

Name.....School.....Adm No.....  
Candidate's signature.....  
Date.....

232/2  
PHYSICS  
PAPER 2  
Theory  
2013  
2 hours

MARANDA, BUNYORE ENROLMENT EXAMINATIONS  
Kenya Certificate of Secondary Education (K.C.S.E)  
PHYSICS  
Paper 2 (Theory)  
2 Hours

**Instructions to candidates**

- Write your name and Adm No in the space provided above.
- Sign and write date of examination in the space provided above.
- This paper consists of two sections, A and B.
- Answer all the questions in section A and B in the space provided.
- All working must be clearly shown.
- No-programmable silent electronic calculators and KNEC mathematical tables may be used.

**For Examiner's Use Only**

SECTION	QUESTION	MAX.SCORE	CAND.SCORE
A	1-10	25	
B	11	09	
	12	10	
	13	12	
	14	11	
	15	13	
	Total score	80	

This paper consists of 10 printed pages.  
Candidates should check question paper to ensure that all that all pages are printed as indicated and no questions are missing.

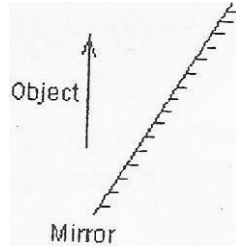
**SECTION 1 (25MARKS)**

**Answer all the questions in the section in the space provided.**

1. (a) What property of light are applied in the information of images by pinhole camera. (1mk)
- .....

- (b) Explain why inside of pinhole camera is painted black? (1mk)
- .....

2. The diagram below shows the object in front of a plane mirror's accurate ray diagrams locate the position of the image.



3. (a) State the advantages of double stroke method over single stroke method of magnetization. (1mk)
- .....

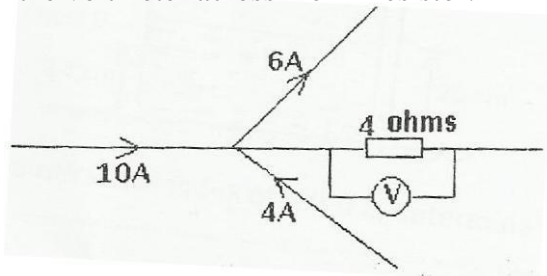
- (b) Using a double stroke method a student produced a magnet with consequent poles as shown. Draw the magnetic pattern of the magnet.



4. The electromotive force of a simple cell reduces even when the cell is not in use. Explain (2mks)
- .....

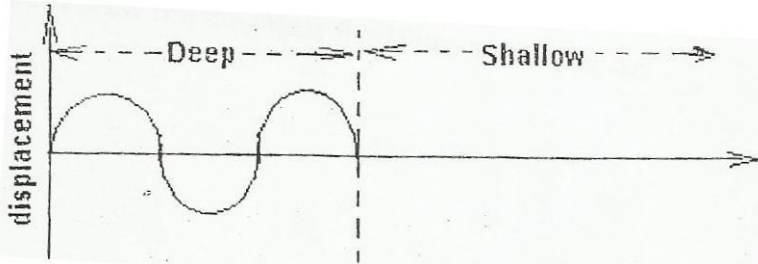
In the space below draw a circuit diagram of a three cell torch. (2mks)

6. The diagram below show four wires carrying electric current. Determine the reading of the voltmeter across 4 ohm resistor.



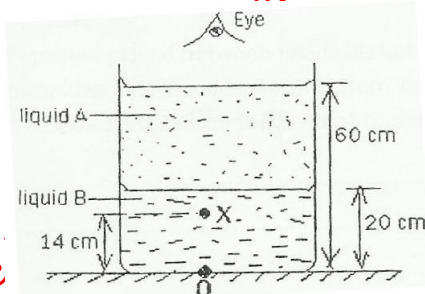
7. Two capacitors C1 and C2 are in series. The total charge of the capacitors is  $1.8 \times 10^{-4}$  coulombs and the p.d across two capacitors is 150v. If the value of C1 is 2 $\mu$ f determine the value of C2. (3mks)

8. The figure below shows a progressive wave incident on a boundary between deep and shallow region.



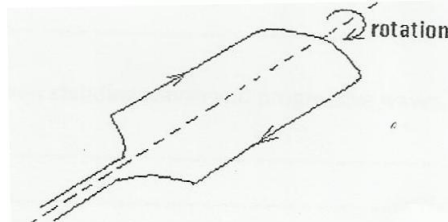
- (a) Complete the diagram to show what is observed after the boundary. (Assume no loss of energy). (2mks)  
 (b) Explain the observation in (a) above (1mk)

9. The diagram below shows an object o at the bottom of beaker filled with two immiscible liquids A and B .The observer above the beaker sees its image at point X inside liquid B.



- If the refractive index of A is 0.8, determine the refractive index of B. (3mks)

10. The figure below shows a coil carrying a current in a magnetic field.



- On the same diagram draw the magnetic field lines across the coil. (1mk)

**SECTION B (55 MARKS)**

11. (a) Define the term wavelength. (1mk)

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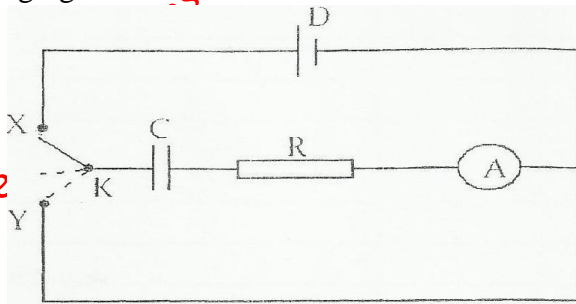
(b) Loudspeaker placed between two wall A and B is sending out constant wave pulses. Determine how far the loudspeaker is from wall B if it is 100m from wall A, and the time between the two echoes received is 0.2 seconds (speed of sound is 340m/s) (3mks)

(c) On the space provided sketch the displacement time graph of a wave of amplitude 1cm and a frequency of 4 Hz, over an interval 1 second.

(d) Distinguish between standing waves and progressive waves. (1 mk)

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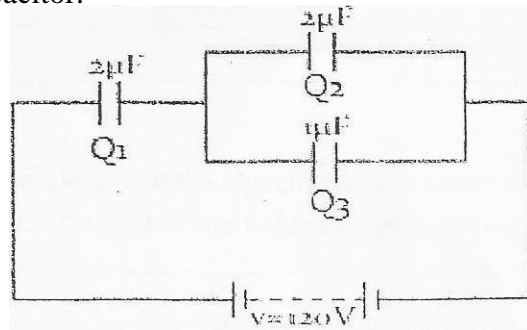
12. The figure below may be used to study the action of a capacitor during charging and discharging



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Sketch the graph of current  $I$  against time ( $t$ ) from  $t=0$  to  $t=t_1$  for charging and  $t=t_1$  to  $t=t_2$  for discharging. (2mks)

(b) In the figured below find the total capacitance and the charge across each capacitor.



(i) Total capacitance  $C_T$  (2mks)

(ii) The charges  $Q_1$  (2mks)

(iii)  $Q_2$  (2mks)

(iv)  $Q_3$  (2mks)

13. (a) Define focal length of a converging lens. (1mk)

.....  
 .....

(b) The near point N of a defective eye is 30.0cm from the eye. Find the focal length and the power of lens needed to correct the defect. (3mks)

(c) In a compound microscope the focal length of the objective lens is 3.0cm and that of the eye piece is 3.2cm and they are placed 10.0cm apart. An object of size 2.00mm is placed from the objectives lens. (3mks)

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(d) Use the lens formula in turn for each lens to find the position of the final image. (3mks)

(e) Calculate the magnification produced by the arrangement of the lenses and the size of the final image viewed. (2mks)

14. (a) Define the term refraction (1mk)

.....

(b) The figured below shows an optical fibre with a ray entering the end of the fibre.



By use of array diagram show how the ray passes out. (2mks)

(c) State one use of fibre communication and one use in medical purposes. (1mk)

(i) Communication

.....

(ii) Medicine (1mk)

.....

(d) A glass prism may be used to divert a ray of light in a simple periscope. An erect object is placed in front of the periscope.

(i) State the characteristics of the image formed of an object incident on the periscope. (2mks)

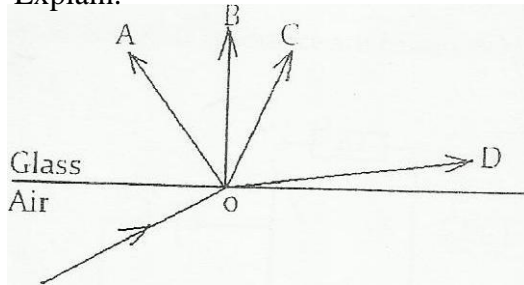
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(ii) State two disadvantages of plane mirrors over glass prisms when used in a simple periscope. (2mks)

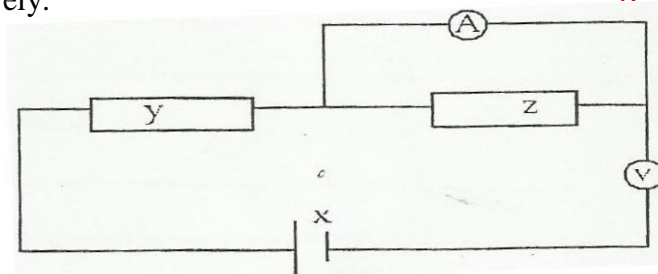
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- (e) The figure below represents a ray incident into air glass interface. Among the paths OA, OB, OC, OD and OE. Which one shows the path followed by the ray? Explain. (2mks)



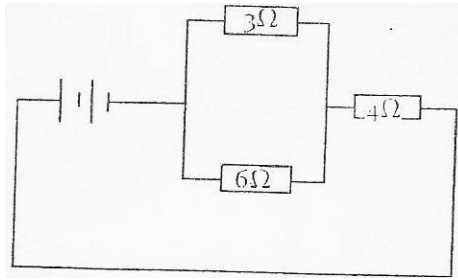
15. The figure below shows a connection done by a student during a practical session, to measure the resistance R of component Z, V and A are voltmeter and ammeter respectively.



- (a) Explain why the connection is wrong. (1mk)
- .....
- .....
- (b) State one advantages one disadvantage of the *leclanche cell* (2mks)
- (i) Advantages
- .....
- (ii) Disadvantages
- .....
- (c) A car battery is an example of a lead acid accumulator. State the materials used at the terminals. (2mks)
- (i) Positive terminal
- .....
- (ii) Negative terminal
- .....

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(d) In the figure below 1.5v cells of negligible resistance are connected to a combination of resistors as shown below.



Calculate

(i) The total resistance in the circuit.

(2mks)

(ii) The current flowing in the 4Ω resistor

(2mks)

(iii) Current flowing in the 6Ω resistor

(2mks)

(iv) The charge that flow through the cells in a time 20 seconds.

(2mks)

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