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GATUNDU SUB COUNTY EVALUATION EXAMINATION

232/2 PHYSICS PAPER 2 JULY / AUGUST, 2014 2 HOURS

FOT NOTE Free

INSTRUCTIONS TO CANDIDATES

- ✤ Write your name and index number in the spaces provided above
- \clubsuit Sign and write the date of the examination in the spaces provided
- ✤ Attempt ALL questions in sections A and B.
- All your answers must be written in the spaces provided in this question paper.
- \clubsuit All working must be clearly shown
- Non programmable silent electronic calculators and KNEC mathematics table may be used except where state otherwise

Section	Question	Maximum Score	Candidates' Score
А	Q1 - Q13	25	
В	Q14 Q15 Q16 Q17 Q18	$ \begin{array}{r} 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10 \\ 10 \\ 10 \\ 11 \\ 12 \\ 13 \\ 9 \\ 10$	
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SECTION A (25 mks)

(Answer ALL the questions in the spaces provided)





(ii) Explain what happens at C.

(1 mks)

(1 mk)

2) Figure below shows a ray of light incident on a face of semi-circular glass block.



Determine the angle	of incidence <i>i</i>	(refractive	index of glass	s = 1.5	(2 mks)
Determine the ungle		(Ionuouro	mach of Stubb	J = 1.5	$(2 \operatorname{IIII}_{3})$

3. A metre rule is suspended by a thread such that it is in equilibrium balanced by a permanent magnet attached to the metre rule and some weight as shown in fig. bellow



If the soft iron is fixed to the bench, state and explain the effect on the metre rule when the switch is closed. (2 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 graphs in the figure below represent the same wave.



Determine the velocity of the wave.



6. Determine the ammeter reading when both switches are closed.

(2 mks)



7. An immersion heater rated 1.5KW23⁸ used continuously for 30min per hour per day. Calculate KCSE Past papers Visit www.fre the cost per week per ksh 6.70 per unit. (2 mks)

FOT NOTE Frees 8. The figure below shows the relationship between the reciprocal of the object distance $\left(\frac{1}{u}\right)$ and





From the graph, determine the focal length of the lens. (2mks)





10. What is the difference between a hard and soft magnetic material in terms of the domain theory. (1mk)

11. Complete the following table:

(2mks)

Radiation	Source	Detector	Application
X- rays	X-ray tube		
Ultra violet	The sun		





If the speakers are connected to an audio generator, state what is observed when one walks along AB and OC. (2mks)

SECTION B (55 MARKS) (Answer ALL questions in this section)

14. Figure below shows an x-ray tube



a) i) Name the elements used in making the parts labeled A and B.

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(2 marks)

A:

B:

ii) Explain the use of the part labeled C.

(2 marks)

iii) Explain how the x-rays are produced.

(2 marks)

(1 mark)

b) The penetrating power of x-rays is normally varied depending on the intended use. Explain briefly how this is done, (2 marks) papers visi

 $k^{e^{-1}}$ in the number of electrons hitting t $k^{e^{-1}}$ in the number of electrons hitting t $k^{e^{-1}}$ (The charge of an electron is $1.6 \ge 10^{-19}$ C) $k^{e^{-1}}$ (The charge of an electron is $1.6 \ge 10^{-19}$ C) c). An veray tube is operating with an anode potential of 20KV and a current of 40mA. **Determine** the number of electrons hitting the target per second. (2mks)

15.1n an experiment to find the relationship between frequency of radiation and kinetic energy of photoelectrons in a photoelectric device, the following graph was obtained.



b) The threshold frequency of sodium is 4.8×10^{14} Hz. Calculate the work function of sodium. (*Take the plank's constant to be* 6.6×10^{-34} *Js*) (2mks)



ii) Describe how the illustrated rectifier works. (2 marks)

iii) State the modification that can be made on the arrangement to improve the quality of the output. (1 mark)

iv) Sketch on the areas below how the improved output is displayed on a C.R.O screen.

(1 mark)

(1 mark)



16. a) State the Faraday's Law of Electromagnetic Induction.) Coil carrying a ¹⁻¹ ait b) Coil carrying a large alternating current is placed close to a iron ring suspended freely on a silk thread as shown in the diagram below.

FOR MORE Free KCSE Past COTTO THREAD iron ring

(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)

(1 mk)



c) The diagram below is a simplified infustration 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 (1 mk)
- (ii) State and explain three ways of increasing the amount of induced current in this set up.

(2 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) the etransformer is 60% and a current of 50A flows through P. Calculate the current through S. Freetransformer is 60% and a current of 50A flows through P. Calculate the current through S. e) The agure below shows a step – down transformer connected to a 240V mains socket. The

(2 mks)





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

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

Determine the values of a and b.

(1 mks)

a.....

b.....

c) A radioactive element A of half life 31 days decays to element B. A sample of A of mass 32g is kept in a container. Assuming Bris stable; calculate the mass of B that will be in the container after 124 days. (2 mks)

d) The figure below shows how a beam of electrons would be deflected by an electric field produced between two metal plates.



(i)Draw the missing connections.	(1mk)
(ii)Explain why the beam of electrons is deflected in the direction shown.	(1mk)

(iii) State how the deflection system of a television system differs from that of a CRO. (1mk)

(iv) Give the reason why it is possible to have a wider screen in the television set than on the CRO. (1mk)

18a) The figure below shows an object placed in front of a thin lens. The focal length of the lens is 10cm. The screen is adjusted until an image which is magnified 5 times is obtained.



From the information

(i)Which type of lens was in the experiment.

(1mk)

(1mk)

(ii)State any other characteric of the image formed.

(2mks)

(iii)Find the value of u

b) The figure below shows an object and an image formed by a certain lens.

By drawing suitable rays (ii)Find the value of focal length f. (1mk)

c) The figure below shows a defective eye



(i) state the cause of the defect.

(ii)What type of lens is used to correct the defect?

d)State any two similarities between an eye and a camera. (2mks)

(1mk)

(1111)

(1mk)