MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education

MOCK EXAMINATIONS 2025

232/2 PHYSICS PAPER 2 Paper 2

Name: .....Adm No: .....

Class: .....Candidate's Signature: ..... Date: 1/8/2023.

Instructions to candidates

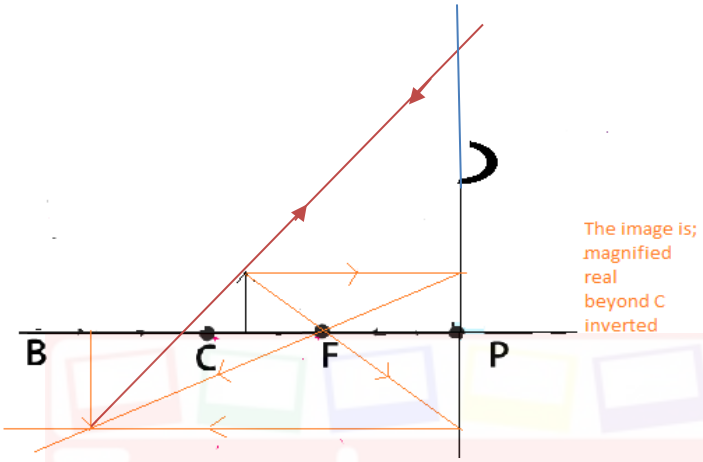
• This paper consists of TWO sections; A and B. Answer ALL the questions in section A and B in the spaces provided.

- ALL working MUST be clearly shown. Mathematical tables, electronic calculators and slide rules may be used.
- • Candidates should check the question paper to ensure that all the **16** pages are printed as indicated and that no questions are missing.

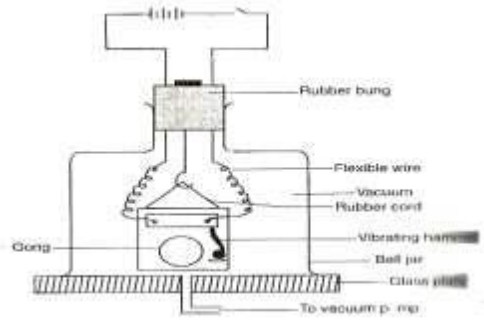
Take c=3.0x10^{8}m/s

section	Question	Maximum score	Candidates score
A	1 - 13	25	
B	14	13	
	15	14	
	16	15	
	17	7	
	18	6	

Marking scheme

1. The speed of the electrons produced increases ✓ hence the strength of x-rays is increased. ✓
2. Attraction can occur between magnets and between a magnet and a magnetic material. ✓
3. National grid system ensures that there is power to consumers even when one of the power stations fails. ✓
4. 

5. *Connection of resistors in parallel gives a <u>cumulative lower resistance</u> ✓ than when in series hence minimizes chances of overheating.*
6. 
7. To <u>absorb any incident light</u> ray that falls on the walls of the pinhole camera ✓
8. It is coiled to <u>increase the length thereby increasing the resistance</u> ✓ thus high amount of electrical energy is converted into heat energy per unit time when the switch is closed.
9. i.Set up the apparatus as shown below ✓



ii-switch on the circuit to make the bell ring continually as air is pumped out slowly using vacuum pump✓

Observation and conclusion

-the intensity of the sound diminishes/fades continually✓ as the air is pumped out this explains that sound does not travel in vacuum✓

10. E.m.f of the cell drops below 1.8V ✓
    Relative density of the acid falls below 1.12✓ (using a hydrometer)
11. Radio waves are easily diffracted around hills than T.V waves since radiowaves have longer wavelengths.
12. (i) Diagram
    (ii)The repelled negative charge flow to the ground, ✓leaving the conductor positively charged.
    (ii)Due to repulsion, the positive charges spread on the conductor but the density is relatively high on sharp end. ✓
13. Winding the coil on a soft iron core. ✓
    Increasing the number of turns of the rotating coil. ✓
    Using a stronger magnet
    Multiplying the number of coils and commuter segments

14.(a) (i) Emision of electrons from surface of metal by shining light/radiation of sufficient frequency/ energy on them.

(ii) Maximum wavelength of the radiation beyond which no photoelectricity occurs /no electron is emited

(a) (i) $f = 6.4 \times 10^{14}$ Hz ✓ (shown from the graph/stated)

$$\lambda = \frac{c}{f}$$

$$\lambda = \frac{3.8 \times 10^{8}}{6.4 \times 10^{14}}$$

$$= 0.46875 \times 10^{-6} \text{ m}$$

(ii) From the vertical intercept ${}^{w_0}/_{e} = 3.0e\sqrt{}$

$W_o = hf_o$

$h = 3 \underline{\times 1.6 \times 10^{-19}}$

6.4×10^{14}

$= 7.5 \times 10^{-34} Js$

(iii) $Wo = 7.5 \times 10^{-34} \times 6.4 \times 10^{14}$ or $^{w_0}/_e = 3.0e\surd$

$= 4.8 \times 10^{-19}$ $w_o = 3.0 \times 1.6 \times 10^{-19}$

$= 4.8 \times 10^{-19} J$

(b) X-Live

Y – Neutral wire

Z – Earth wire

15.(a) A - Cathode **√**

B - Anode **√**

b. When current flows through the filament in the cathode, electrons are produced by thermionic emission.**√¹** This electrons are accelerated towards the target where they are suddenly stopped**√¹** producing x-rays.

C (i) By increasing the heating/filament current √

(ii) By increasing the accelerating potential difference. √

(iii)Q = It

$Q = \frac{10}{1000} \times 1s$ √

= 0.01 C

$$No.of\ electron = \frac{Q}{e}$$

$$= \frac{0.01}{1.6 \times 10^{-19}}$$

$= \quad 6.25 \times 10^{16} \surd$

(iv) K.E = ½ mv^2

$eV = ½ mv^2 \surd$

$1.6 \times 10^{-19} \times 5000v = ½ \times 9.1 \times 10^{-31} \times V^2$

$V^2 = \frac{1.6 \times 10^{-19} \times 5000 \times 2}{9.1 \times 10^{-31}}$

$V = \sqrt{1.7582x\ 10^{15}}$

$V = 4.193 \times 10^7\ ms^{-1} \surd$

v. High density √ hence It absorbs stray x-rays

1.d. It varies voltage on the X-plates For horizontal deflection of the spot formed on the screen √

(ii) a) The spot will move up or down √ depending on polarity of the plates

b)A vertical line will be seen on the screen√ or a spot will move up and down continuosly

16.(a) The direction of the induced e.m.f is such that the induced current which it causes to flow produces a magnetic effect that opposes the change producing it. √

(b) North √

(c) - Relative motion between the field and conductor√ (change in flux linkage)

(d) i)the current in the 1st coil build up to maximum, magnetic field produced cuts across the 2nd coil, √ a changing magnetic flux linkage is created√ in the coil inducing an e.m.f √ ,hence current in the 2nd coil cause a deflection in the galvanometer

(Changing magnetic flux linkage √√)

(ii) There will be greater deflection √ since it will have greater changing magnetic field due to easy magnetization of the soft iron core. √

(i)

Power = Voltage x Current, P = 240 x 0.1

= 24 W √

iiVpIp = VsIs √

240 x 0.1 = 12 x I_s

$I_s = \frac{240\ x\ 0.1}{12}$

Is = 2A √

(i) Efficiency = $\frac{power\ output}{power\ input}$ *x 100, √*

80 = $\frac{power\ output}{24}$ *x 100,*

Power output = $\frac{80x24}{100}$

Power output = 19.2 W √

(ii) Power = voltage x current,

19.2 = 12 x I, √

I = 1.6 A √

17

i) **Is a coherent sound wave source ✓**

ii) <u>Alternate</u> loud (in regions of constructive interference) ✓ and soft sound (in regions of destructive interference) ✓ is heard along PQ.

iii) When the frequency of the signal is increased, the separation between the alternating loud and soft sound is reduced i.e. more close ✓

iv) a <u>constant</u> loud sound ✓ will be heard.

v) ✓ There will be formation of a transverse wave.

18.a.Is the ratio of the velocity of light in vacuum to the velocity of light in the medium

b. *(i) Light must be travelling from a denser to a less dense medium.*
(ii) The angle of incidence must be greater than the critical angle.

c. *Its an angle of incidence in the optically denser medium for which the angle of refraction in the less dense medium is 90^0*

d.