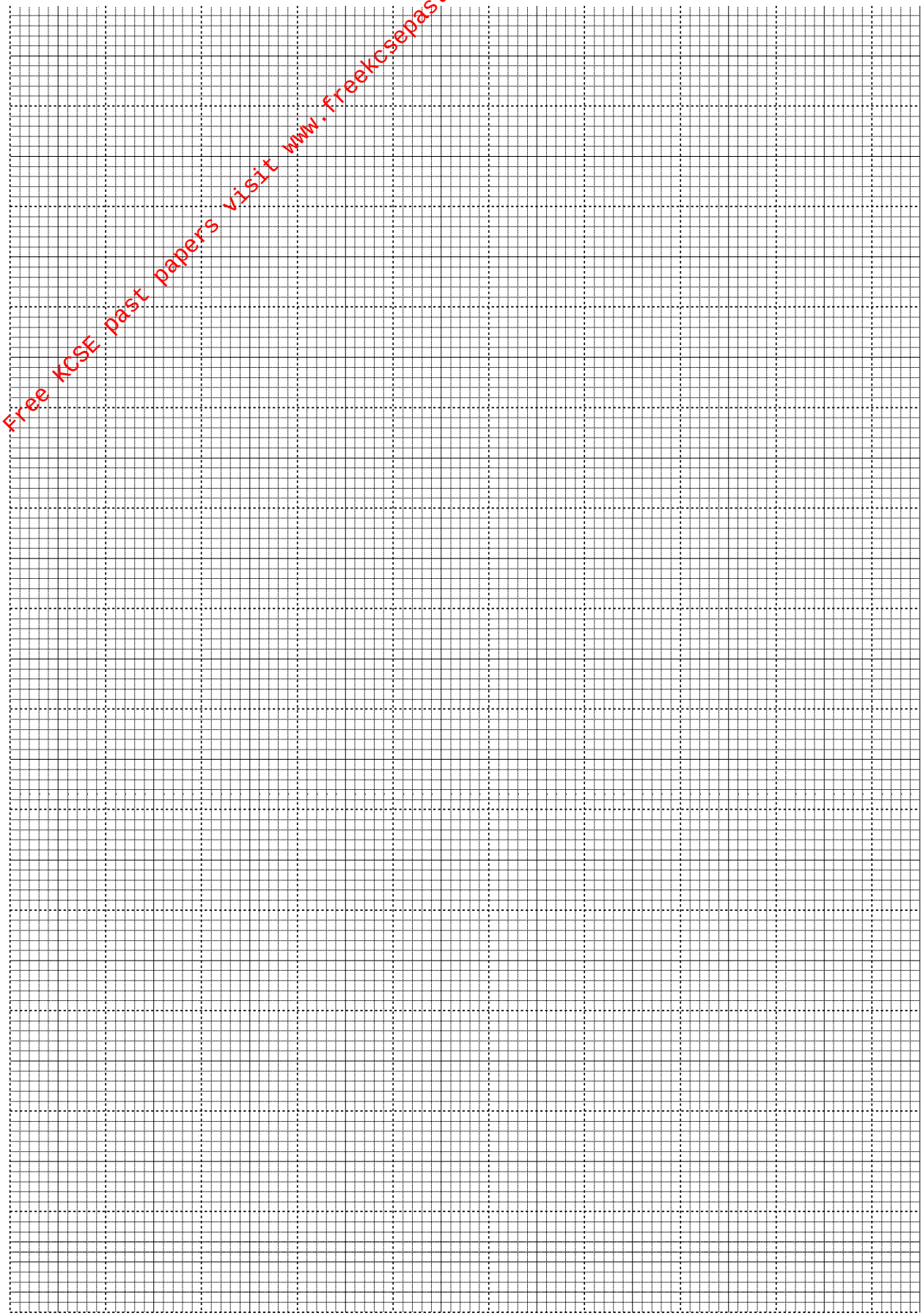
b. Place the sliding contact at **L =20cm** from **P** then switch on and take both current and voltage reading. Record the reading in the table below.

c. Repeat the above experiment by placing the sliding contact X at each point 40cm, 60cm, 70cm and 80cm from P. Record your reading and complete the table below.

Length L (cm)	I(A)	P.D (V)	I (mA)	P.D (Mv)	Log I (mA)	Log V (mV)
50 60 70 80 90 100						

(8 mks)

d. Plot a graph of **Log I** against **Log V** (5mks)



e. Determine the slope of the graph. (3 mks)

f. The relationship between I and P.D is given by the equation

Log I = n log v + log k where **k** and **n** are constants. Determine using the graph the value

i. **k** (2 mks)

ii. **n** (2 mks)