

Name.....

Index No.....

School.....

Candidates Signature.....

Date

232/2

PHYSICS

Paper 2

(Theory)

July/August 2009

2 Hours

**MANGA DISTRICT SECONDARY SCHOOLS
JOINT EVALUATION TEST - 2009
Kenya Certificate of Secondary Education (K.C.S.E)**

232/2

PHYSICS

Paper 2

(Theory)

July/August 2009

2 Hours

Instructions to Candidates

- Write your name and index number in the spaces provided above.
- Sign and write the date of the examination in the spaces provided above
- This paper consists of **two** questions **A** and **B**.
- Answer **all** the questions in section **A** and **B** in the spaces provided
- All working **MUST** clearly be shown in the spaces provided in this booklet.
- Non programmable silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise.

Take: Speed of light in vacuum $C = 3.0 \times 10^8 \text{m/s}$ and $g=10\text{m/s}^2$ where necessary

FOR EXAMINER'S USE ONLY

Section	Question (s)	Max. Score	Candidates Score
A	1 – 14	25	
B	15	11	
	16	11	
	17	11	
	18	11	
	19	11	
	Total		80

This paper consists of 10 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 (25 MARKS)

Answer ALL the questions in this section

1. State one advantage of :

i) a lead-acid accumulative over a dry cell (1mk)

.....
ii) A dry cell of a lead-acid accumulator (1mk)

2. Three identical cells of e.m.f. 2.0v and of negligible internal resistance are connected as shown in figure. Determine the ammeter reading. (2mks)

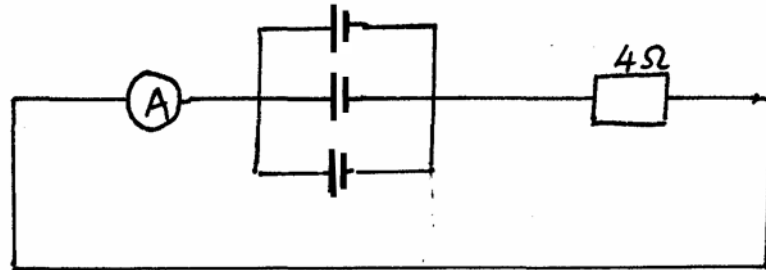


Fig. 1

3. The figure 2 shows a light-emitting bulb placed in front of plane mirror. On the figure sketch two rays showing how the eye is able to see the bulb image. (3mks)

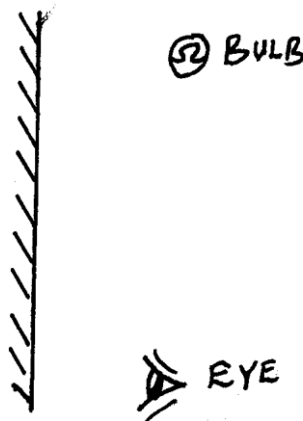
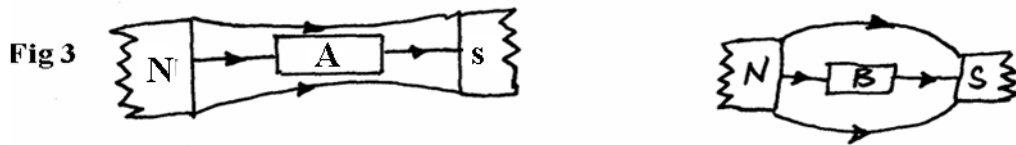


Fig. 2

4. State one disadvantage of the convex mirror when used as a car driving mirror. (1mk)

.....
5. On a dusty day, clean polished shoes attract a lot of dust. Explain this. (1mk)

.....
6. The figure 3 shows the effect on the magnetic field when two materials A and B are placed in the magnetic field.



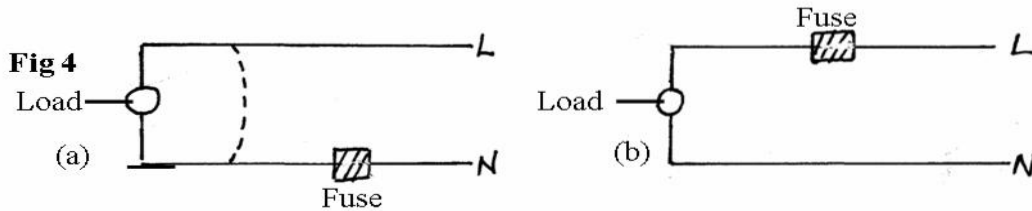
State the difference between A and B. (2mks)

.....

7. A nail is electrically magnetized. It attracts an increasing number of iron pins as the magnetizing current increases. After sometime, the nail can no longer attract any more pins. Explain this observation. (2mks)

.....

8. The figure 4 shows short circuit between the live (L) and neutral (N) wires.



The fuse blows in both cases; and (a) is dangerous while (b) is safe. Explain. (2mks)

.....

9. The table below shows the type of radiation, detection method and uses of electromagnetic radiations. Complete the table.

Type of radiation	Detection method	Use
Ultraviolet	Photographic paper	
	Blackened thermometer	Warmth sensation
Radio waves		Communication

3mks

10. Compare the property of material used to make a fuse wire to one used to make the filament of a torch bulb. (1mk)

.....
.....
11. State two reasons why the CRO is a more accurate voltmeter than a moving coil voltmeter. (1mk)

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.....

12. How can the intensity of X-rays in an X-ray tube be increased. (1mk)

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.....

13. Distinguish between thermionic emission and photoelectric effect. (2mk)

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.....

14. What is Fleming's right hand rule used for? (1mk)

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.....

SECTION B (55 MARKS)

All questions are compulsory

15. a) In the circuit diagram shown in Fig.5 each cell has an e.m.f of 1.5v and internal resistance of 0.5Ω . the capacitance of each capacitor is $1.4 \mu F$.

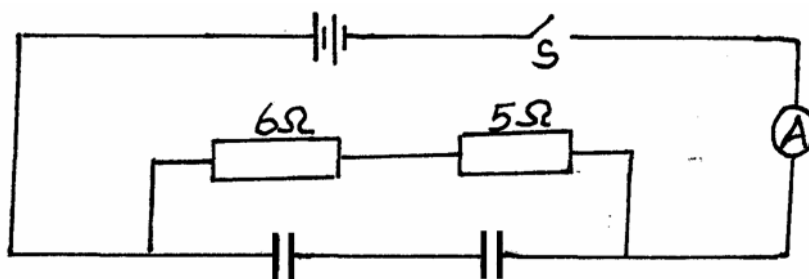


Fig. 5

i) When the switch S is closed determine the ammeter reading. (3mks)

ii) When the switch S is closed determine the charge on each capacitor. (3mks)

- b) The diagram in Fig. 6 represents two parallel plates of a capacitor separated by a distance d . Each plate has an area of a square unit. Suggest two adjustments that can be made so as to increase the effective capacitance. (2mks)

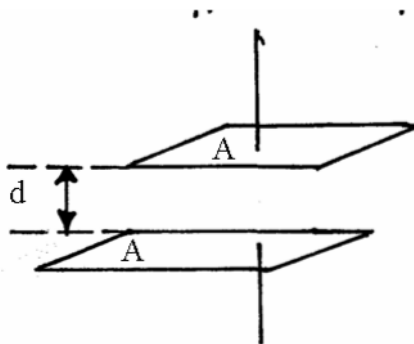
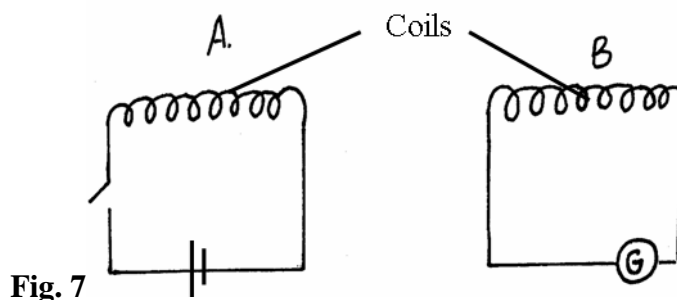


Fig. 6

- c) Complete the table to describe the function of the parts of a lightning conductor. (3mks)

Part	Function
Spike	
Thick copper rod	
Earthed metal plate	

16. The circuits in Fig. 7 shown are close to each other.



- a) When the switch is closed, the galvanometer shows a reading and then returns to zero. When the switch is then opened, the galvanometer shows a reading in the opposite direction and then returns to zero. Explain these observations. (3mks)

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- b) Energy losses in a transformer are reduced by having a laminated soft iron core. State and explain two other ways of reducing energy losses in a transformer. (4mks)

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- c) The e.m.f generated as the coil of an alternating generator rotates is represented in the graph in Fig. 8.

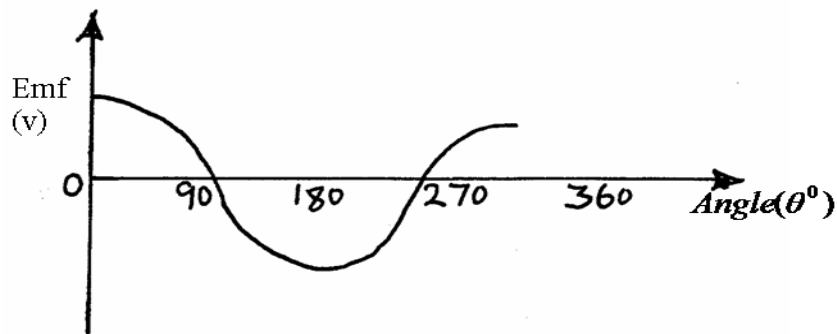


Fig. 8

- i) Give reasons for the changes in the e.m.f as the coil rotates from 0° to 90° and 90° to 180° . (3mks)

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- ii) Sketch on the same diagram a similar graph if the generator was a direct current one. (1mk)

17. a) The Fig.9 shows a ray of sunlight incident to face AB of a glass prism.

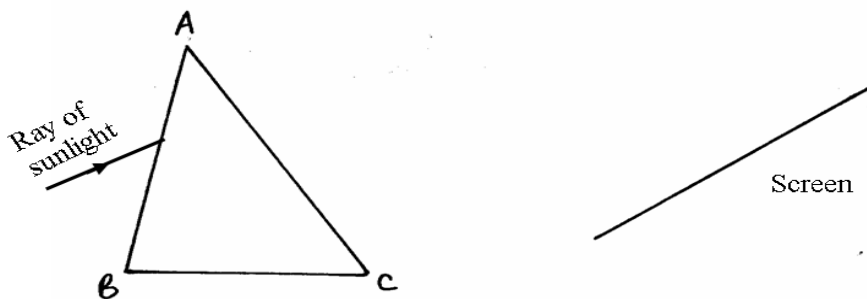


Fig. 9

- i) Complete the diagram showing the observation on the screen. (3mks)

ii) Explain the observation on the screen. (2mks)

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.....

iii) State why the spectrum formed above is not pure. (1mk)

.....

b) i) You are provided with four equilateral prisms and four convex lenses. Sketch a diagram showing how all the eight can be arranged to make a simple prism binoculars. (4mks)

ii) State one reason why prisms produce better optical instruments than plane mirrors. (1mk)

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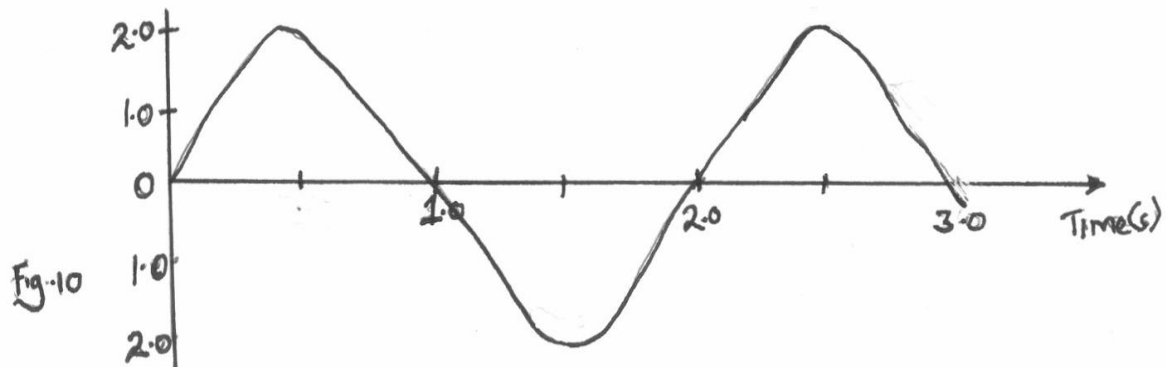
18. a) i) Distinguish between stationary waves and progressive waves. In terms of their propagation. (2mks)

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.....

ii) State a reason why a closed pipe produces less quality sound than an open pipe. (1mk)

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.....

b) The Fig. 10 represents an oscillation taking place at a particular point while a sound wave in a gas passes the point. The vertical axis is labeled displacement.



i) Explain what is meant by displacement in this context. (1mk)

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.....

ii) From the figure determine

I The period. (1mk)

.....
II. The frequency (1mk)

.....
c) Calculate the wavelength of the sound wave in the figure. Take the velocity of sound in the gas to be 340m/s (3mks)

d) State two factors that can increase the speed of sound in solids. (2mks)

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19. a) What is meant by radioactive decay? (1mk)

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b) A radioactive source placed 12cm from the detector produced a constant count rate of 5 counts per minute. When the source is moved close to 3cm, the count rate varies as follows;

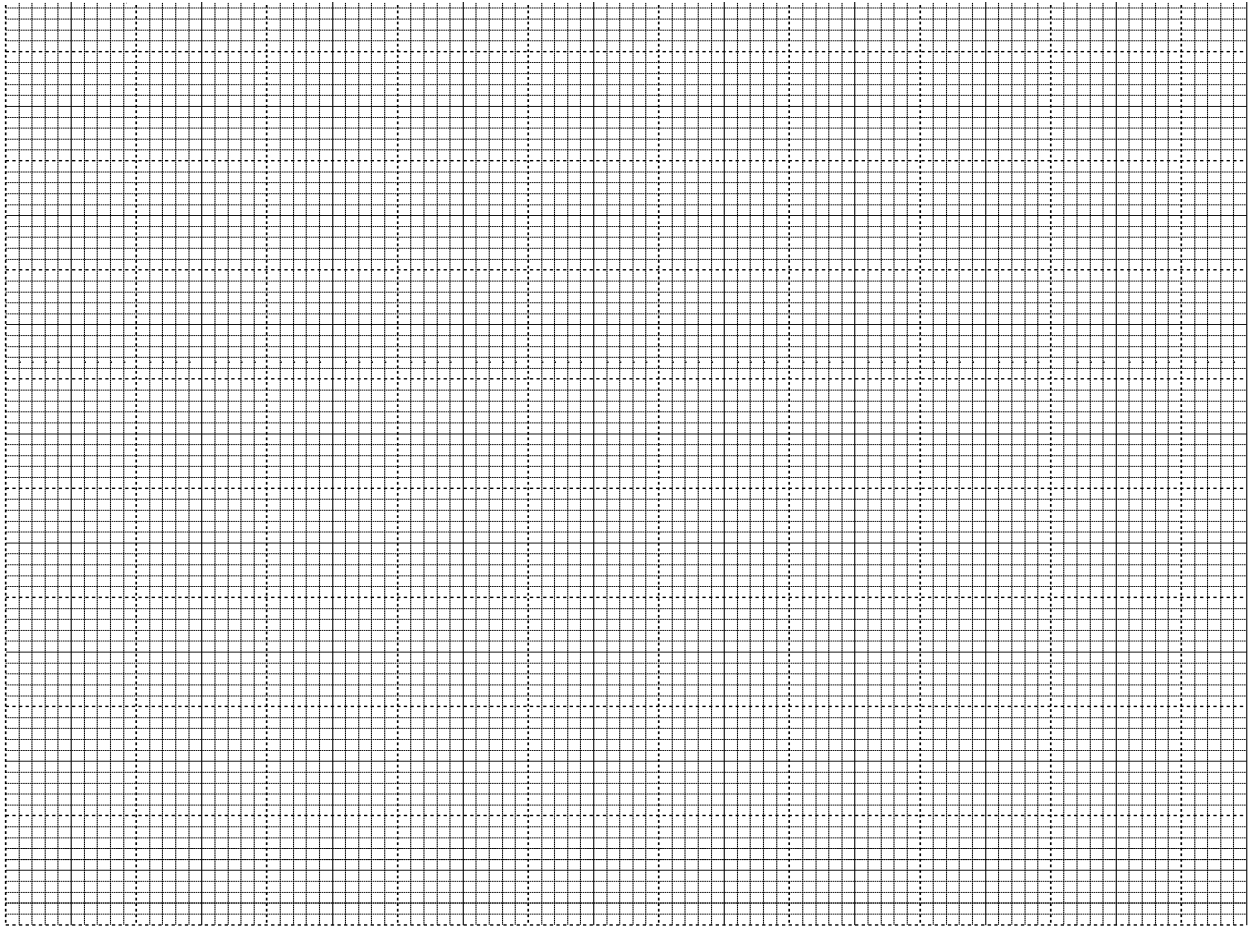
Time	0	20	40	60	80
Count rate	101	65	43	29	21

i) State the type of radiation emitted. (1mk)

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ii) Explain the constant count rate when the source is 12cm away. (2mks)

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iii) Plot a graph of count rate against time (Use graph paper) (5mks)



iv) Use the graph to estimate the half life of the element. (2mks)

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