NAME: _____SCHOOL_____ADM NO. _____

INDEX No. _____ DATE: _____ SIGN: _____

GATUNDU EVALUATION EXAMS 2016
KENYA CERTIFICATE OF SECONDARY EDUCATION
PHYSICS PAPER 2 (232/2)
TIME 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Write your name, school, admission number and Index number in the spaces provided above.
2. Sign and write the date of examination in the spaces above.
3. Answer all the questions in Section A and B in the spaces provided.
4. All working MUST be clearly shown
5. Non –programmable silent electronic calculator and KNEC Mathematical tables may be used.
6. This paper consists of 16 pages.
7. Candidates should check the question paper to ascertain that ALL the pages are printed and no questions are missing.

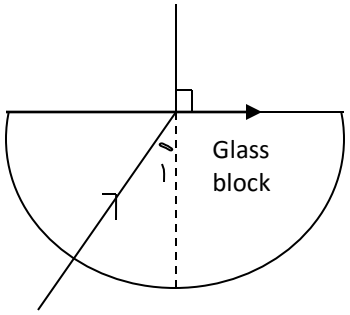
SECTION	QUESTIONS	MAX SCORE	CANDIDATES SCORE
A	1 -14	25	
	15	12	
B	16	10	
	17	11	
	18	10	
	19	12	
	TOTAL	80	

SECTION A: 25 MARKS.

Answer all questions in this section in the spaces provided.

1. Give a reason why it is necessary to leave the caps of the cells open when charging an accumulator. (1 Mk)

2. The figure shows a ray of light incident on a face of semi-circular glass block.

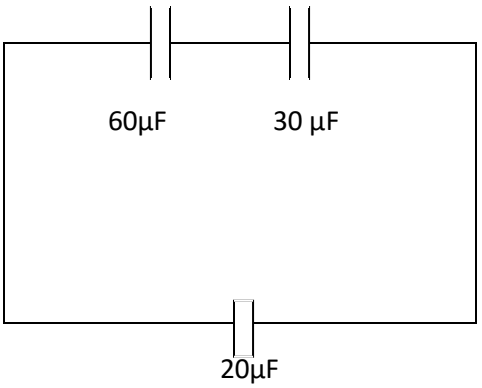


Determine the angle of incidence (refractive index of glass = 1.5) (2 Mks)

3. Explain how doping produces a p-type semiconductor from a pure – semi conductor material. (2 Mks)

4. When a highly positively charged rod is gradually brought towards a negatively charged electroscope. It is observed that the leaf divergence first decreases and then increases when the rod moves near to the cap. Explain (2 Mks)

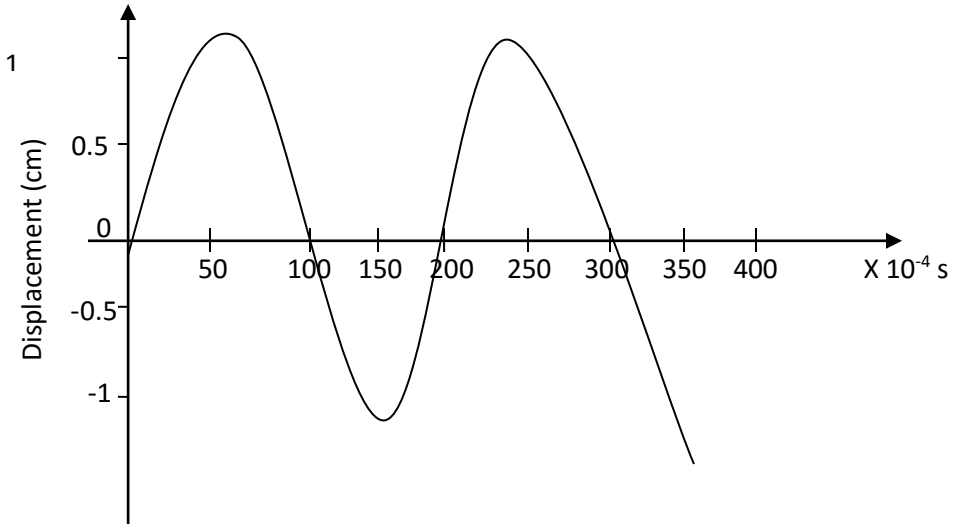
5. Calculate the effective capacitance of the capacitors shown in the figure below. (2 Mks)



6. State how the deflection system of a television differs from that of a C.R.O (2 Mks)

7. State two factors affecting the type of shadow formed by a fixed size object placed in front of a source of light. (2 Mks)

8. The wave shown in the figure below has a speed of 100m/s. Study and answer question below.



Calculate the wavelength of the wave. (3 Mks)

9. Explain In terms of domain theory what happens when a bar magnet is placed in a solenoid in which an alternating current flows. (2 Mks)

10. If the half life of a radio active gas is 2 minutes, then after 8 minutes the activity will have fallen to afraction of its initial value. Determine this fraction. (2 Mks)

11. In each case, the pattern of the waves is incident on the slit and the emergent pattern is shown.

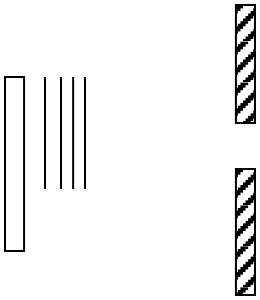


Diagram 1

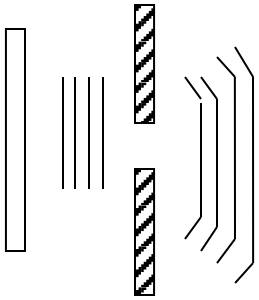


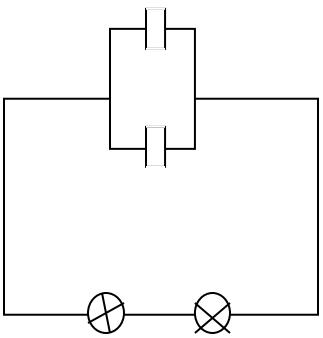
diagram 2

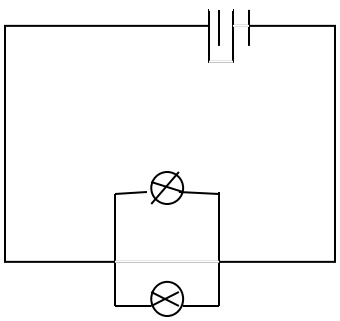
Which action would cause the waves in diagram 1 to be diffracted less and so produce an emergent pattern closer to that shown in diagram 2. (1 Mk)

12. Explain why the cathode of a cathode ray tube is coated with oxides of metals such as strontium and barium. (1 Mk)

13. State why optical fibers are preferred in communication to ordinary cables. (1 Mk)

14. A student was investigating the brightness of bulbs with set up in circuits. He used identical bulbs and cells. The circuits A and R were set up as shown.

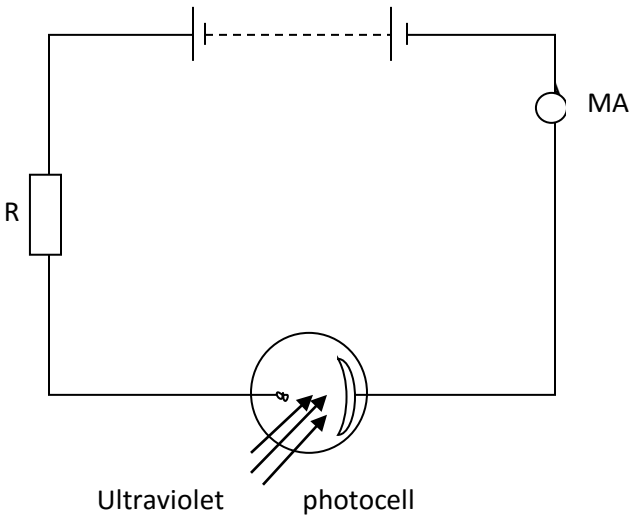




State and explain which set-up had the bulbs brightest. (2 Mks)

SECTION B - 55 MARKS.

15. (a) The figure below shows a photocell P in action

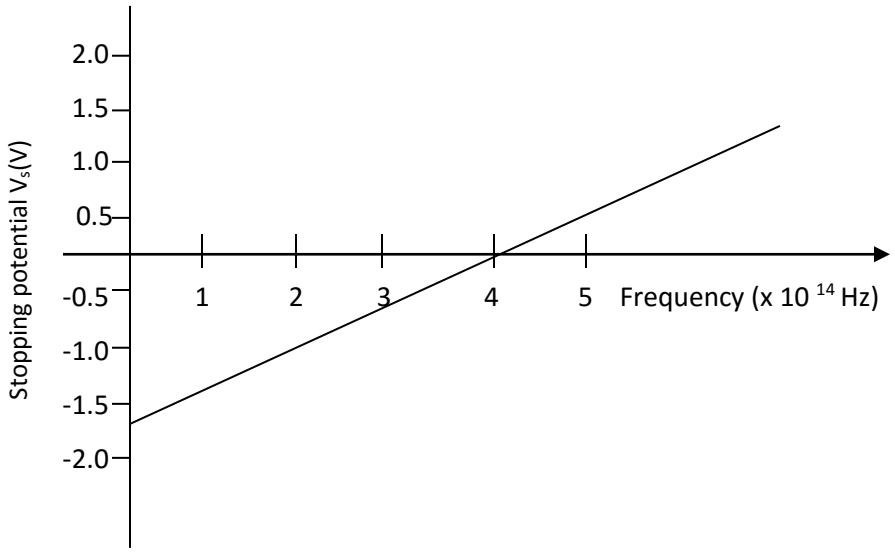


light.

(i) Give a reason why the photocell is evacuated. (1 Mk)

(ii) What is the function of the resistor R in the circuit? (1 Mk)

(b) The following graph was plotted for the results obtained from an experiment on photoelectric effect.



Given that $eV_s = hf_o - W_o$ where h is planks

Constant and W_o is the work function of the metal used. Use the graph to:

(i) Determine the threshold frequency. (1 Mk)

(ii) The plank's constant. (4 Mks)

(iii) The work function for the metal. (take charge of an electron e = 1.6×10^{-19} J) (2 Mks)

(c) (i) Sodium has a work function of 2.0eV.
Calculate the least frequency of radiation by which electrons are emitted.
Use the value of h obtained from the graph above. (3 Mks)

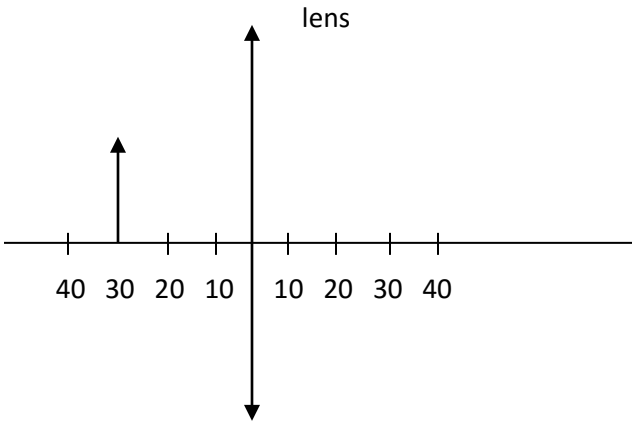
16. (a) State the Lenz's law of electromagnetic induction. (1 Mk)

(b) List three features in a transformer which improves its efficiency. (3 Mks)

(c) A step down transformer has 800 turns in the primary coil and 40 turns in the secondary coil.
A 100Ω resistor is connected to the secondary output. If the primary voltage is 240V, calculate;
(i) The output voltage. (3 Mks)

(iii) The secondary current. (3 Mks)

17. (a) An object is placed 30cm in front of a thin converging lens of focal length 20cm. The set up is represented in the figure.



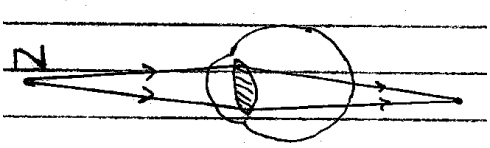
(i) On the same figure construct a ray diagram to locate the position of the image. (3 Mks)

(ii) Determine the magnification produced. (2 Mks)

(b) An object 6cm tall is placed 40cm from a convex lens of focal length 50cm.
Find the position of the image. (2Mks)

(c) State two differences between the human eye and the camera. (2 Mks)

(d) The figure below shows an eye defect.



(i) Identify the defect. (1 Mk)

(ii) State the cause of the defect. (1 Mk)

18. (a) (i) Define background radiation. (1 Mk)

(ii) State two sources of background radiation. (2 Mks)

(b) State two differences between alpha and beta particles. (2 Mks)

(c) State one use of radioactivity in each of the following areas.

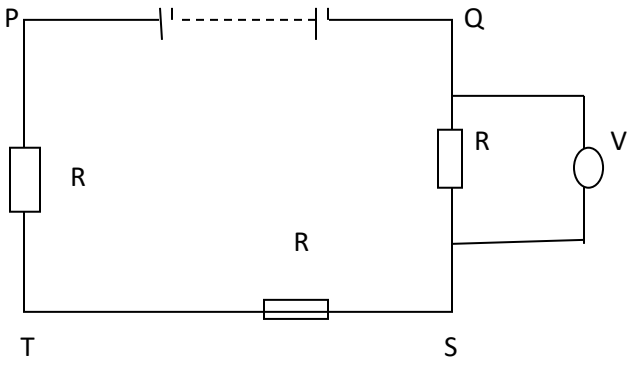
(i) Agriculture. (1 Mk)

(ii) Medicine (1 Mk)

(d) Uranium $\left[\begin{matrix}238\\92\end{matrix}\ \mathbf{U}\right]$ **undergoes both alpha and beta radioactive decay to become lead** $\left[\begin{matrix}206\\82\end{matrix}\ \mathbf{Pb}\right]$

Find the number of alpha and beta particles emitted in the process. (3 Mks)

19. (a) The circuit diagram in the figure below shows three identical resistors connected to a cell of e.m.f 12V



(i) Determine the reading of the voltmeter. (2 Mks)

(ii) If another identical resistor R is connected parallel to PT, determine the potential difference across Qs. (3 Mks)

(b) Explain why the earth pin in the mains plug is longer than the neutral and live pins. (1 Mk)

(c) Give one example of a semi conductor and one example of a conductor. (2 Mks)

(d) A hair dryer rated 1000W, 240V runs for 3 hours per day for 7 days. Calculate;

(i) The number of KWh used. (2 Mks)

(ii)The cost of electricity paid at the rate of Ksh 5.50 per unit. (2 Mks)