

Name: ..... Index No. ....  
 School: ..... Candidate's Sign. ....  
 Date: .....

232/2  
 PHYSICS  
 PAPER 2  
 MARCH/APRIL 2011  
 TIME: 2 HOURS

# BUTERE EAST JOINT EVALUATION TEST

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

Physics  
 Paper 2

**INSTRUCTIONS TO THE CANDIDATES:**

- Write your **name** and **index number** in the spaces provided above
- This paper consists of *two* sections **A** and **B**.
- Answer *all* questions in section **A** and **B** in the spaces provided.
- All working *must* be clearly shown in the spaces provided.
- Mathematical tables and electronic calculators may be used.

**For Examiners' Use Only**

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-13	25	
B	14	15	
	15	14	
	16	12	
	17	11	
	18	08	
	<b>TOTAL</b>	<b>80</b>	

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

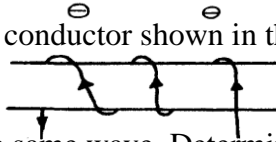
**SECTION A (25MARKS)**

*Answer all questions in the spaces provided*

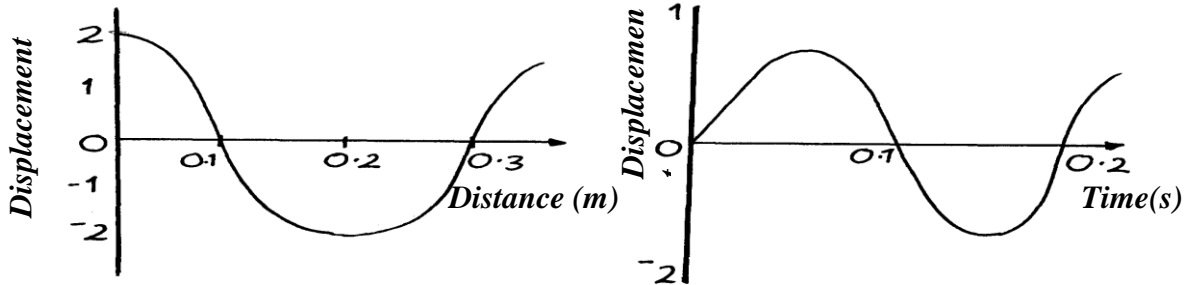
1. Draw the electric field pattern around the charges shown below; (2mks)



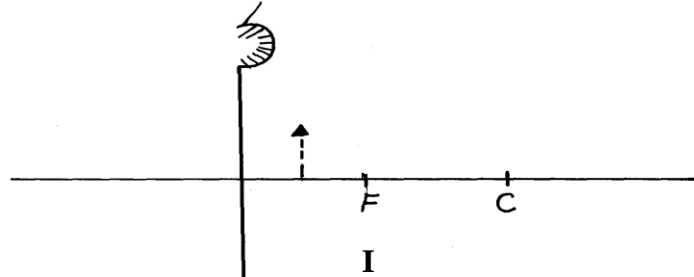
2. Sketch the magnetic field for a conductor shown in the figure below; (2mks)



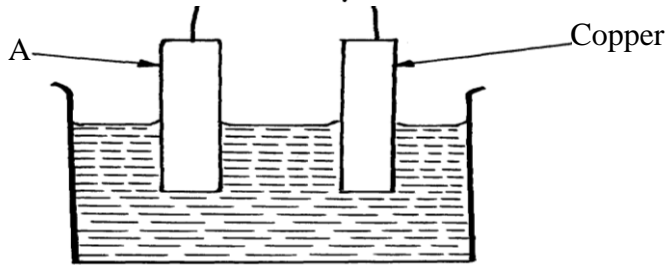
3. The graphs below represent the same wave. Determine the velocity of the wave. (3mks)



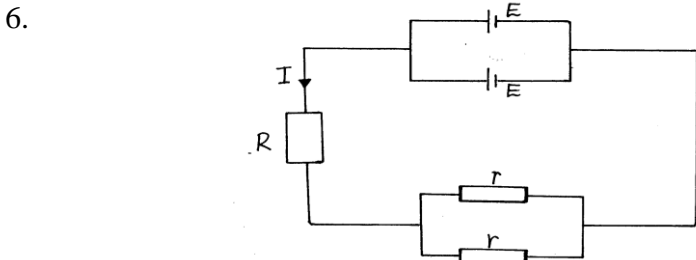
4. The figure below shows the image **I** formed in a convex mirror. Complete the ray diagram to show the position of the object. (2mks)



5. The figure below shows the set-up

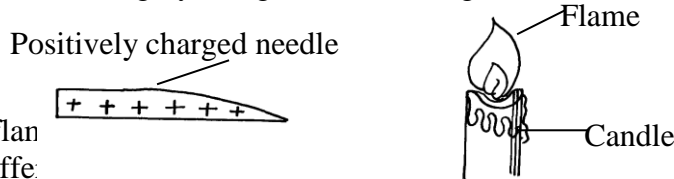


- (i) Name the electrode **A**. (1mk)  
 (ii) Explain why the bulb goes off after a short time. (1mk)



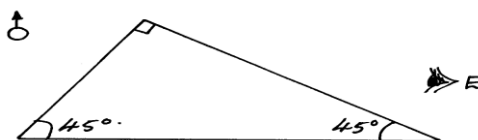
Using the circuit diagram above, write formula relating  $E$ ,  $I$ ,  $R$  and  $r$  (2mks)

7. The figure below shows a highly charged needle brought near a candle flame;



Explain why the flame  
 State the major difference

9. The figure below shows an object placed in front of a prism as shown;

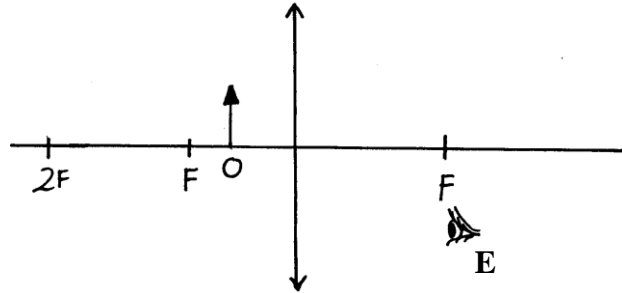


Using two rays, show the image of the object as observed by an observer at **E**. (2mks)

10. A thick sheet of plastic  $n = 1.5$ , is used as the side of an aquarium tank. Light reflected from a fish in the water has an angle of incidence of  $35^\circ$ . At what angle does the light enter the air. (Take refractive index of water as 1.3) (3mks)
11. In pin-hole camera, what is the effect of making the pin-hole small but square in shape? (1mk)
13. Two heaters **A** and **B** are connected in parallel across 240V main supply. Heater **A** is rated 1000W and **B** is rated 2500W. Calculate the ratio of their resistance  $R_A/R_B$ . (2mks)

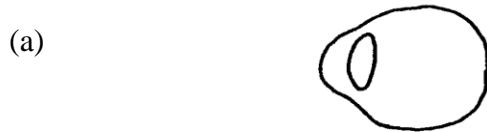
**SECTION B (25MARKS)**

14. (a) The figure below shows an object in front of a lens



- Using rays locate the image as seen by observer, **E** (2mks)
- (ii) Give **one** application of such a lens as used above. (1mk)
- (iii) Write **three** similarities between an eye and a camera (3mks)

- (b) Figure (a) and (b) show diagrams of the human eye;



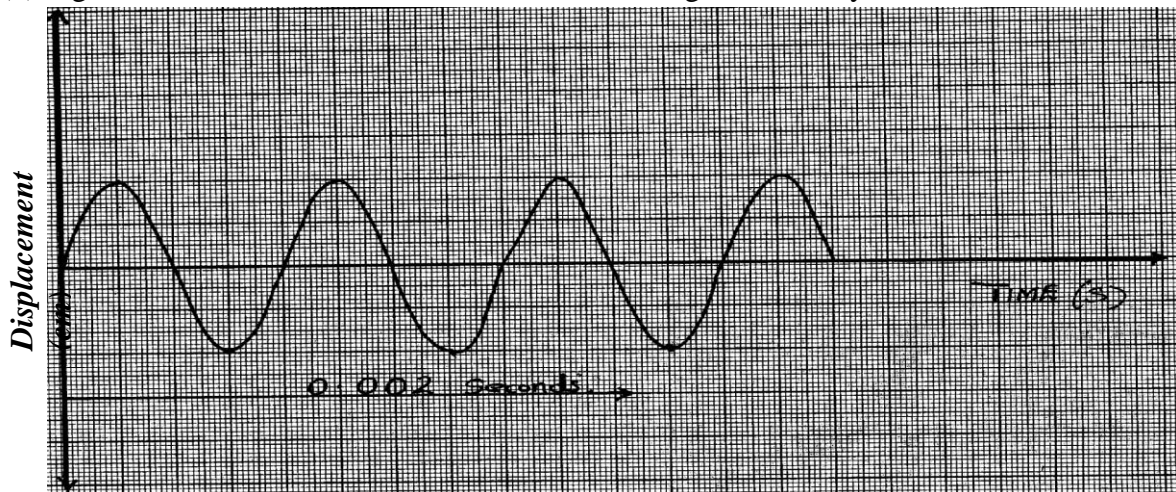
- (i) In figure (a), sketch a ray diagram showing long sightedness. (1mk)
- (ii) In figure (b), sketch a ray diagram showing how lens is used to correct the long sightedness. (2mks)

- (c) An object of height 10.5cm stands before a diverging lens of length 20cm and a distance of 10cm from the lens. Determine;

- (i) Image distance. (3mks)
- (ii) Height of the image (2mks)
- (iii) Magnification (2mks)

- (d) Write **one** difference between a virtual and a real image.

15. (a) State **two** differences between sound waves and electromagnetic waves. (2mks)
- (b) Figure below shows a waveform of a wave moving at a velocity 2m/s;

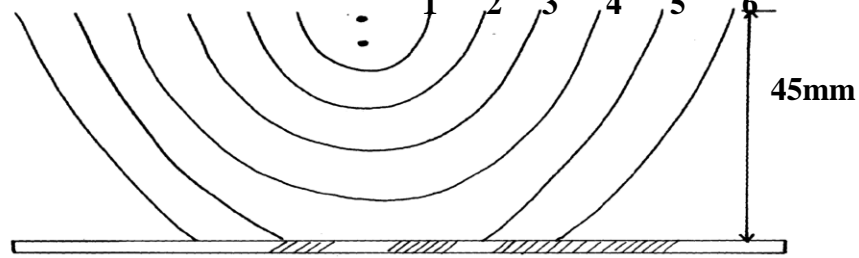


(i) The periodic time (T) (2mks)

(ii) The wavelength ( $\lambda$ ) (3mks)

(c) A fathometer produces sound in a ship and receives two echo's where there is a raised sea bed after 2.5seconds and the other after 3.0seconds. Find the height of the raised sea bank if the velocity of sound in water is 1460m/s. (3mks)

(d) A vibrating source S produces circular water waves near a straight reflector as shown in the figure below;



(i) Copy and complete the diagram to show how crest 5 and 6 are reflected. (1mk)

(ii) From the figure determine the wavelength of the water waves. (1mk)

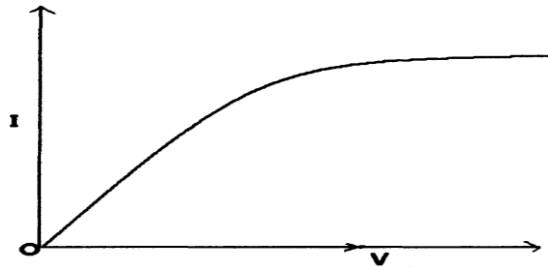
(iii) Find the frequency of the waves if their speed is 60mm/s (2mks)

16. (a) A car battery is used to light a 12V lamp. A constant current of 3A passes round the circuit.

(i) Explain what happens to the energy of the electrons as they flow through the lamp wire. (3mks)

(ii) How much energy is transferred by the lamp in 20seconds? (2mks)

(b) For a particular specimen of wire, a series of readings of the current through the wire for different potential differences it is taken and plotted as shown;



(i) Explain how resistance of the wire changes. (3mks)

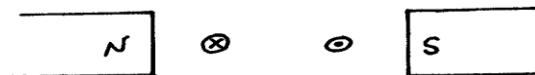
(ii) How would the resistance of a piece of wire change if;

I. the length were doubled (2mks)

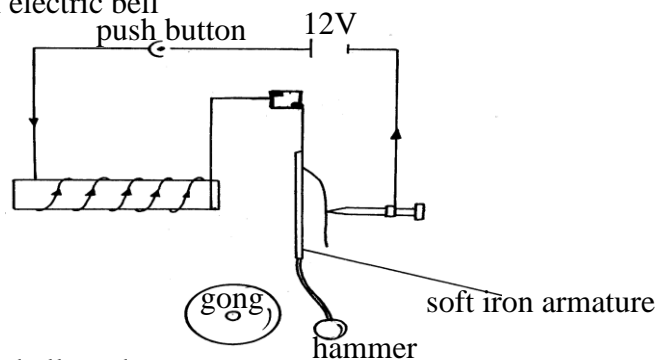
II. the diameter were doubled (2mks)

17. (a) State the motor rule. (1mk)

(b) Sketch the resultant field pattern around the following current carrying conductors and show the direction of the forces acting on the conductors. (3mks)



(c) The figure below shows an electric bell



(i) Describe how the electric bell works (4mks)

(ii) Explain what would happen if the armature is made of steel. (2mks)

(iii) What adjustment should be done to the system to make it operate effectively with lower voltage battery? (1mk)

(d) Explain briefly how a loudspeaker can be used as a microphone. (3mks)