

Name..... Index No.....
 School..... Candidate's sign.....
 Date.....

232/2
PHYSICS
 Paper 2
THEORY
 July/August 2010
 2 Hours

MANGA DISTRICT JOINT EVALUATION TEST – 2010
Kenya Certificate of Secondary Education (K.C.S.E)

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PHYSICS
 Paper 2
THEORY
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Instructions to candidates.

1. Write your name and index number in the spaces provided above
2. Sign and write the date of the examination in the spaces provided above
3. All working must be clearly shown
4. Non – programmable silent electronic calculators and KNEC Mathematical tables and may be used.

FOR EXAMINER'S USE ONLY.

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1 – 13	25	
B	14	11	
	15	11	
	16	11	
	17	11	
	18	11	
	TOTAL	80	

*This paper consists of 12 printed pages.
 Candidates should check the question paper to
 Ensure that all the pages are printed as indicated and no questions are missing.*

SECTION A (25MARKS)

1. The figure below (fig 1) shows two plane mirrors inclined at an angle x from each other. A viewer counts a total of seven images from looking directly from the object O. Determine value of x (3mks)

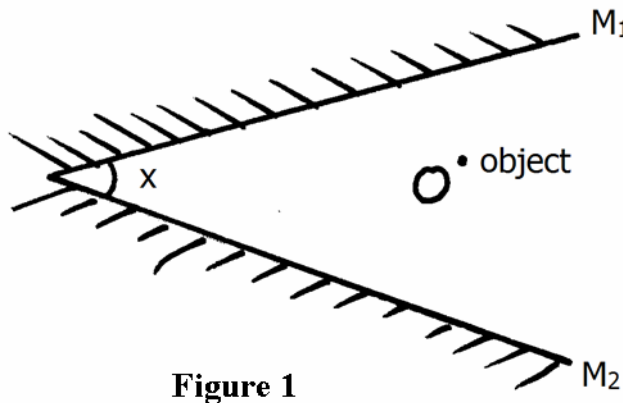


Figure 1

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2. The figure 2 below shows two identical electroscopes. The one on the right is charged but the one on the left is not.

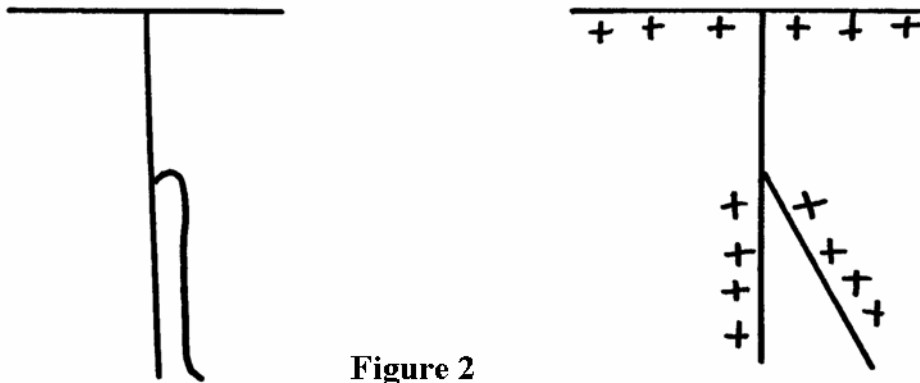


Figure 2

Show the charge distribution after the caps of the two electroscopes are connected by a thin conducting wire (2mks)

3. A student connected the circuit as in fig 3. State what happens when S_2 is closed (1mk)

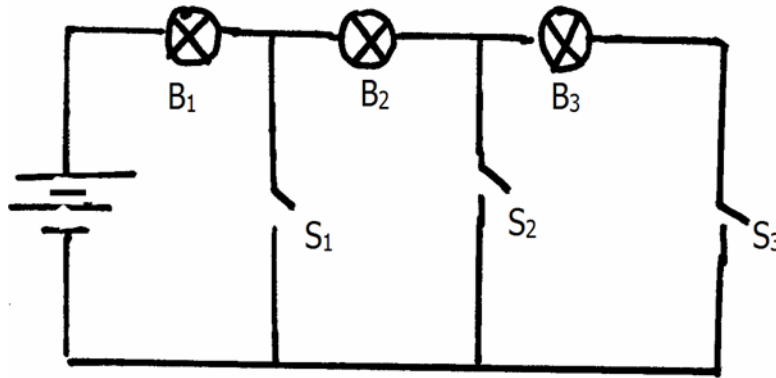


Figure 3

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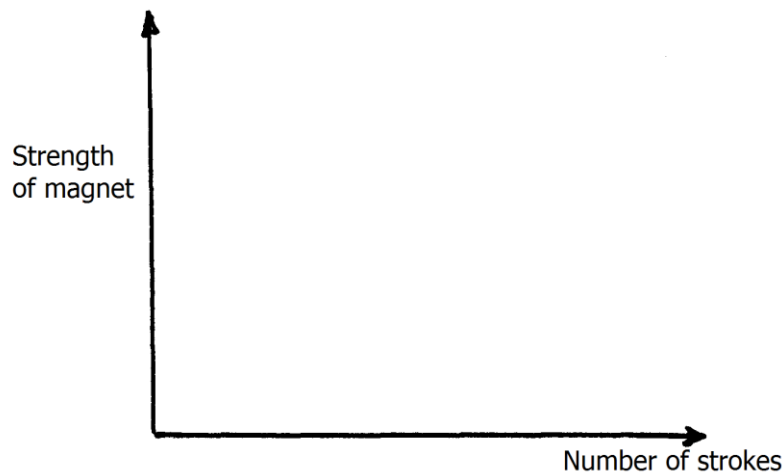
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4. State the use of manganese (IV) oxide in a dry cell (1mk)

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5. A ferromagnetic material is being magnetized by single stroking method. On the axes provided, sketch a graph to show how the strength of the magnet being created varies with the number of strokes (2mks)



6. State why the convex mirror is used for rear view mirror in vehicles (1mk)

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7. Figure 4 shows a conductor carrying current placed in the magnetic field and moves in the direction shown

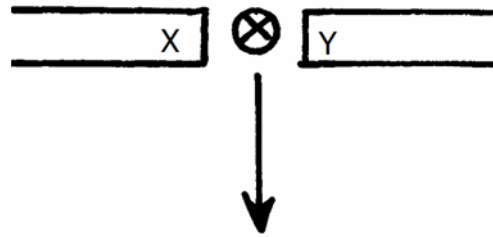


Figure 4

Identify the polarities of X and Y (2mks)

X.....
 Y.....

8. A pin is placed horizontally at the bottom of a beaker 9cm tall completely filled with a liquid. Viewing from the top, the pin appears to be 2cm above the bottom of the beaker. Calculate the refractive index of the liquid. (3mks)

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9. Figure 5 shows a wave profile for a wave whose frequency is 2Hz.

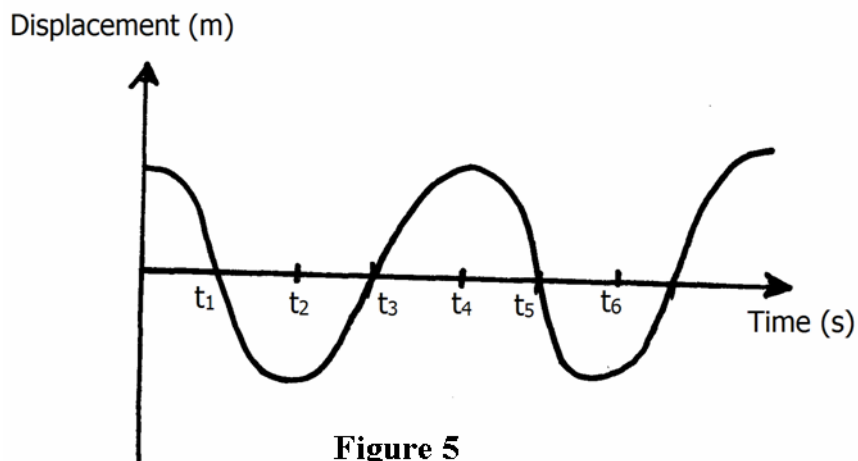


Figure 5

Determine the value of t_3 (s) (3mks)

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10. State one factor which does not change as water waves move from shallow to deep end (1mk)
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-
11. Explain the following statement:
Sound is a longitudinal pressure wave (2mks)
-
-
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-
12. A cell supplies a current of 1.8A through two 2Ω resistors connected in parallel. When the resistors are connected in series, the current is 0.6A. Calculate the internal resistance of the cell. (3mks)
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-
13. State why the filament of a lamp is made of tungsten (1mk)
-
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SECTION B (55 MARKS)

14. (a) Figure 6 shows two circuits close to each other

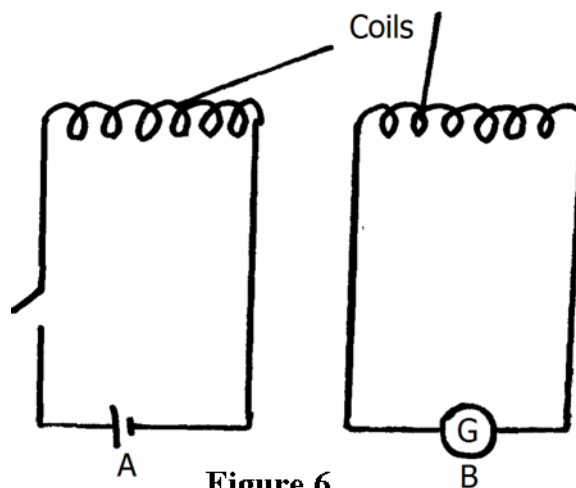


Figure 6

When the switch is closed, the galvanometer shows a reading and then returns to zero. When the switch is then opened, the galvanometer show a reading in the opposite direction then return to zero. Explain these observations (4mks)

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(b) A transformer is designed to supply a current of 12A at a p.d. of 80V. The inlet cable is to be connected to an a.c. mains of 240V. The efficiency of this transformer is 80%.

Calculate:

(i) Current in the primary coil of the transformer (2mks)

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(ii) The power supplied to the transformer (3mks)

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(iii) Explain how energy losses in a transformer are reduced by having a soft iron core. (2mks)

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15. (a) Figure 7 shows the features of a cathode ray tube

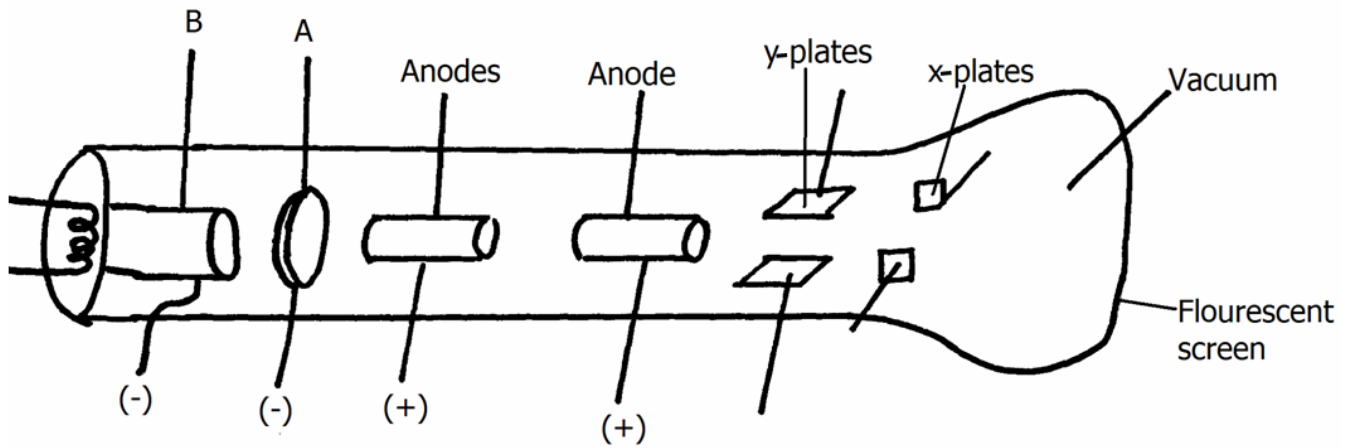


Figure 7

(i) Name the parts labeled A and B (2mks)

A.....

B.....

(ii) Explain how the electrons are produced in the tube (2mks)

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(iii) At what point of the cathode ray tube would the time base be connected (1mk)

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(iv) State two function of the anodes (2mks)

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(b) (i) Explain how x – rays are produced (1mk)

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(ii) State the functions of the high voltage between the cathode and the anode in the x – ray tube (1mk)

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(c) State one similarity and one difference between cathode rays and x – rays (2mks)

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16. (a) When does a convex lens form a virtual image (1mk)

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(b) Figure 8 shows an object 'O' in front of a lens.

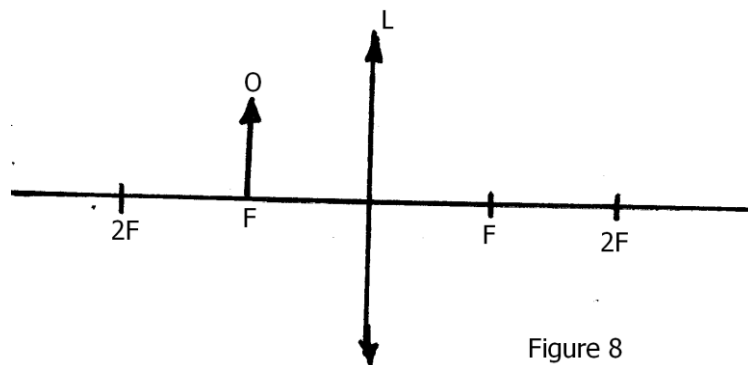


Figure 8

(i) By drawing appropriate rays on the same figure state the position of the image formed (3mks)

(ii) Explain the adjustments you would make on the position of the object above in order to obtain a real magnified image (2mks)

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- (c) An object 1cm tall standing 10cm from a converging lens produces a magnified image 2.5cm tall on the same side as the object. Determine the focal length of this lens (5mks)

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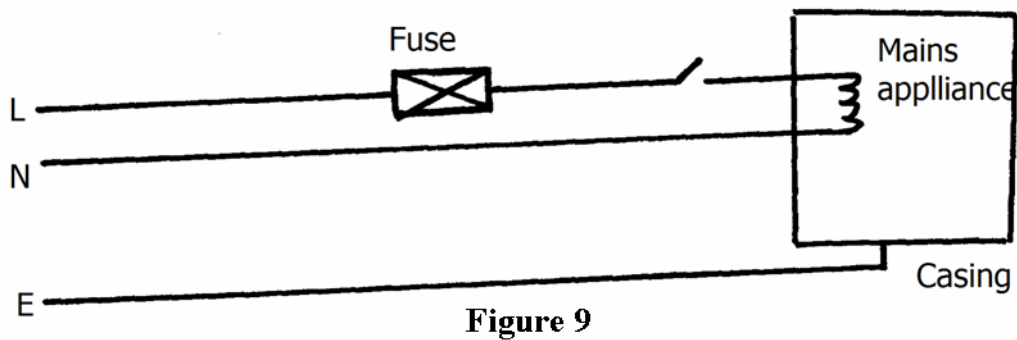
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17. (a) Figure 9 shows a modern mains appliance



- (i) State the purpose of lead E (1mk)

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- (ii) Explain why the fuse is connected to the live wire (2mks)

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- (b) Explain why mains electricity is transmitted through alternating current and not direct Current (2mks)

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(c) A heater is marked 3kW, 240V. The fuses available are marked 10A, 13A and 20A.
Which fuse is most suitable? (3mks)

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(d) A 2kW electric heater is used for 10hrs. Calculate the cost of electricity if it costs 30ksh/ unit (3mks)

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18. (a) Consider the table below for some electromagnetic waves

Radiation	Production	Detection	Application
Radio waves	A	Aerials	B
Infrared	Thermal vibration of atoms of hot bodies	C	D

(i) Fill in the spaces labeled (4mks)

A.....

B.....

C.....

D.....

(ii) State one similarity between ultraviolet rays and gamma rays in terms of their Dangers (1mk)

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(b) Distinguish between thermionic emission and photoelectric effect (1mk)

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(c) Explain the term work function of a metal surface, stating how it affect photoelectric emission (2mks)

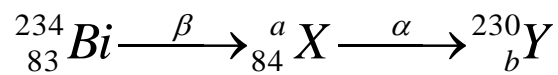
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(d) The following is a part of a radioactivity decay series



Determine the values of

a (1mk)

b (1mk)

(e) Figure 10(a) and 10(b) shows a p – n junction connected to a battery. It is observed that the current in figure 10(a) is greater than the one in figure 10(b)

(f)

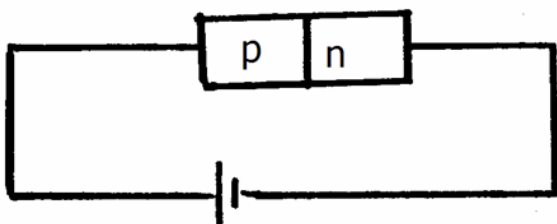


Figure 10 (a)

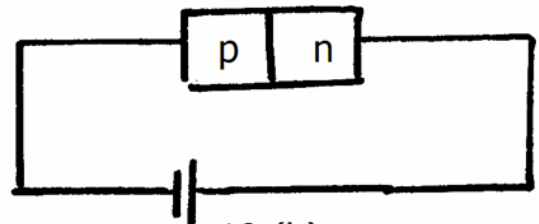


Figure 10 (b)

State the reason for this observation (1mk)

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