Name ……..…… Index No. ..……..…….

232/2
PHYSICS
Paper 2
July / August - 2008
Time: 2 Hours

KISUMU DISTRICT JOINT EVALUATION TESTS - 2008

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

232/2
PHYSICS
Paper 2
July / August - 2008
Time: 2 Hours

INSTRUCTION TO CANDIDATES

- Write your name and index number in the space provided above.
- Answer ALL questions in the spaces provided in the question paper.
- Mathematical tables and electronic calculators may be used.

FOR EXAMINER'S USE ONLY

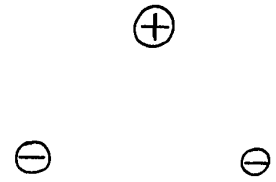
SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
I	1 - 13		
II	14		
	15		
	16		
	17		
TOTAL SCORE			

This paper consists of 11 printed pages.
Candidates should check the question paper to ascertain that all the
Pages are printed as indicated and no questions are missing.

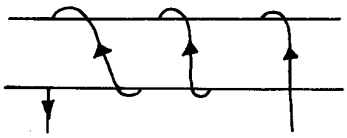
SECTION I (25 Marks)

Answer all questions in the spaces provided

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



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



3. The graphs in the figure below represent the same wave.

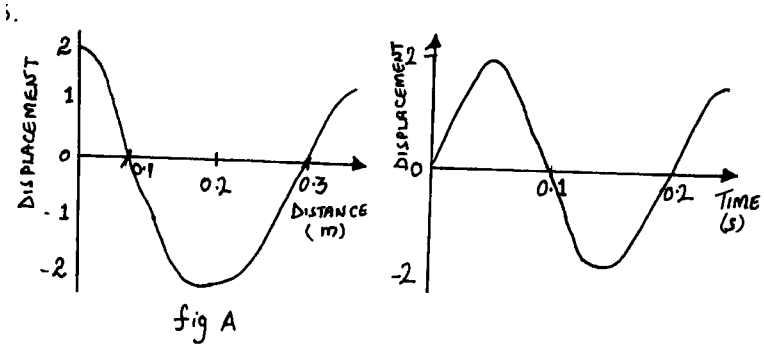
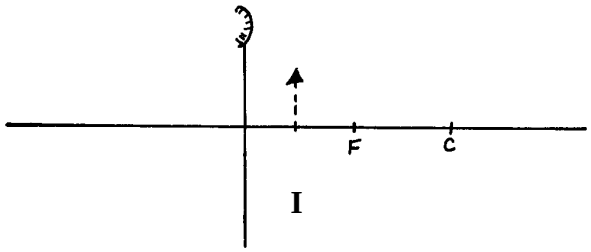


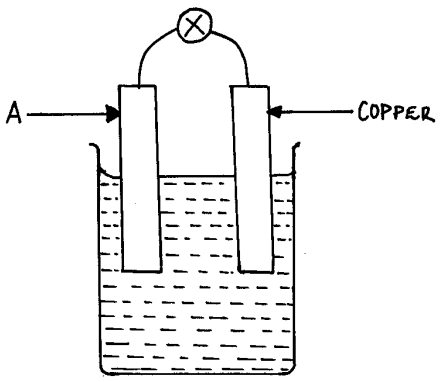
fig A

Determine the velocity of the wave. (3 mks)

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



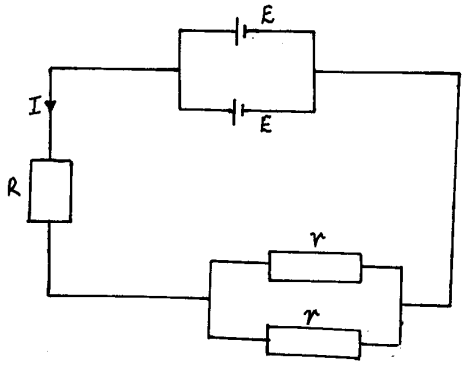
5. The figure below shows the set – up for a simple cell.



(i) Name the electrode A. (1 mk)

(ii) Explain why the bulb goes off after only a short time. (1 mk)

6.



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

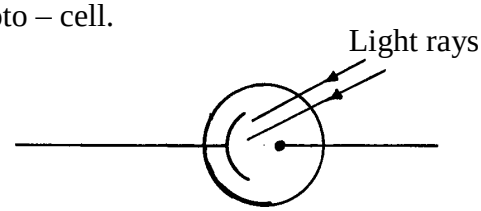
7. A 32g sample of a radio – active substance was reduced to 2g in 96days. What is its half-life?

(2 mks)

8. Arrange the following waves in the order of increasing frequency.

X-rays, visible light, infra – red, TV waves, micro waves. (1 mk)

9. The fig. below shows a photo – cell.



What factor determine the kinetic energy of the electrons emitted, hence show the relationship.

(2 mks)

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 35^0. At what angle does the light enter the air.

(3 mks)

11. In a pin – hole camera, what is the effect of making the pin – hole small but square in shape?

(1 mk)

12. Suggest a reason why it is not possible to increase the strength of a magnet indefinitely. (1 mk)

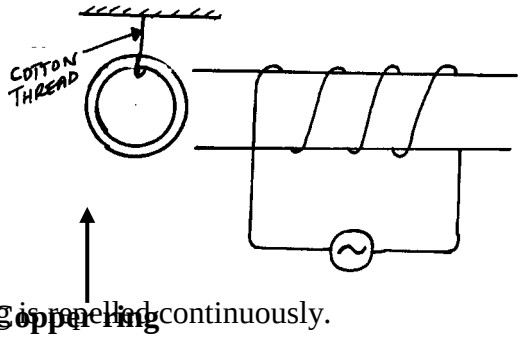
13. Two heaters A and B are connected in parallel across 240V mains supply. Heater A is rated 1000W and B is rated 2500W. Calculate the ratio of their resistance RA/RB. (2 mks)

SECTION II (55 Marks)

Answer ALL questions in the spaces provided

14. a) State the Faraday's Law of Electromagnetic Induction. (1 mk)

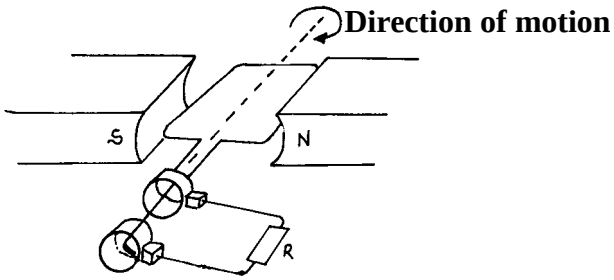
b) Coil carrying a large alternating current is placed close to a copper ring suspended freely on a silk thread as shown in the diagram below.



(i) Explain why the ring is repelled continuously. (2 mks)

(ii) State and explain what would be observed when a direct current is used instead of an alternating current. (2 mks)

c) The diagram below is a simplified illustration of an E.M.F. generator.



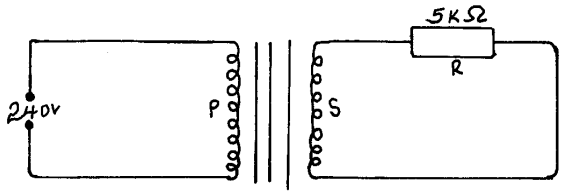
(i) Show the direction of induced current through R when the coil is in the position shown in the diagram. (1 mk)

(ii) State and explain three ways of increasing the amount of induced current in this set up. (3 mks)

(iii) On the axes below, sketch a graph to show how potential difference across R varies with time. The coil is initially horizontal. (1 mk)

d) State and explain any two ways by which energy losses are reduced in transformation. (2 mks)

e)



The figure above shows a step – down transformer connected to a 240V mains socket. The primary coil P has 4000 turns while the secondary coil has 200 turns. The efficiency of the transformer is 60% and a current of 50A flows through P. Calculate the current through S. (3 mks)

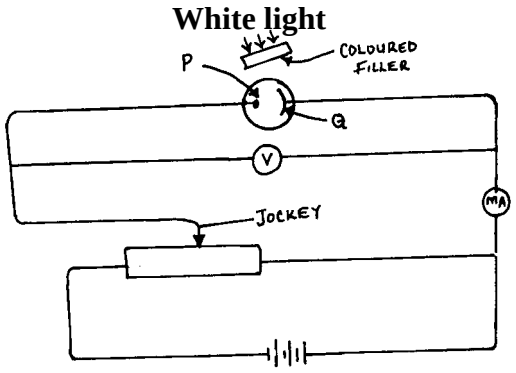
15. a) An object O placed in front of a converging lens, L_o forms an image I on the other side of the lens. Another converging lens, L_e is placed such that two lenses form a compound microscope. Draw a diagram of the set – up to show how the final image is formed. (5 mks)

b) A lit car bulb is placed 1.2m infront of a concave lens of focal length 0.4m. Find the position of the image formed. (3 mks)

c) The focal length of a convex lens is 15cm. A candle is placed 34cm infront of the lens. Draw a ray diagram to find the location of the image. (3 mks)

16. a) What is meant by the term photo – electric effect. (1 mk)

b) The figure below shows an arrangement used to investigate photo-electric effect.

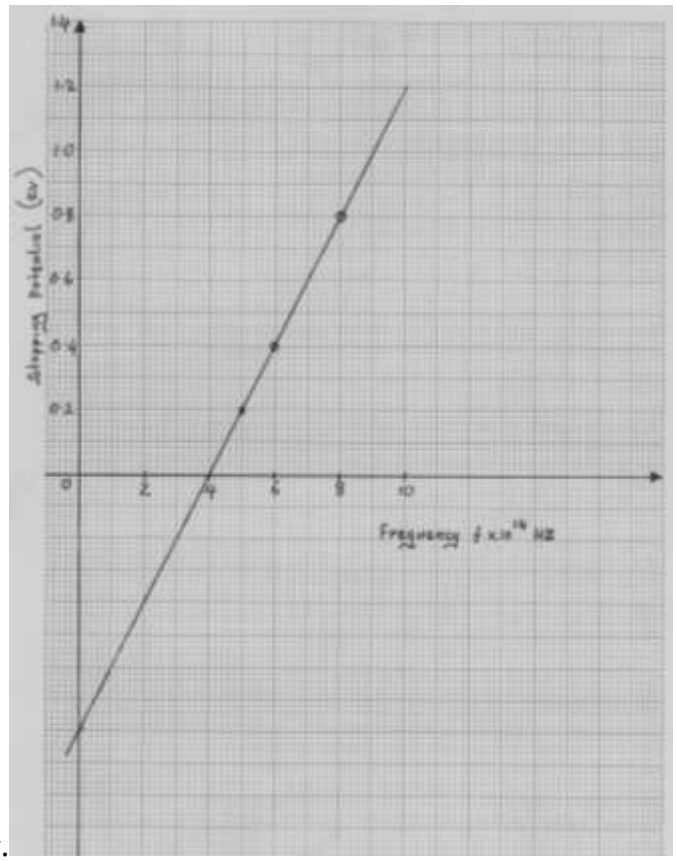


(i) Name the parts marked P and Q. (2 mks)

(ii) State three measurable quantities in this set up. (3 mks)

(iii) State how the intensity of light affects the photo – current. (1 mk)

c) The results obtained for various monochromatic radiations of different colours are shown graphically below.



(i) The graph indicates that there is a frequency below which no electrons are emitted. Explain why this is so. (1 mk)

(ii) From the graph determine;

I. Plank's constant, h (4 mks)

(Take electron charge, e = 1.6 x 10^{-19}C)

II. The work function of the metal, W_O (3 mks)

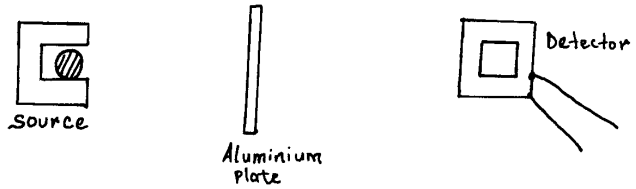
III. Sketch on the same graph, the expected graph of another metal which has a lower work function than the metal used. (1 mk)

17. a) What is meant by radio – active decay? (1 mk)

b) State a factor that leads to radio – active decay of a nucleus. (1 mk)

c) Distinguish between nuclear fission and nuclear fusion. (2 mks)

d) A radio – active source, Aluminium plate and suitable detector were arranged as below:-



(i) Before the source was introduced, the detector registered a reading of 40 counts per second. Explain this observation. (1 mk)

(ii) Name the emission from the source that was received by the detector and explain your answer. (2 mks)

(iii) Explain how the reading would be affected by removing the Aluminium. (1 mk)

e) (i) Uranium – 235 was bombarded with a neutron and fission took place in the following manner:-

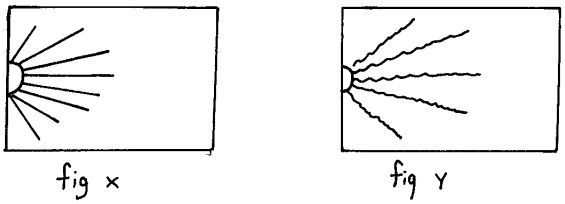
$$^{235}_{92}U + ^{1}_{0}n \longrightarrow {}^{90}_{38}Rn + ^{a}_{b}X + 10^{1}_{0}n$$

Determine the values of a and b. (2 mks)

a

b

(ii) The following are tracks formed by radio – active radiation.



Identify the type of radioactive particle that forms each set of tracks. (2 mks)

X:

Y:

(iii) State one application of radio isotopes in medicine and one in industry. (2 mks)