

NAMEINDEX NO.....DATE.....

SCHOOL.....SIGNATURE.....

PHYSICS

232/2

JULY/AUGUST 2010

2 HOURS

LAICOMET

Kenya Certificate of Secondary Education 2010

232/2

PHYSICS

JULY/AUGUST 2010

INSTRUCTIONS TO CANDIDATES

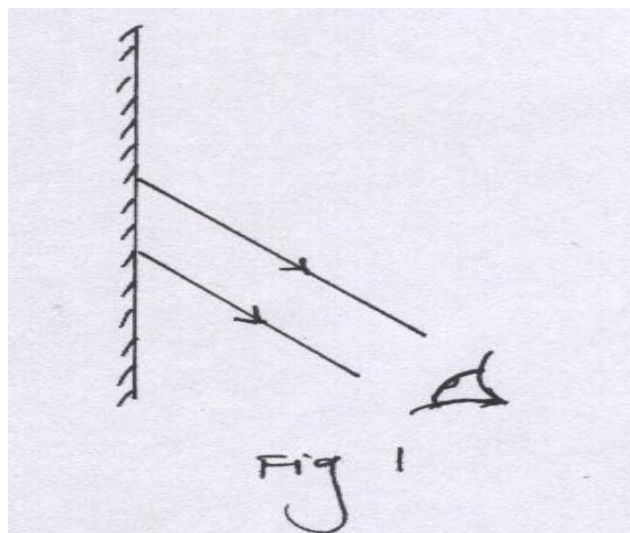
- ❖ Write your name and index number in the spaces provided above.
- ❖ This paper consists of **TWO** section :A &B
- ❖ Answer all the questions in the spaces provided.
- ❖ All working **MUST** be clearly shown
- ❖ Mathematical tables and calculators may be used .
- ❖ Take speed of light to be $3.0 \times 10^8 \text{ m/s}$

For examiners' use only

Section	Question	Max.score	Candidate's score
A	1 – 11	25	
B	12	11	
	13	10	
	14	12	
	15	10	
	16	12	
	TOTAL	80	

SECTION A (25 mks)

1. By ray construction, show the position of the image and object in the diagram below. (3mks)



2. A plastic rod is rubbed with cotton and it is observed that the rod acquires a negative charge. The same cotton is brought near the cap of positively charged electroscope.

i State the observation made on the leaf of the electroscope. (1mk)

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ii Explain the observation (2mk)

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3. The diagrams in figure 2a and 2b below shows two circuits in which identical dry cells and identical bulbs are used.

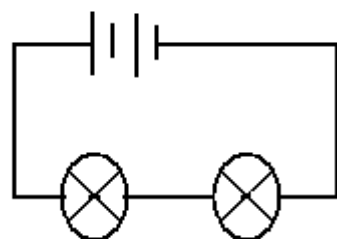


Fig 2a

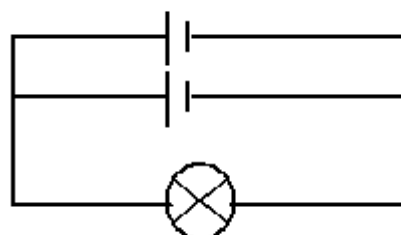


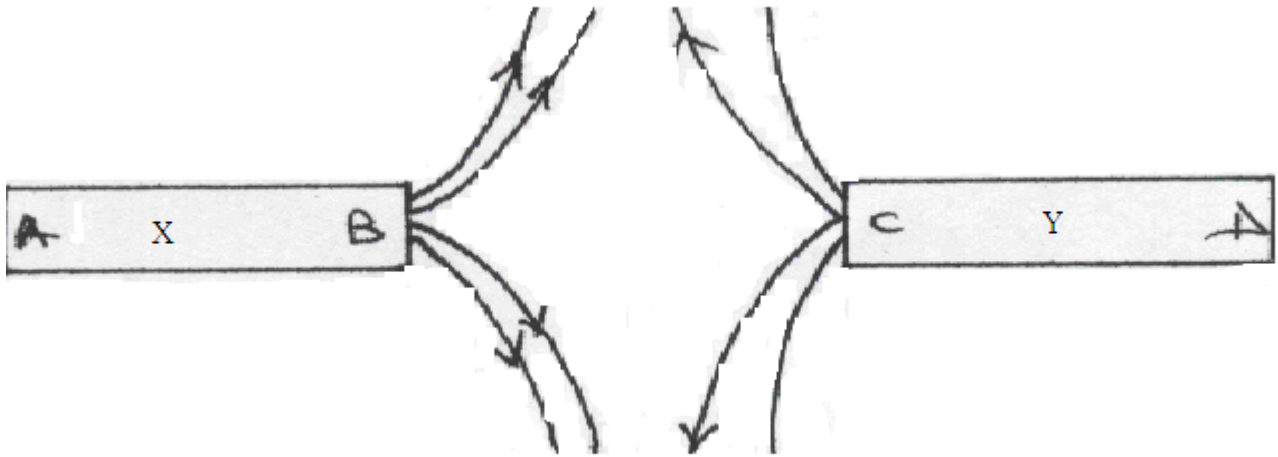
Fig 2b

Explain why the bulb in fig 2b will be brighter than both bulbs in fig 2a.

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4. The diagram below shows two bar magnets X and Y and the magnetic pattern



i Identify B and C (1mk)

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ii State with a reason which magnet X or Y is stronger (1mk)

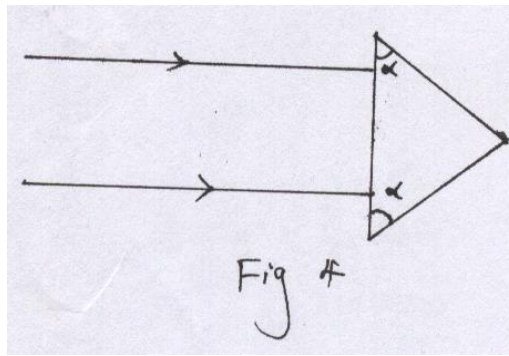
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5. An object is placed 15cm in front of convex lens of focal length 10cm. Calculate the image distance (2mk)

6. State two factors that affect the speed of sound in air (2mk)

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7. Two rays are incident on the base of a triangular prism whose angles are $\alpha = 30^\circ$ as shown in the figure 4 below. If the refractive index is $n = 1.414$, determine the angle between the two emergent rays. (3mks)



8. You are provided with three resistors of 3Ω , 2Ω and 1Ω . Arrange the resistors in the circuit so as to have minimum resistance. Determine the effective resistance in the above circuit (3mks)

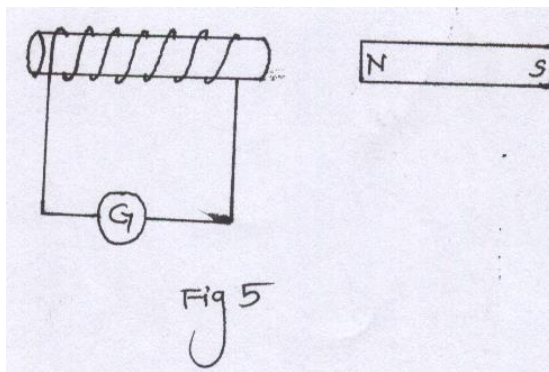
9. State the two functions of anode in the C.R.O (2mks)

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10. The figure 5 below shows ends of a solenoid connected to a galvanometer as shown below and a magnet plunged into the coil.



Show the direction of induced current (2mks)

11. Complete the following nuclear reaction by identifying the values of x and y.



SECTION B (55MKS)

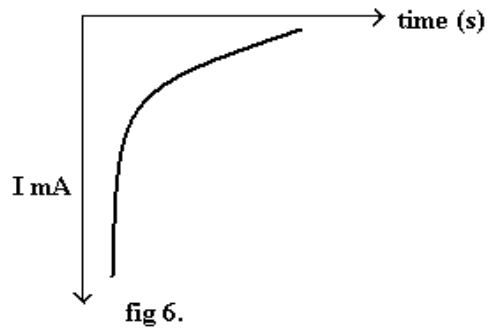
12. a Define capacitance of capacitor (1mk)

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b. State and explain two factors affecting capacitance of parallel plate capacitor (4mks)

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c. The graph shows the variation of current against time as the capacitor is being discharged

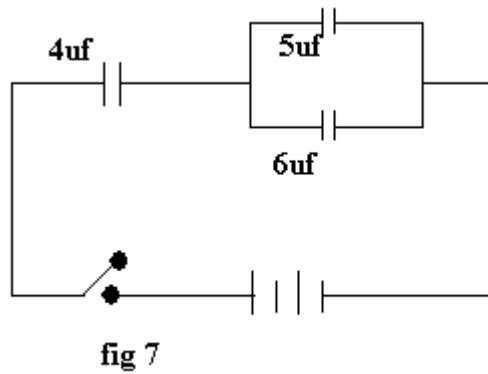


Explain the graph

(1mk)

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d. The diagram below shows 3 capacitors of 4uf, 5uf and 6uf connected to 12v d.c . supply



Find

ii The effective capacitance

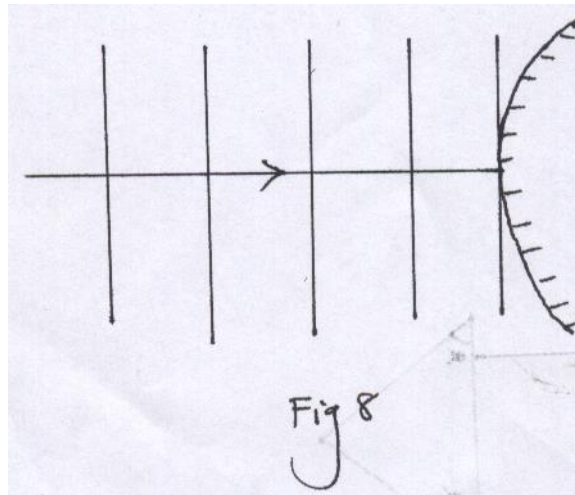
(3mks)

ii The charge stored in the 4uf capacitor

(2mks)

13. a The figure 8 below shows straight wavefronts incident on convex reflector.

Complete the diagram to show the reflected wavefronts. (2mks)

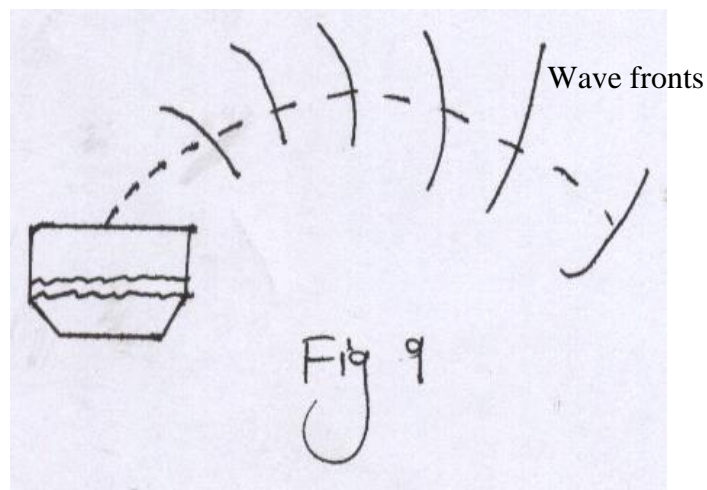


b. Narrow slits cannot be used to demonstrate interference of sound waves.

Explain (2mks)

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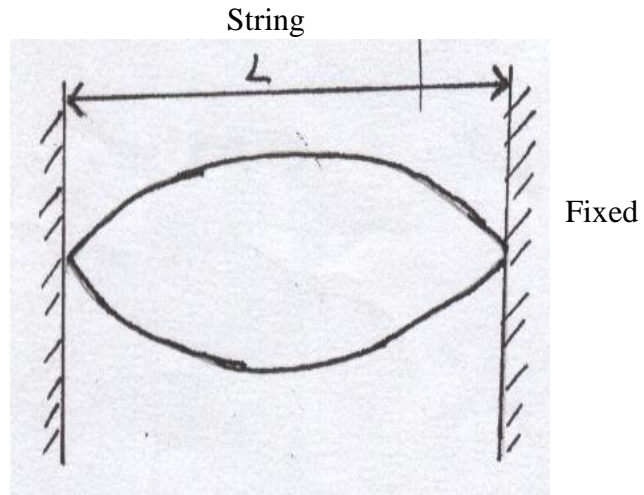
c. The figure 9 below shows sound waves emitted by a drum struck.



Explain why the wavefronts are directed to the ground (2mks)

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d. The figure 10 below shows a vibrating string fixed at the ends.



If the vibration has a frequency of 200Hz and its wave velocity is 200m/s

Calculate

i Wavelength of the wave (2mks)

ii Length of the string (2mks)

14. A metal surface is illuminated with radiations of different wavelength and the kinetic energy of the photoelectrons ejected by each wavelength is recorded in the table below.

Wavelength of ($\times 10^{-9} m$)	415	387	368	345	325	315
Energy ($\times 10^{-19} \tau$)	0.5	0.8	1.1	1.5	1.75	2.00
Frequency of (Hz)						

- a. Complete the table by filling the frequency (3mks)
- b. Plot a graph of energy (y – axis) against frequency on the grid paper provided (5 mks)

GRAPH

c. Use the graph to find

i Work function (1mk)

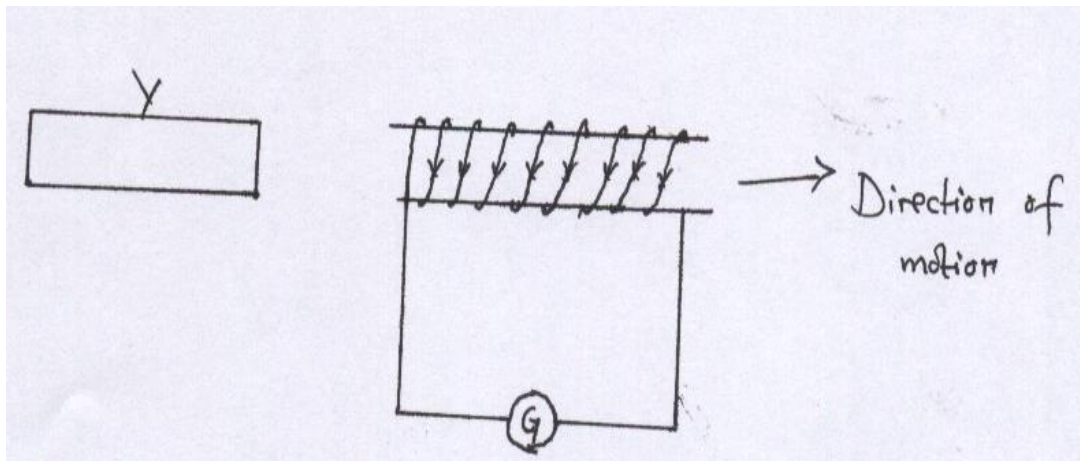
ii Planks' constant (1mk)

iii Stopping potential when wavelength is $315 \times 10^{-9} m$ (2mks)

15.a) State Lenz's law of electromagnetic induction (2mks)

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b) A coil x is moved quickly away from the end of a stationary Magnet Y and current flows as shown in Fig.11



Show the polarity of Y (1mk)

c) State the essential condition for e.m.f to be induced in a conductor (1mk)

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d) A transformer has 800 turns in its primary winding and 40 turns in the secondary winding. The alternating e.m.f connected to the primary is 240v and the current is 0.2 A

Find

i Secondary e mf (3 mks)

ii The power in the secondary transformer if it is 90%efficient (3mks)

16. a) A glass prism of refractive index 1.5 calculate the critical angle of this glass prism (3mks)

b) In an experiment to determine refractive index of water, a black line is painted on the bottom of a tall glass container which is then partially filled with water. The black line appears closer than it is really.

The following results were recorded from the experiment

Real depth (cm)	8.1	12.0	16.0	20.0
Displacement (cm)	2.2	2.9	4.0	4.9
Apparent depth(cm)				

i. Complete the table for apparent depth row (2mks)

ii. Plot a graph of real depth against apparent depth on the grid provided (5mks)

GRAPH

iii. Determine the refractive index for the water (2 mks)