

MASINGA DISTRICT JOINT EVALUATION TEST - 2011

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

232/2 PHYSICS PAPER 2 (THEORY) TIME: 2 HRS

INSTRUCTIONS

- 1. Write your name and your Index number in the spaces provided.
- 2. This paper consists of **two** sections, Section **A** and **B**. Answer **ALL** the questions in both section in the spaces provided in this paper.
- 3. ALLworking must be clearly shown.
- 4. Mathematical tables and electronic calculators may be used.
- 5. Take $g = 10m/s^2 C=3.0 \times 10^8 ms^{-1} M_e=9.1 \times 10^{-31} kg e = 1.6 \times 10^{-19} c$

SECTION	QUESTION	MAXIMUM SCORE	STUDENTS SCORE
Α	1-12	25	
В	13	10	
	14	13	
	15	13	
	16	12	
	17	07	
	TOTAL	80	

FOR EXAMINER'S USE:

This paper consists of 11 printed pages Candidates should check to ensure that all pages are printed as indicated and no questions are missing

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Turn Over

SECTION A (25 MARKS)

- 1. State one difference between primary cell and secondary cell.
 (1Mark)
- 2. Give a reason why it is not advisable to arrange cells in parallel unless they have identical e.m.fs.

(1Mark)

3. The South Pole S of a magnet is stroked along a metal bar in the direction shown.



a) Name a metal which could become permanently magnetized by stroking in this way	(1Mark)
b) State the polarity of end A	(1Mark)
4. State one advantage of alkaline cell over a lead – acid cell	(1Mark)
5. Distinguish between thermionic and photo-electric emission	(1Mark)
 6. The following nuclear reactions is part of a radioactive series B → C → D i) Name the radiation represented by R and S; 	
R	(1Mark)
S	(1Mark)
ii) Determine the value of Y	
Y	(1Mark)

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SWELS	
7. State the difference between transverse and longitudinal wave	(2Marks)
e ^{r é}	
8. A modern cathode $ray oscilloscope$ has a set of deflection plate called X and Y-plates a	and a time base.
i) What is the fup ose of the time base	(1Mark)
ii) What would be the trace seen when the time base is switched off and	
A d.c voltage applied to the y- plates	(1Mark)
to a solution of the second se	
b) An a.c voltage is applied to the Y-plates?	(1Mark)
9. Apprece of metal is embedded at the centre of an ice block of thickness 30cm. How	far inside does the
metal appear to be when viewed from the outside (Refractive index of ice is 11.32)	(3Marks)

10. The figure below is drawn to scale. Use this information on the figure to answer thequestions that follow;



- i) What is the critical angle of the glass-air interface (1Mark)
- ii) Determine therefractive index of the glass material (2Marks)

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11. A heater of resistance R₁ is rated P watts, V volts while another of resistance R₂ is rated 2P watts, -

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volts. Determine -
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(3Marks)

12. The figure below shows a displacement time graph for a certain wave



Determine the frequency of the wave

(2Marks)

SECTION B (55 MARKS)

13 The fig below shows apparatus used to produce X-rays.



iv) Determine the velocity with which the electrons strike the target (Take $e=1.6x10^{-19}$ C and $M_e=9.1x10^{-31}$ kg) (2Marks)

v) What property of lead makes it suitable for use as shielding material?	(1Mark)
14. a) State Lenz's law of electromagnetic induction	(2Marks)

b) A coil is moved quickly away from the end of a stationery magnet Y and current is flowing as shown below;



Show the polarity of Y	(1Mark)
c) State the essential condition for e.m.f to be induced in a conductor.	(1Mark)

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- d) A Transformer has 800 turns in the primary winding and 40 turns in the secondary winding. The alternating e.m.f connected to the primary is 240V and the current is 0.2 A.Find;
 - i) Secondary e.m.f get (3Marks)

Workhurke (Winner in the secondary if the transformer is 90% efficient

(3Marks)

- e) Explain how energy losses in a transformer are reduced by having;
 - i) A soft-iron core (2Marks) ii) A laminated core (1Mark)
- 15. The figure below shows an object placed infront of a cocave mirror of focal length 10cm. C is the centre of curvature.



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i) On the same figure draw a ray diagram showing the position of the image. Use the ray diagram (i) above to determine	(4Marks)
ii) The images distance	(2Marks)
iii) Magnification	(1Mark)
b) A vertical object is placed 20cm infront of a convex lens of focal length 6cm.	
i) Determinea) The image distance	(2Marks)
b) The Magnification	(2Marks)
ii) State two characteristics of the image	(2Marks)
16. a) Define the refractive index of a substance	(1Mark)
b) In an experiment to determine the refractive index of a liquid, the liquid was pomeasuringcylinder. A pin was placed at the bottom of the cylinder and another pillocate the apparent position of the first pin. The real depth and apparent depth we experiment was repeated with other values of real depth. The table below shows	uredinto a in was used to vere measured. The the results obtained.

Real (cm)	5	10	15	20	25
Apparent (cm)	5.3	6.7	10	13.3	16.7

i) Plot the graph of real depth against apparent depth

1ers

(5Marks)



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c) Figure below shows a ray of light incident on a glass-air interface



Given that the refractive index of the glass is 1.6, determine angle (3Marks)

17 a) AGelger –Muller Counter, sensitive to all three types of radioactive radiation is placed in front of and close to a radioactive source, and the count rate determined. A sheet oflead, 2mm thick is placed in front of radioactive source and it was found the count rate was reduced.
i) Name the type of radioactive radiation giving your reasons (2Marks)

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	eners	
ii) Explair	n the difference between this type of radioactive radiation, and the	e other twotypes of
radiatio	on, and show why the range differs for each type of radiation	(2Marks)
	22 ⁵ 2 ⁵	
······		
iii) When t	the radioactive source is removed, the rate count does not fall con	npletely to zero.
e www.	s this effect called?	(1Mark)
NOT TE iv) A radioa	ctive isotope of copper decays to form an isotope of Zinc as show	/n below.
€ ⁰ , 6 [†] Cu	Zn + Radiation	
Name the	e radiation emitted and give a reason for your answer	(2 Marks)
Radiation	1	
Reason		