



MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education

THE MOCK EXAMINATIONS, 2026

232/2
June 2026

PHYSICS

PAPER 2
Time: 2 Hours

MARKING GUIDE

Instructions

- (a) Write your name and admission number in the spaces provided above
- (b) This paper consists of Two sections **A** and **B**
- (c) Answer **ALL** questions in section **A**
- (d) Answer question 16 and any other **THREE** questions from section **B**
- (e) All answers should be written in the spaces provided on the question paper.

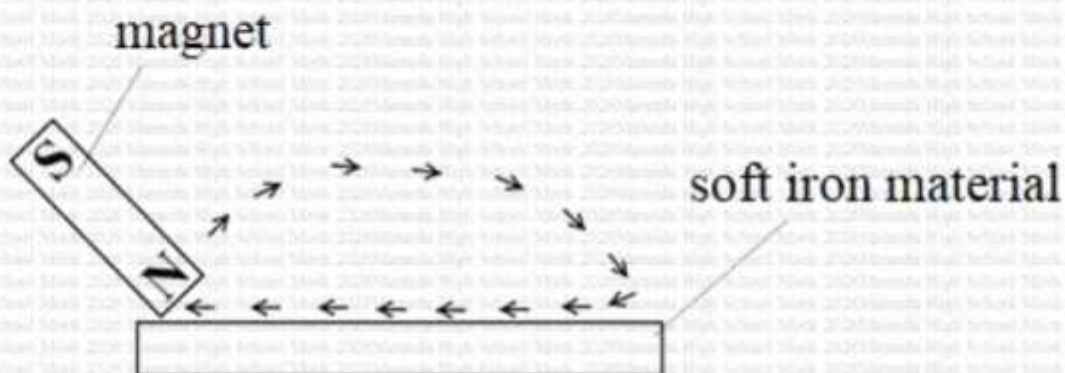
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SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 -13	25	
B	14	11	
	15	08	
	16	11	
	17	07	
	18	09	
	19	09	
	TOTAL SCORE	80	

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SECTION A (25 MARKS)

1. A steel bar is stroked repeatedly with a magnet in the same direction as illustrated by **Figure 1**.

**Figure 1**

State the method used to magnetize the bar.

(1 mark)

Single stroke method ✓¹

2. A current carrying conductor is placed between the poles of a magnet and experiences a force.

a) Name the rule used to determine the direction of the force.

(1 mark)

Flemming's left hand rule ✓¹

- b) Other than the magnitude of current through the current carrying conductor, state **one** other factor that affects the magnitude of the force. ✓¹

(1 mark)

Strength of magnetic field / Length of conductor / Angle between conductor and magnetic field

3. An object is placed between the principal focus **F** and the center of curvature **C** of a concave mirror. State **two** characteristics of the image formed. (2 marks)

-Image is real ✓¹

-Image is inverted ✓¹

-Image is enlarged/magnified

4. Light passes from air into glass as shown in Figure 2

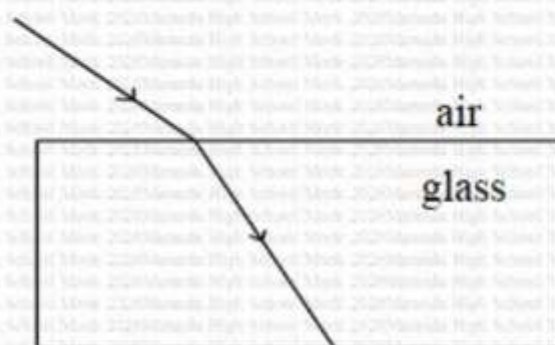


Figure 2

State and explain what happens to the speed of the ray of light as it moves into glass. (2 marks)

The speed decreases. ✓¹

Glass has higher optical density than air / Glass has a higher refractive index

than air. ✓¹

5. A water wave travels a distance of 12m in 4 seconds. If the wavelength of the wave is 3m, determine the frequency of the wave. (2 marks)

$$v = \frac{d}{t}$$

$$= \frac{12}{4}$$

$$= 3 \text{ m/s}$$

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

$$= \frac{3}{3}$$

$$= 1 \text{ Hz}$$

6. A bulb is rated 60W, 240V. Calculate the current drawn by the bulb. (2 marks)

$$I = \frac{P}{V}$$

$$= \frac{60}{240}$$

$$= 0.25 \text{ A}$$

7. A charged rod is brought near to but not touching a neutral conductor.

a) Name the process by which charges are rearranged.

(1 mark)

Electrostatic induction [accept induction] ✓¹

- b) State the type of charges induced on the end near the neutral conductor. (1 mark)

The charge opposite to that of the charged conductor. ✓¹

8. A student observed a rainbow when it was raining and the sun was shining. Explain how dispersion of white light by rain drops leads to the formation of the rainbow. (2 marks)

White light enters the raindrop and is refracted. ✓¹

White light is dispersed into different colours due to the different wavelengths. ✓¹

9. Describe how focal length of a curved mirror can be determined using a distant object. (2 marks)

Reflect rays from a distant object onto a screen to form a sharp image. ✓¹

Measure the distance between the mirror and the screen. ✓¹

10. Explain why it is not advisable to leave a lead-acid accumulator in the discharge condition for a long time. (2 marks)

The plates become coated/ The plates become sulphated. ✓¹

The coat is difficult to break and thus reduces battery capacity. ✓¹

11. Describe how a ripple tank may be used to determine the wavelength of a transverse wave. (3 marks)

Turn on the vibrator/wave source // Place the wave source in contact with water. ✓¹

Measure the distance covered by a given number of wavelengths. ✓¹

Divide this distance with the number of wavelengths to get λ . ✓¹

12. A student observed that sounds from distant sources travel faster on warm nights than on cold nights. Explain this observation. (2 marks)

Increase in temperature increases kinetic energy of air particles. ✓¹

The particles vibrate over longer distances. ✓¹

13. State one device that may be used to detect Ultra Violet radiation. (1 mark)

Photographic plate ✓¹ Fluorescent screen

UV detector.

SECTION B (55 MARKS)

Answer all questions in this section in the spaces provided

14. a) State Faraday's law of electromagnetic induction (1 mark)

The magnitude of induced e.m.f. is directly proportional to the rate of

change of magnetic flux linkage. ✓¹

- b) A magnet is moved into a coil connected to a galvanometer.

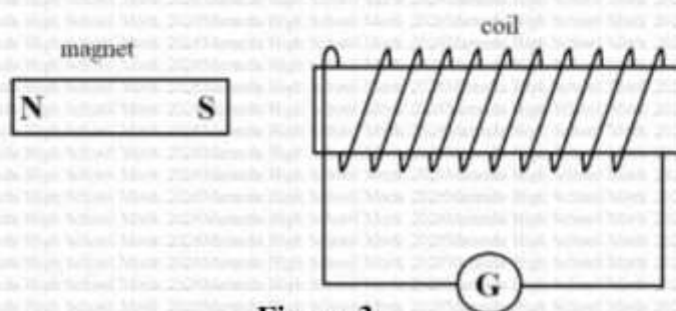


Figure 3

Explain the observation (2 marks)

The galvanometer deflects but returns to zero when the magnet enters the

coil. ✓¹ Change in magnetic flux occurs as the magnet enters the coil

to induce e.m.f. but no more change occurs when the magnet is in the coil. ✓¹

Galvanometer deflects in one direction as magnet enters coil and in opposite direction as it leaves through the other side. OR

- c) State **two** factors that affect the magnitude of induced e.m.f. (2 marks)

-Speed of movement of the magnet ✓¹

-Strength of the magnet ✓¹

-Number of turns of the coil

- d) Explain how Lenz's law applies in this process. (3 marks)

Coil produces a magnetic pole repelling the approaching magnet. ✓¹

It then reverses to produce a pole that attracts the magnet when it

moves away from that end of the coil. ✓¹ Induced current flows in a

direction that opposes change producing it hence deflection in opposite directions. ✓¹

- e) A transformer has 600 turns in the primary and 150 turns in the secondary. If the primary voltage is 240V, determine the secondary voltage. (3 marks)

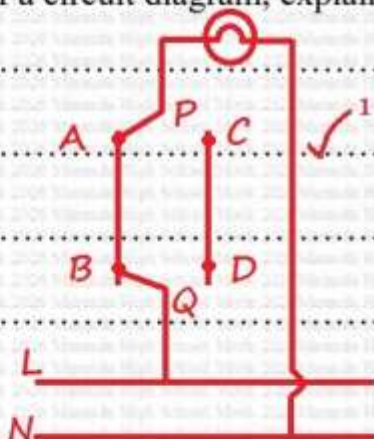
$$\frac{V_p}{V_s} = \frac{N_p}{N_s} \quad \checkmark^1$$

$$\frac{240}{V_s} = \frac{600}{150} \quad \checkmark^1$$

$$V_s = 60V \quad \checkmark^1$$

15.

- a) With the aid of a circuit diagram, explain how a two-way switch works. (3 marks)



-Bulb lights when contact is at A & B

also at C & D ✓¹

-Bulb is switched off when B is moved to

D or A moved to C ✓¹

- b) Three identical bulbs are connected in series with a battery. At first, the bulbs shine brightly but gradually become dimmer. Using the same cells, explain how you would increase the brightness of the bulb. (2 marks)

-Connect the cells in series ✓¹

-Reconnect the bulbs in parallel. ✓¹

- c) A family observed that after purchasing a refrigerator, the monthly bill increased by Ksh 2000 in a 30 day month. Given that the cost of electricity per kWh is Ksh 400 and the fridge was used for 24 hours per day, determine the power rating of the fridge. (3 marks)

$$\text{Energy used} = \frac{\text{Total cost}}{\text{price/kWh}}$$

$$= \frac{2000}{400}$$

$$= 5\text{kWh}$$

$$\text{Time} = 30 \times 24 = 720\text{h}$$

$$P = \frac{E}{t}$$

$$= \frac{5}{720}$$

$$= 0.00694\text{kW}$$

$$= 6.94\text{W}$$

16.

a)

- (i) State **three** uses of the electron gun in the cathode ray oscilloscope. (3 marks)

-To produce electrons ✓¹

-To accelerate electrons ✓¹

-To focus the electron beam ✓¹

-To control brightness/intensity of the electron beam

- (ii) State the reason why the screen of the cathode ray oscilloscope is coated with phosphor. (1 mark)

It glows when struck by electron beam ✓¹

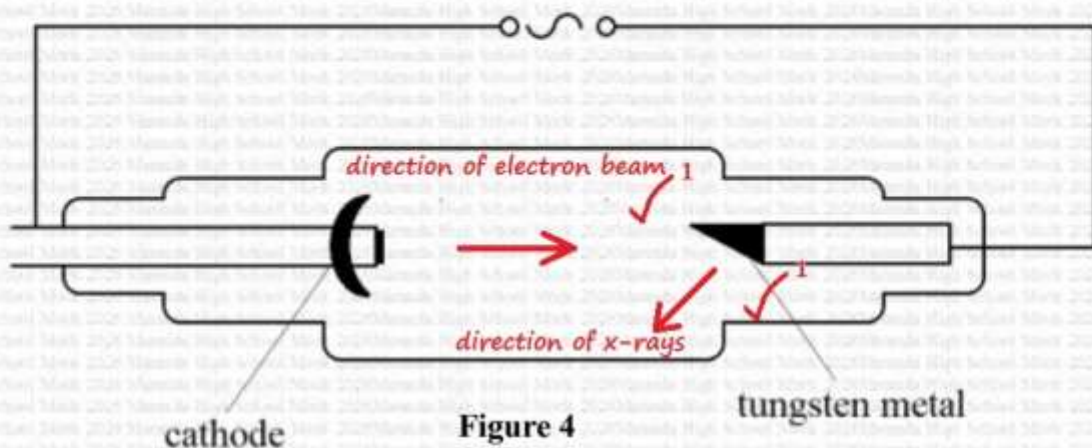
- b) Describe how a cathode ray oscilloscope can be used to measure the voltage of a cell. (3 marks)

Connect the cell to the Y-input terminals of the C.R.O. ✓¹

Note the vertical displacement on the screen. ✓¹

Multiply the number of squares displaced vertically by the volts/division setting. ✓¹

- c) Figure 4 shows an x-ray tube



- (i) On the figure show with an arrow

I. The direction of electron beam in the tube (1 mark)

II. The direction of x-rays produced. (1 mark)

- (ii) Briefly explain how x-rays are produced in the tube. (2 marks)

Electrons produced at the cathode are accelerated to hit the metal target. ✓¹

The sudden deceleration of electrons at the target produces x-rays ✓¹

17.

- a) An object is placed 20cm from a convex lens of focal length 10cm. Determine the image distance. (3 marks)

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u} \quad \checkmark^1$$

$$\frac{1}{10} = \frac{1}{v} + \frac{1}{20} \quad \checkmark^1$$

$$\frac{1}{v} = \frac{1}{20}$$

$$v = 20\text{cm} \quad \checkmark^1$$

- b) Determine the magnification (2 marks)

$$m = \frac{v}{u}$$

$$= \frac{20}{20} \quad \checkmark^1$$

$$= 1 \quad \checkmark^1$$

- c) State two characteristics of the image. (2 marks)

-Real

-Inverted $\checkmark^1$

-Same size as the object $\checkmark^1$

18.

- a) Define photoelectric emission (2 marks)

Ejection of electrons from a metal surface $\checkmark^1$ when light of suitable

frequency falls on it. $\checkmark^1$

- b) Light of frequency 8.0×10^{14} Hz falls on a metal of threshold frequency 5.0×10^{14} Hz. Determine the maximum energy of the emitted electrons. (3 marks)

$$K.E._{\text{max}} = h(f - f_0) \quad \checkmark^1$$

$$= 6.63 \times 10^{-34} (8.0 - 5.0) \times 10^{14} \quad \checkmark^1$$

$$= 1.989 \times 10^{-19} \text{ J} \quad \checkmark^1$$

- c) Explain the term *stopping potential* as used in photoelectric effect. (2 marks)

Minimum reverse voltage required to stop emitted photoelectrons ¹ ✓
 hence making photocurrent zero. ¹ ✓

- d) A radioactive substance has a half-life of 6 days. Determine the fraction remaining after 12 days. (2 marks)

$$\begin{aligned} \text{No. of } t_{\frac{1}{2}} &= \frac{\text{Total time}}{t_{\frac{1}{2}}} \\ &= \frac{12}{6} \quad \checkmark^1 \\ &= 2 \end{aligned} \quad \left| \quad \begin{aligned} \text{Rem} &= \left(\frac{1}{2}\right)^2 \\ &= \frac{1}{4} \quad \checkmark^1 \end{aligned}$$

19.

- a) The circuit in **Figure 5** has switches S_1 and S_2 , diodes D_1 and D_2 , and bulbs B_1 and B_2 .

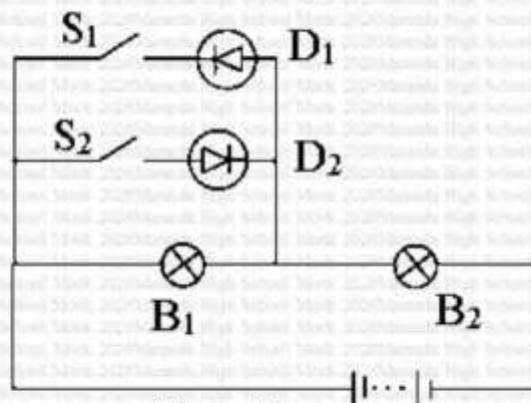


Figure 5

- i) State the observation when switch S_1 is closed and switch S_2 is open. (1 mark)

Bulbs B_1 and B_2 light with [equal brightness].

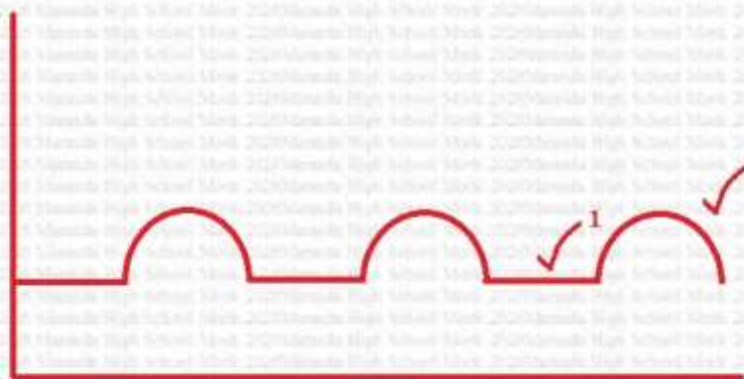
- ii) Explain your observation in i) above. (2 marks)

D_1 is reverse biased ¹ ✓ hence current flows through B_1 and B_2 directly. ¹ ✓

- b) State the purpose of rectification. (1 mark)

To convert alternating current (a.c.) to direct current (d.c.) ✓¹

- c) Draw the output wave form of a half-wave rectifier. (2 marks)



- d) State two advantages of semiconductor diodes. (2 marks)

-Low power consumption ✓¹

-Longer lifespan ✓¹

-Cheaper

- e) State **one** limitation of half-wave rectification. (1 mark)

-High ripple effect ✓¹

-Uses only one half-cycle of a.c.

-Poor output

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