

Name: Index No.

School: Candidate's Sign.

Date:

232/2
PHYSICS
PAPER 2
JULY/AUGUST 2011
TIME: 2 HOURS

NDHIWA DISTRICT 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

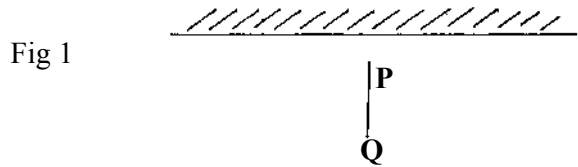
SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-12	25	
B	13	11	
	14	11	
	15	1	
	16	11	
	17	11	
	TOTAL	80	

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 (25 MARKS)

Answer **all** the questions in this section in the spaces provided

- 1 Figure 1 represents an object PQ in front of a plane mirror.

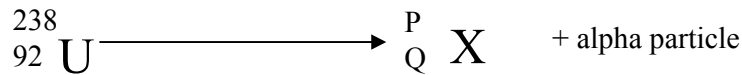


Sketch rays to show the position of an image formed. (2mks)

2. a) Define radioactivity. (1mk)

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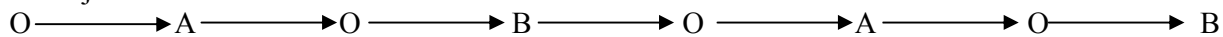
- b) Uranium ${}_{92}^{238}\text{U}$ emits an alpha particle to become another element x as shown.



Give the value of Q

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3. An object moves as shown below and takes 1.4 seconds



Determine the frequency of vibration of the object. (2mks)

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4. You are provided with a circular soft iron ring, long length of wire, galvanometer, switch rheostat three dry cells. In the space provide sketch how you could assemble a step-up transformer.

(2mks)

5. a) Arrange the following radiations in order of increasing wave length: microwaves, gamma rays, purple Light, ultra-violet and infrared
(1mk)

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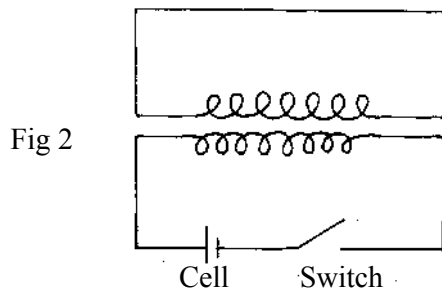
b) Calculate the wave length of radiowave of frequency 0.5×10^8 Hz. (2mks)

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6. a) State Lenz's law. (1mk)

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b) Two coils are placed near each other as shown in fig 2 below. Give two possible ways of increasing the deflection on the galvanometer. (2mks)



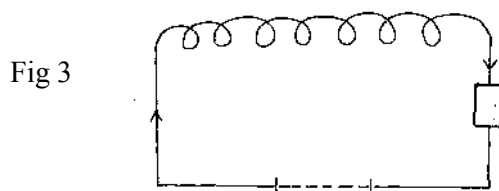
7. A narrow beam of electrons in a cathode ray oscilloscope (C.R.O) strikes the screen producing a spot. State what is observed on the screen if a low frequency a.c source is connected across the y-input of the C.R.O
(1mk)

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8. State one difference between charging by contact and charging by friction. (1mk)

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9. Indicate the magnetic filed pattern in and outside of the solenoid shown in fig 3 below. (2mks)



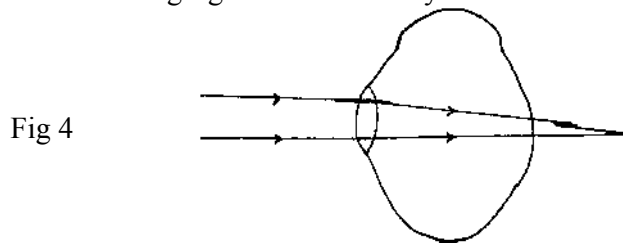
10. The critical angle of the air glass interface is 48.12° calculate the refractive index of the glass. (2mks)

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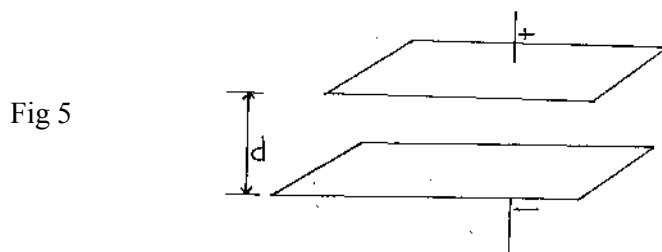
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11. The following figure 4 shows an eye defect



Illustrate on the same diagram how the defect could be corrected. (2mks)

12. The figure 5 below represents two parallel plate capacitor separated by a distance d . Each plate has an area A square units.



Suggest **two** adjustments that can be made so as to reduce the effective capacitance. (2mks)

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SECTION B (55 MARKS)

Answer all the questions in this section in the spaces provided.

13. (a) Distinguish between a wavetrain and a waveform. (2mks)

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(b) A mine worker stands between two vertical cliffs 400m from the nearer cliff. The cliffs are x distance apart. Every time he strikes the rock once, he hears two echoes, the first one after 2.5 seconds and the second follows 2 seconds later. From this information calculate ;

- (i) the speed of the sound in air. (2mks)

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- (ii) the value of x (3mks)

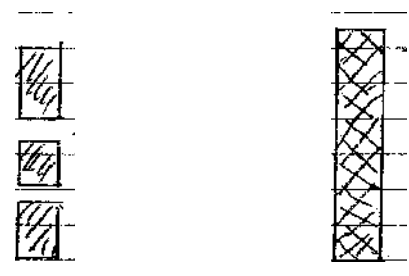
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(c) In an experiment to observe interference of light waves a double slit is placed close to the source as in the figure 6 below

Fig 6



(i) State the function of the double slit. (1mk)

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(ii) Describe what is observed on the screen. (2mks)

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(iii) State what is observed on the screen when I the slit separations S_1S_2 is reduced. (1mk)

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II white light source is used in place of monochromatic source. (1mk)

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14. a) The figure below shows a parallel connection of 3 bulbs.

(i) What happens to the brightness of B_1 when the switches S_1 S_2 and S_3 are switched on one after the other? (1mk)

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(ii) Give reason for your answer in (i) above (1mk)

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(iii) why is the parallel connection preferred in domestic lighting to the series connection? (1mk)

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b) when two resistors R_1 and R_2 are connected in series to a 10V battery a current of 0.5A flows through the circuit. When only R_1 is connected to the battery the ammeter reading is 0.8A calculate

(i) the resistance of R_1 (2mks)

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(ii) the resistance of R_2 (2mks)

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(iii) the current flowing through R_1 and R_2 when the two are now connected in parallel. (2mks)

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15. a) Explain the effect on the X-rays produced when the anode voltage is increased. (2mks)

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b) A stream of X- rays is passed close to the cap of a negatively charged electroscope as shown in the figure below.

(i) the leaf divergence is found to reduce Explain this observation (2mks)

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(ii) What effect will increase in the cathode current have on the above observation? Explain your answer (2mks)

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(c) An x –ray tube operates on 80KV potential
Calculate

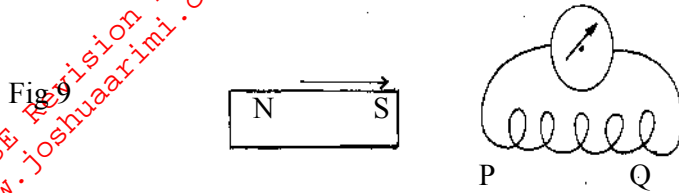
(i) the energy gained by the electrons. (2mks)

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(ii) The minimum wavelength of the x-rays produced. (3mks)

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16. a) The figure 9 below shows two free ends of a coil connected to a galvanometer. When the north pole of a magnet is moved towards the coil, the pointer deflects towards the right hand sides.



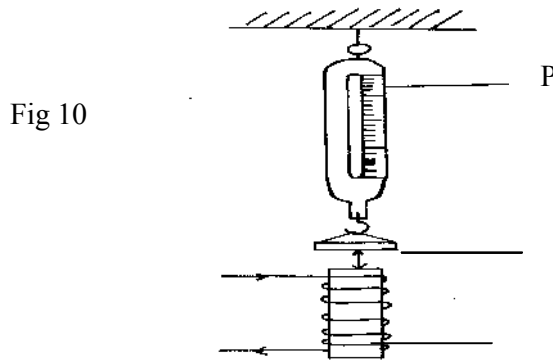
State with reason the behaviour of the pointer when;
(i) the north pole of the magnet is held stationary near P. (2mks)

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(ii) the south pole of the magnet is made to approach the coil from end Q. (2mks)

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(b) In an attempt to investigate how electromagnetic force varies with current, a student from Wayaga secondary school set up the arrangement fig.10 below



(i) Why is the current passed through the solenoid? (1mk)

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(ii) What happens to the iron suspended from the spring balance when a current is passed through the solenoid. (1mk)

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(iii) What is observed on the spring balance reading when the current passing through the solenoid is reduced? (1mk)

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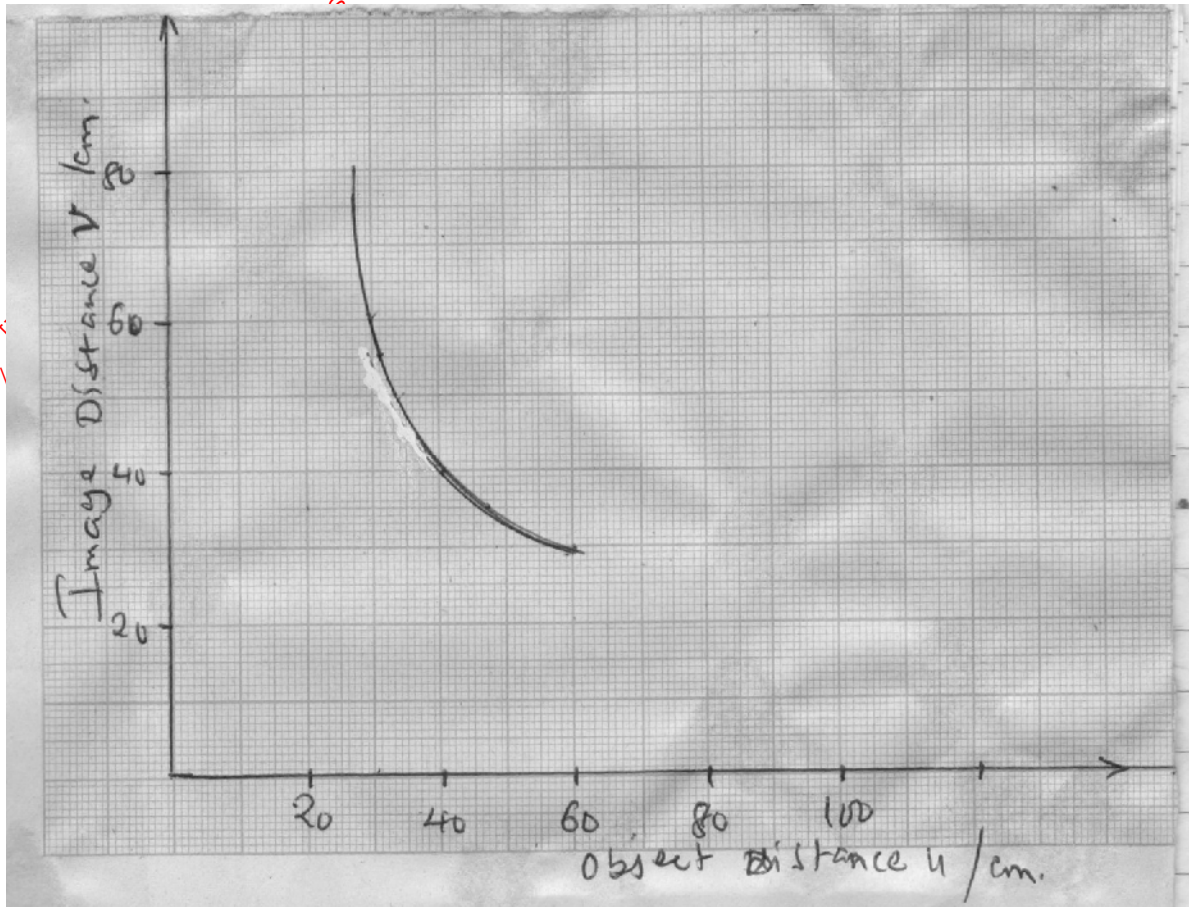
(iv) Sketch a graph of magnetic force against current that can be obtained from the results of the experiment above. (2mks)

(v) A part from increasing the amount of current through the solenoid, state **two** ways of improving the efficiency of the electromagnet. (2mks)

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17. (a) With the help of a ray diagram explain how a lense can be used as magnifying glass. (3mks)

(b) in an experiment to determine the focal length of a convex lens the results were represented in the graph in figure below.



(i) Use the graph to determine the focal length of the lens used in the experiment. (3mks)

(ii) Determine the magnification of the image when the object is 30cm from the lens. (3mks)

(iii) Explain the property of light that is evidence in the formation of a rainbow (2mks)

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(d) Explain two conditions under which light moves from medium to another of different optical densities without refraction. (2mks)

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