Name:……...……Index No…….……...

232/1
PHYSICS
THEORY
PAPER 2
JULY/AUGUST 2014
TIME: 2 HOURS

Candidate's Signature:…….…….……

Date:…….…….....

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MIGORI SUB-COUNTY JOINT EVALUATION EXAM

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

232/2
PHYSICS
Paper 2
2 hours

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided.
- Mathematical tables and non-programmable calculators may be used.
- This paper consists of section A and section B.
- Attempt all the questions in the spaces provided.
- ALLOW working MUST be clearly shown.

For Examiners Use

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 – 12	25	
B	13	11	
	14	12	
	15	10	
	16	10	
	17	18	
	TOTAL	**80**	

This paper consists of 9 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

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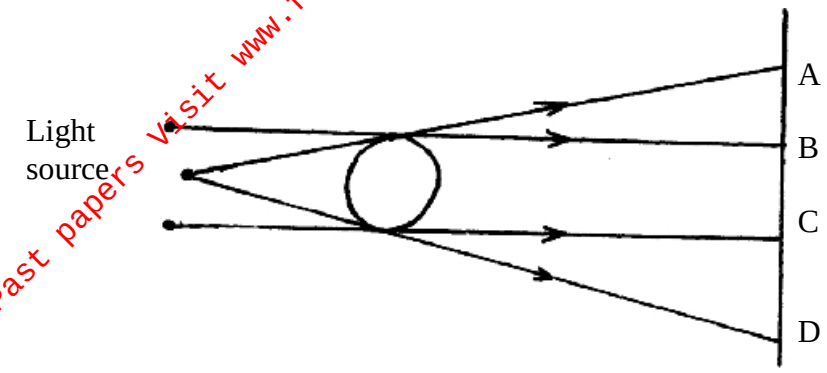
SECTION A (25 MARKS)

1. The figure below shows three point sources of light with an opaque object placed between them and the screen.



State and explain the nature of the shadow formed along BC (2mks)

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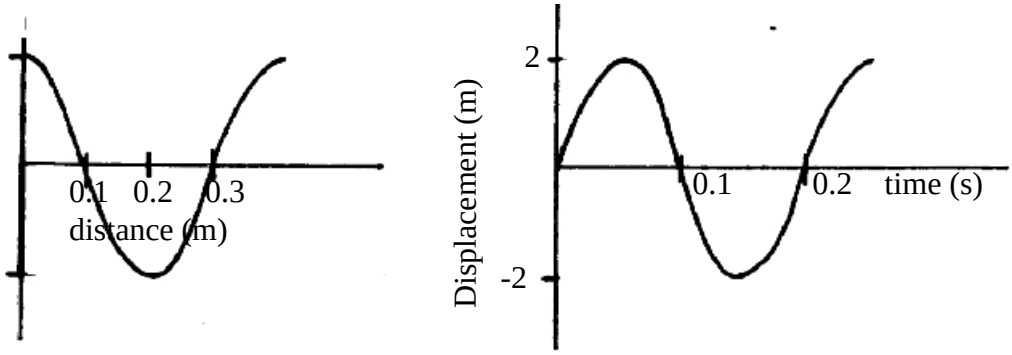
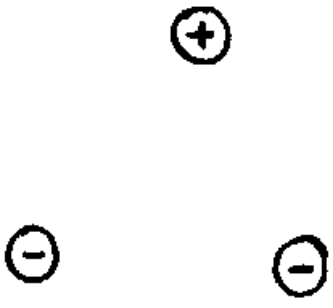
2. The graphs in the figure below represents the same wave



Determine the velocity of the wave. (3mks)

3. Draw the field patterns around the charges shown below. (2mks)



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4. A man standing between two parallel walls fire a gun. He hears an echo after 1. Seconds and another one after 2.5 seconds. How far are the walls.(take speed of sound in air = 330m/s) (3mks)

5. How would you achieve a P- type semi-conductor from an intrinsic semiconductor. (2mks)

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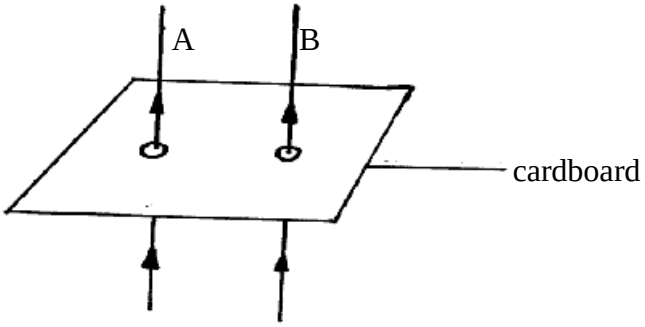
6. The figure below shows two condunating wires A and passing through a horizontal piece of cardboard.



(i) Sketch the resultant magnetic filed patterns when the current of high magnitude are flowing in both wires A and B (1mk)

(ii) If the current in B were reversed, state how the reversed will affect the wire conductors. (1mk)

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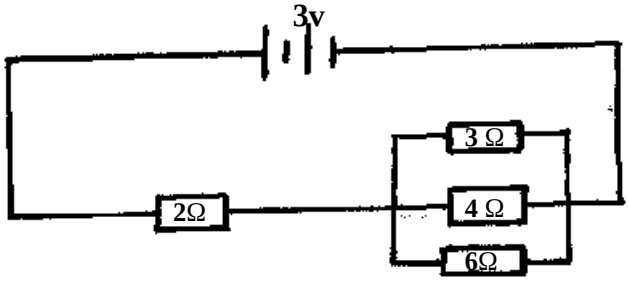
7. The figure below shows a resistance network in a circuit.



Calculate the effective resistance b in the circuit and hence the current through the 6Ω resistor.(3mks)

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8. Arrange the following in order of increasing frequency visible light, infrared radiation, x-rays, ultra violet radiation and radio waves. (1mk)

……

……

9. Give the difference in the defection of a cathode ray oselloscope and television set (1mk)

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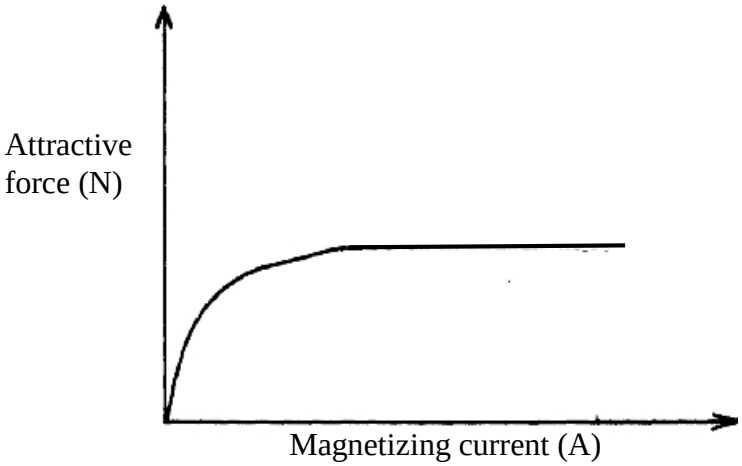
10. The graph in the figure below shows the relationship between attractive forces of an electromagnet and the magnetizing current.



Give reasons for the shape of the graph using the domain theory (1mk)

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11. Your house is supplied with 240v from a power source which is fitted with a 13A safe fuse. What is the maximum number of 60W bulbs that can be fitted in the house. (2mks)

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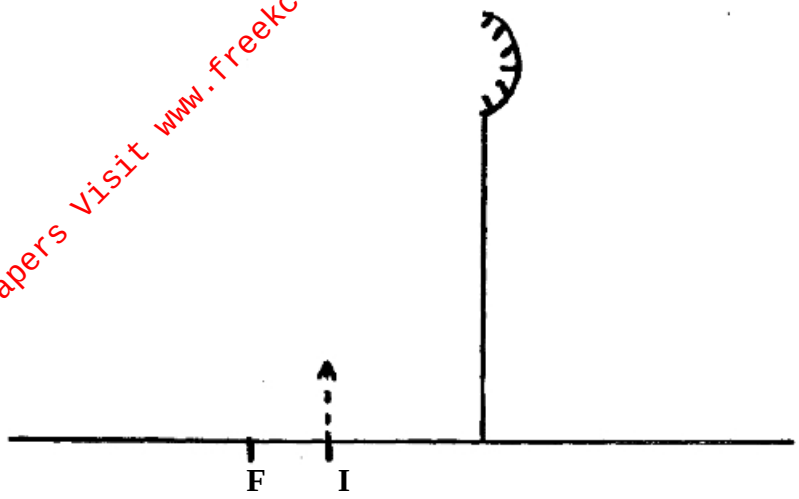
12. The figure below (drawn to scale) shows the image I formed by a convex mirror. F is the virtual principal focus of the mirror.



Using a ray diagram locate the position of the object. (3mks)

SECTION II

13. (a) The following represents a nuclear reaction involving the nuclide polonium $^{214}_{84}Po$

$$^{214}_{84}Po \xrightarrow{m} {}^{214}_{82}Pb \xrightarrow{n} {}^{214}_{83}Bi$$

Identify (2mks)

(i) m

……

(ii) n

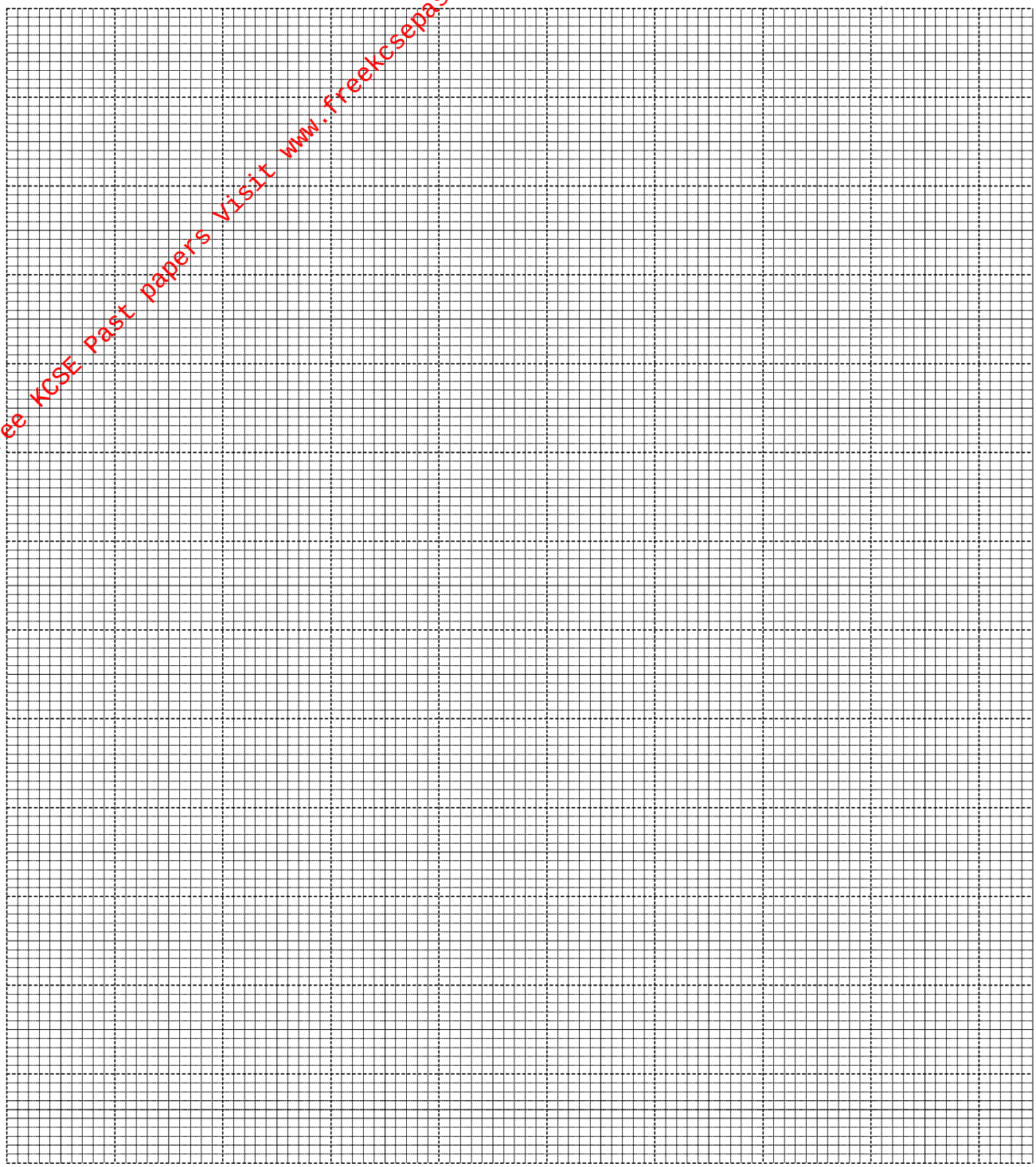
……

(b) The table below shows a results obtained from a gigermuller tube when a radioactive sample was placed near it

Time (min)	0	1	2	3	4	5	6
Count per min	1050	996	928	840	721	559	332
Correct count							

i) Given that the background radiation was 30 counts per minute fill in the blank spaces in the table (1mk)

ii) Plot a suitable graph of correct count (5mks)



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(iii) From the graph determine the half life of the sample. (2mks)

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14. a) Differentiate between the mianic emission and photo electric emission (2mks)

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b) The figure below whose a graph of stopping potential Vs against frequency in an experiment on photoelectric effect given that $eVs = hf - hf_o$ where e is the charge of an electron (e = 1.6 x 10-19c)

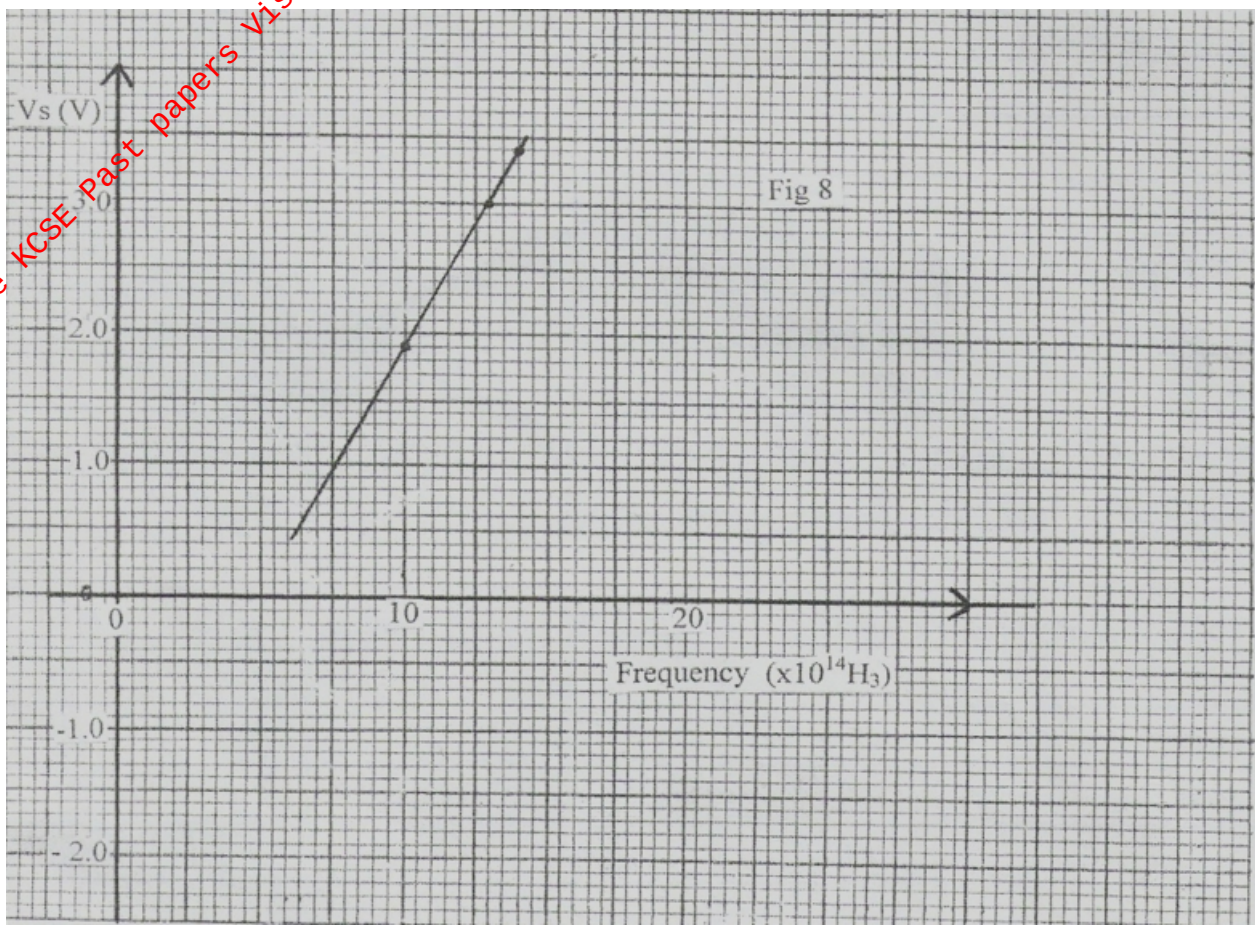

Fig 8

i) Determine

(i) threshold frequency (2mks)

(ii) Planck's constant (h) (4mks)

(iii) Work function Wo for the metal in joules (3mks)

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15. (a) State the Lenz's law of electromagnetic induction. (1mk)

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(b) A step down transformer supplies 240v a.c mains with a transmission current of 0.5 A. the number of turns in the primary coil is 1200 turns and the number of turns in the secondary coil is 60. Calculate

(i) The output voltage of the transformer. (3mks)

(ii) The output current (when there are no energy losses) (3mks)

(c) Describe how two causes of energy losses in a transformer can be minimized. (4mks)

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16. (a) what is meant by the term "critical angle' (1mk)

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(b) State **two** conditions for total internal reflection to occur. (2mks)

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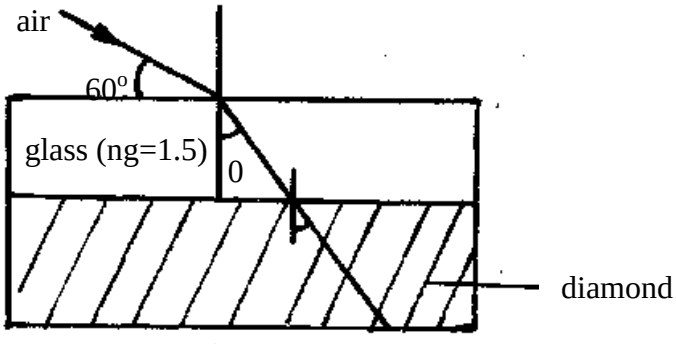
(c) Draw the route taken by the ray incident in the optical fiber shown below.

(d) The figure below shows a ray of light incident on an air-glass interface. The glass is placed on diamond of refractive index 2.4



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(i) Calculate the size of angle θ (4mks)

(ii) Determine the size of angel β (3mks)

(e) Determine the critical angle for the diamond – glass interface. (2mks)

17. (a) Define the term principal focus as applied in thin lenses. (1mk)

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(b) A lens forms a clear image on a screen when the distance between the screen and the object is 80cm, the image is 3 times the size of the object.

(i) Explain the type of lens used. (2mks)

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(ii) Determine the distance of the image from the lens. (3mks)

(iii) Determine the focal length of the lens. (3mks)

(c) Find the magnification when an object is placed 30cm from a concave mirror of focal length 20cm.

(2mks)

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