KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE GIRLS HIGH SCHOOL
232/1
PHYSICS
PAPER 2

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ALLIANCE GIRLS HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016

Paper 2 (Theory)

SECTION A(25 MARKS)

Answer ALL the questions in this section in the spaces provided

1. State the property of light associated with formation of shadows (1mk)
2. Explain why soft iron keepers are suitable for storing magnets (2mks)
3. Fig 1 below shows a conductor carrying current placed in the magnetic field of two magnets. Complete the diagram by showing the field pattern and the direction of force F that acts on the conductor (2mks)

Figure 1

4. State two quantities that are used to determine whether accumulator require recharging or not (2mks)
5. The figure 2 below shows the image I, formed in a convex mirror. Complete the ray diagram to show the position of the object. (2mks)

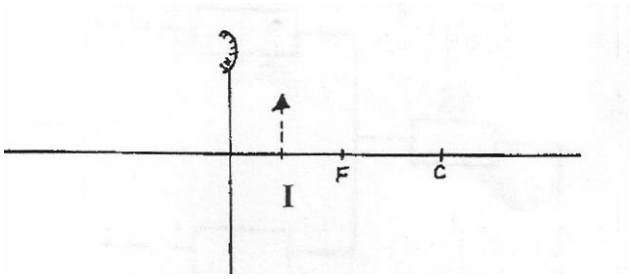


Figure 2

6. Draw the electric field around the charges shown below (2mks)

Figure 3

7. The figure below shows a displacement –time graph for a wave with a period of 0.5 seconds

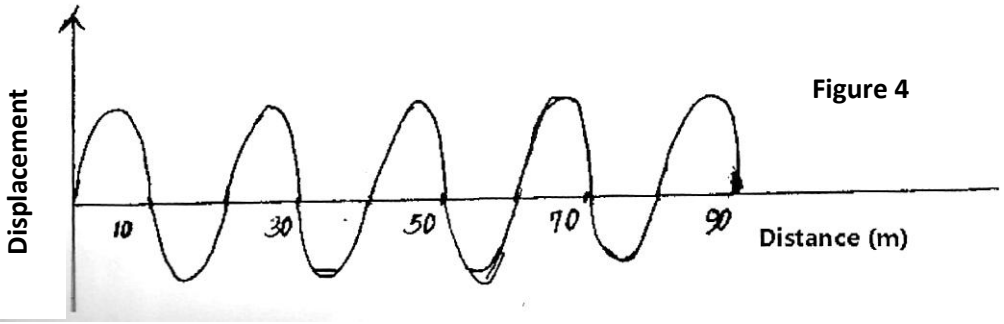


Figure 4

Calculate the velocity of the wave (2mks)

8. Determine the ammeter reading in the figure below (3mks)

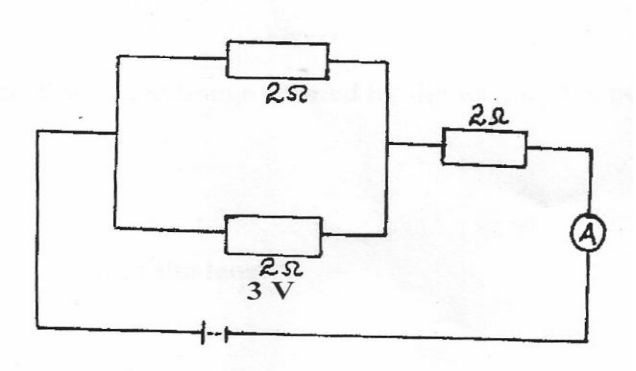


Figure 5

9. State two ways in which x-rays differ from Gamma rays (2mks)
10. Find the cost of using a 3kw immersion heater and five 75w electric bulbs for a day if the price per unit (kwh) is 80cts (3mks)

11. Fig 6 shows a diagram of an arrangement used by a student to determine the focal length of a convex lens. Use it to answer the questions that follow

Figure 6

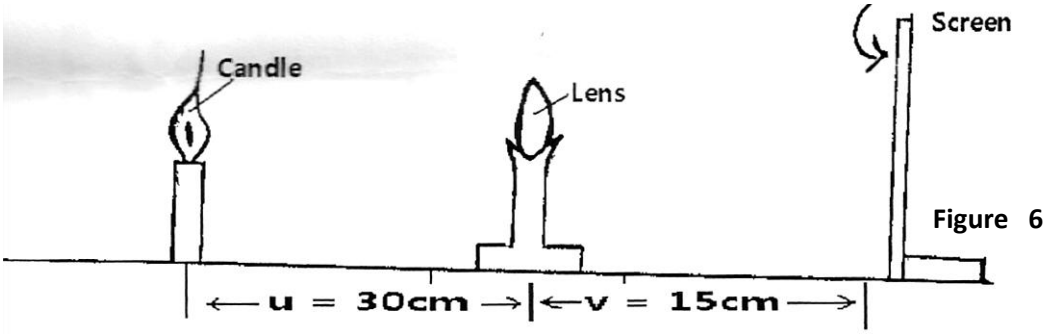


Figure 6

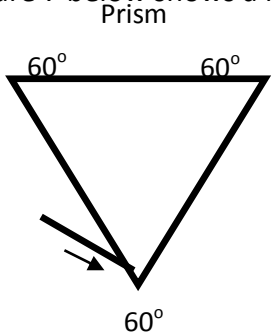
(a)Give two properties of the image formed by the lens in this position (1mk)
(b) What is the focal length of the lens? (1mk)

12. Calculate the wavelength of green light whose energy is 3.37×10^{-19}J. ($h=6.63 \times 10^{-34}$JS, $C=3.0 \times 10^{8}$m/s) (3mks)

SECTION B (55 MKS)

Answer all questions in the spaces provided

13. (a) Figure 7 below shows a ray of white light incident on the surface of a glass prism



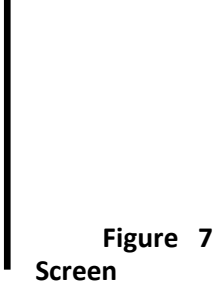


Figure 7

(i) Complete the path of the ray until it reaches the screen. (Use only two extreme rays) (2mks)

(ii) Mark on the diagram the two rays as they appear on the screen (1mk)

(iii) What colours will be observed on the screen if white light was replaced by yellow light? (1mk)

(b) (i) Distinguish between reflection and refraction of light (1mk)

(ii) Figure 8, (I) and (II) show refraction of light at air-water interface

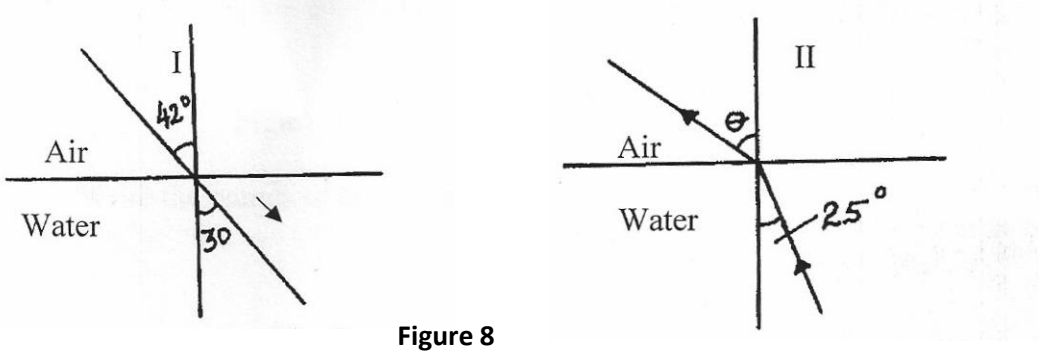


Figure 8

Determine angle θ in figure 9, (II) (3mks)

(iii) State two laws of refraction (2mks)

(iv) State two conditions necessary for total internal reflection to occur(2mks)

14. (a) (i) Define radioactivity (1mk)

(ii) Figure 9 shows a radium source of raditions subjected to strong magnetic field. Use to answer questions that follow

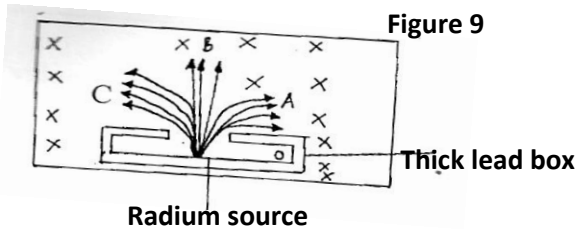
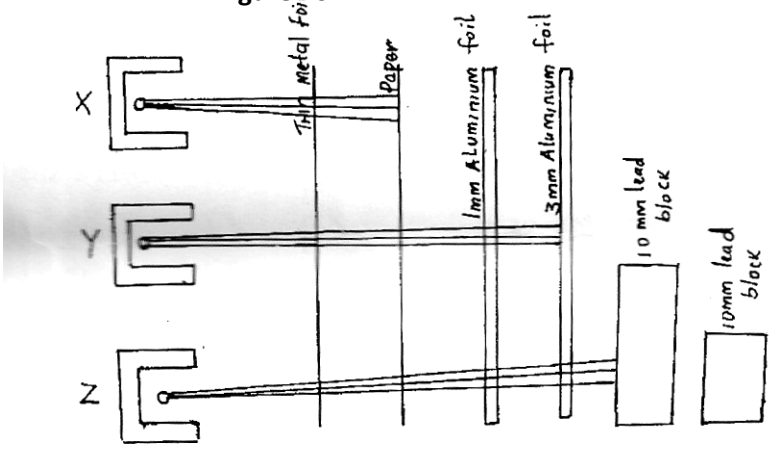


Figure 9

Write the names of radiations A,B and C (3mks)

(iii) Figure 10 shows the penetrating power of radioactive radition n various materials, Use it to answer questions that follow

Figure 10



Which of the radiations indicate?

(i) Gamma radiation (1mk)

(ii) Alpha radiation (1mk)

(b) (i) The following is part of a radioactive decay series

210 3ß decay S T

$$PO \xrightarrow{} A \xrightarrow{} C$$

84 87 82

Determine the value of S and T (2mks)

(ii) A radioactive material was picked from cave. Its average count rate was found to be 97 counts per second. After at time of 210 seconds, the count rate was registered as 34 counts per second. The average back ground count rate remained 35 counts per seconds. What is its half life? (3mks)

15. (a) A transfprmer is connected to a.d.c source. The secondary coil is connected to a centre zero galvanometer. State and explain the observation made on the galvanometer (2mks)

(b) State Lenz's law (1mk)

(c) (i) Distinguish between semi conductors and conductors (2mks)

(ii) Give one example of a semi conductor and one example for a conductor (2mks)

(iii) What is meant by donor impurity in a semi conductor (1mk)

(iv) Draw a circuit diagram including a cell, a diode and a resistor in the reverse biased mode (1mk)

(v) n the circuit in figure 11 below, when the switch is closed, the voltmeter shows a reading.

When the cell terminals are reversed and the switch is closed the voltmeter reading is zero

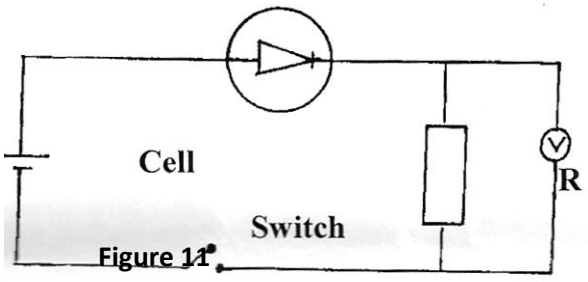
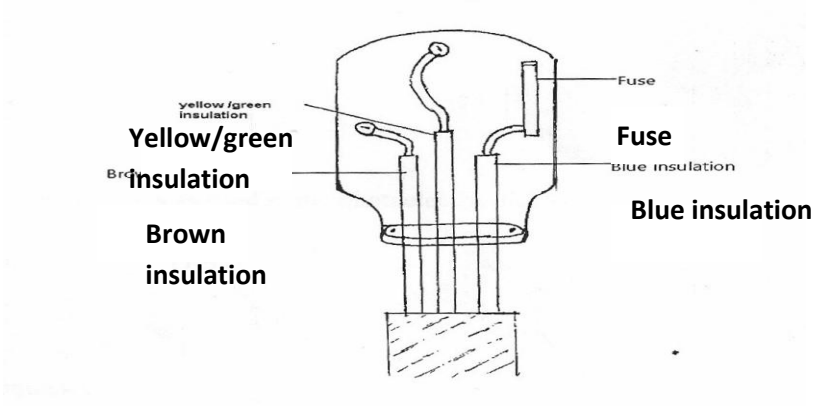


Figure 11

Explain this observation (2mks)

16. Figure 12 below shows a flex to the 13A-3 pin



(a) Plug which has been incorrectly fitted
List two mistakes and suggest corresponding remedies. (4mks)

(b) (i) Why would it be wrong to fit an electric heater in a bathroom on the wall directly the bath? (1mk)

(ii) Where would such a heater be fitted and what type of switch should be used to operate it? (2mks)

(c) A power line from a power sub- station to a town some distance away, has a resistance of 0.10 hms per kilometer. Determine the rate of energy loss in the transmission of power over 50km at a current of 60 Ampheres (3mks)

17. (a) Define the following terms as used in the photoelectric electric.

(i) Work function (1mk)

(ii) threshold frequency (1mk)

(b) In an experiment to find the relationship between frequency of radiation and kinetic of photoelectrons in a photoelectric device, the following graph was obtained

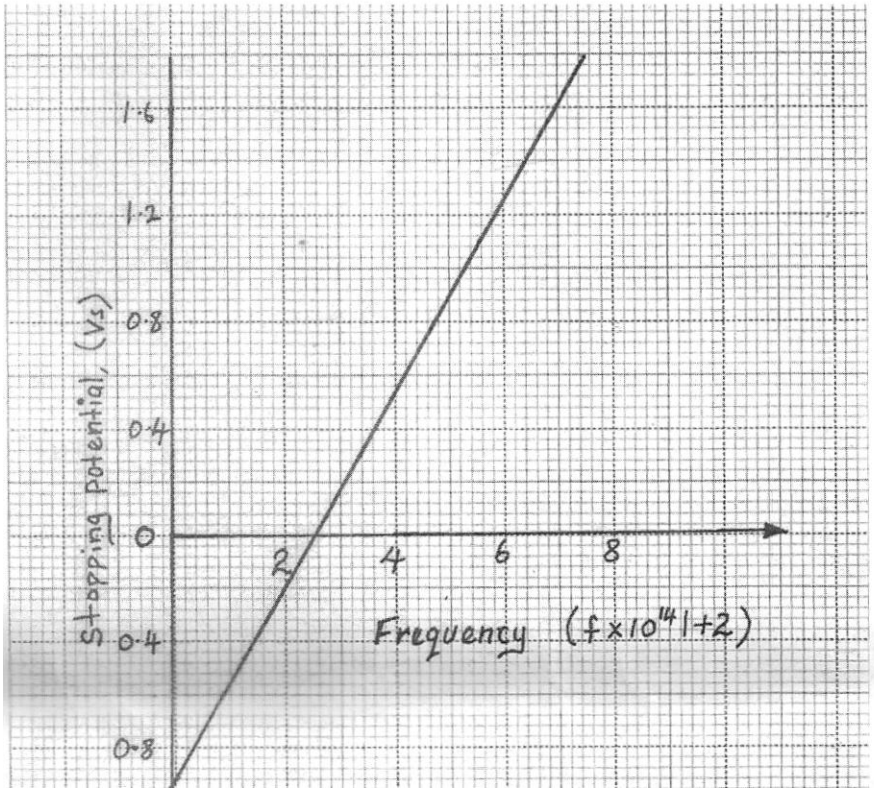


Figure 7

Use the graph to answer the following questions,

(a) (i) Determine the threshold frequency (1mk)

(ii) Find the plank's constant h (3mks)

(Take the charge of an electron to be 0.6x 10^{-19}C)

(ii) Calculate the work function of the metal in joules (3mks)

(b) The threshold frequency of sodium is 4.8x10^{14}Hz. Calculate the work function of sodium.

(*Takethe plank's constant to be 6.6x10-34JS) (*2mks*)*

Water