



2322-2025-1710

CANDIDATE NAME:

INDEX NUMBER:

CENTRE CODE:

CENTRE NAME:

RANDOM NUMBER:

232/2

Candidate's signature: Date:

THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education



232/2

PHYSICS

Paper 2

Nov. 2025 – 2 hours

Candidate's signature: Date:

Instructions to candidates:

- (a) Confirm that this question paper has your name, name of your school and the correct index number.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) This paper consists of **two** sections: **Section A** and **Section B**.
- (d) Answer **all** the questions in **Section A** and **Section B**.
- (e) **All** working **must** be clearly shown in the spaces provided in the booklet.
- (f) **Non-programmable** silent electronic calculators may be used.
- (g) *This paper consists of 12 printed pages.*
- (h) *Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.*
- (i) **Candidates should answer the questions in English.**

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Section	Questions	Maximum Score	Candidate's Score
A	1 - 14	25	
B	15	11	
	16	12	
	17	9	
	18	12	
	19	11	
Total Score		80	



SECTION A (25 marks)

Answer **all** the questions in this section in the spaces provided.

1. **Figure 1** shows a ray of light incident on a plane mirror at an angle of 40° . A second plane mirror is placed at an angle of 70° to the first mirror.

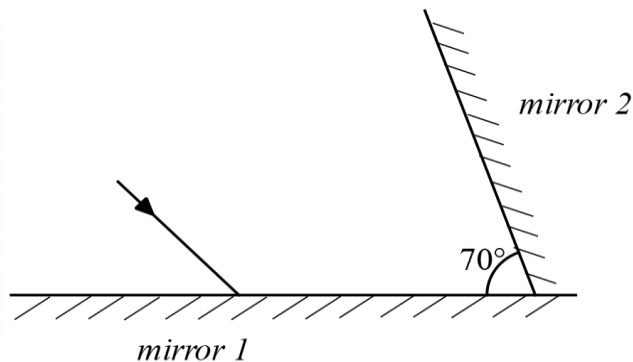


Figure 1

Draw the path of the ray to show how it is reflected from the second mirror. Include all the necessary details. (2 marks)

2. State what happens when a positively charged rod is placed in contact with an uncharged rod. (1 mark)

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3. Explain why lightning arrestors are made of thick copper wire. (2 marks)

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4. **Figure 2** shows a circuit diagram consisting of a bulb, 3 voltmeters, cells and a switch which was connected by a student in the laboratory.

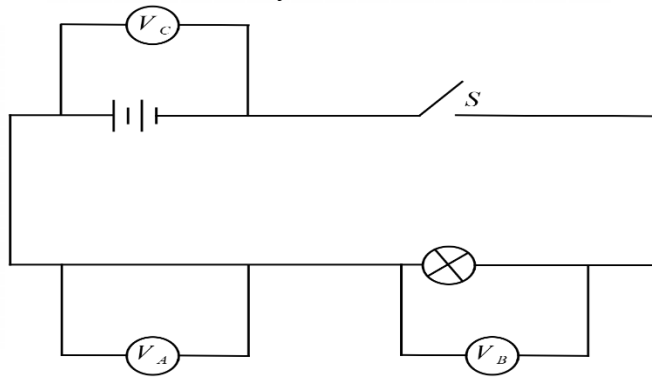


Figure 2

State with a reason, the voltmeter that will show the highest reading when the switch is closed. (2 marks)

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5. **Figure 3** shows a pattern observed by students when studying the properties of magnets.



Figure 3

State the law of magnetism that is illustrated in **Figure 3**. (1 mark)

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6. **Figure 4** shows two parallel rays incident on a concave mirror from a distant object.

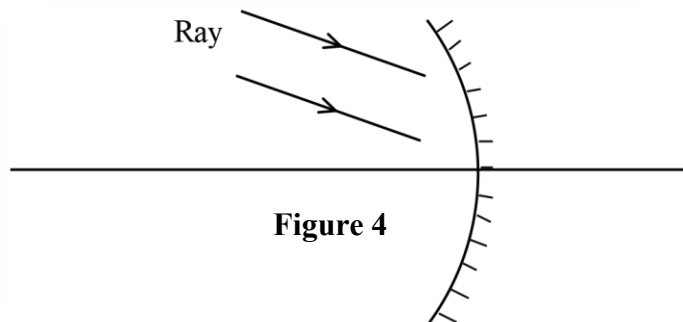


Figure 4

Complete the diagram to show the position of the image formed. (3 marks)

7. A student wants to construct a simple electromagnet. Apart from an iron nail, state **one** other main material the student requires. (1 mark)

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8. Explain the function of the mixture of powdered carbon and manganese dioxide in a dry Leclanche cell. (2 marks)

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

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

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11. The refractive index of perspex is approximately $\frac{3}{2}$ while that of water is $\frac{4}{3}$. Determine the refractive index of water with respect to perspex. (2 marks)

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12. Explain how a diode is used in a rectification circuit. (2 marks)

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13. State **one** application of total internal reflection. (1 mark)

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14. State **one** device that may be used to detect infrared radiation. (1 mark)

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SECTION B (55 marks)

Answer **all** the questions in this section in the spaces provided.

15. (a) Describe how a magnet can be demagnetized by the hammering method. (3 marks)

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- (b) **Figure 5** shows a wire moving out of a magnetic field. The wire is connected to a centre zero galvanometer.

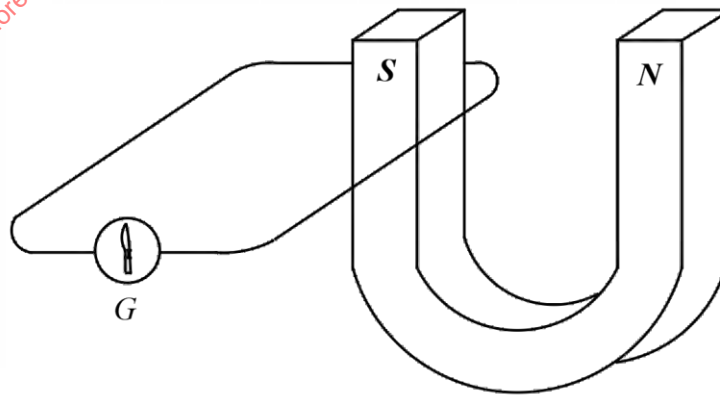


Figure 5

- (i) Describe what is observed on the galvanometer as the wire moves out of the magnetic field. (2 marks)

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- (ii) Explain the reason for the observation described in (b)(i). (2 marks)

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- (iii) Explain how an increased speed of motion of the wire will affect the observation made in (b)(i). (2 marks)

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- (c) Explain how hysteresis losses can be minimized in a transformer. (2 marks)

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16. (a) Students visited a power generation and transmission station. State the reason for each of the following observation that they made.

(i) *the voltage is stepped down;* (1 mark)

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(ii) *transmission cables used are thick.* (1 mark)

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- (b) State **two** risks that may arise from transmitting electricity at high voltage. (2 marks)

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- (c) A school uses electricity for lighting up the classrooms. State **two** ways in which the electrical energy consumed in the classrooms may be minimized without reducing the number of bulbs. (2 marks)

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- (d) Kairu lit up a hall using 10 bulbs each rated 60 W, 240 V.
Determine the:

(i) current drawn by each bulb; (3 marks)

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- (ii) energy consumed if the bulbs were used for 10 hours. (3 marks)

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17. (a) **Figure 6** shows a cathode ray oscilloscope in which a beam of electrons is cast on the screen to produce a spot.

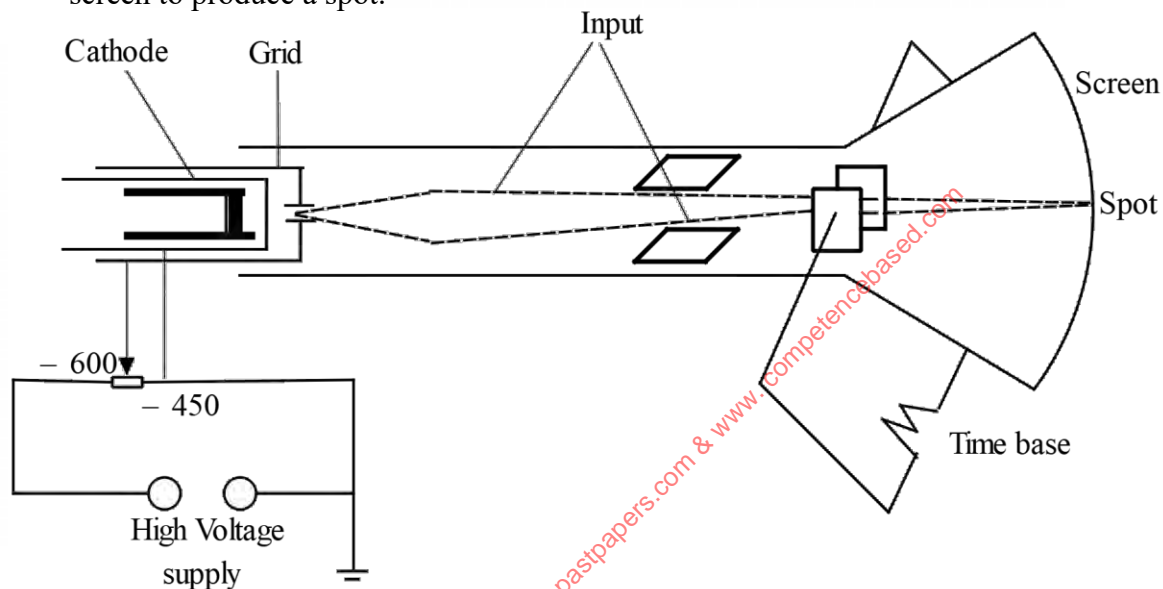


Figure 6

- (i) Explain how the intensity of the spot is increased. (2 marks)

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- (ii) Explain what is observed on the screen when the time base is switched on, then switched off. (3 marks)

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- (b) State **two** uses of a cathode ray oscilloscope in a laboratory. (2 marks)

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- (c) A signal of wavelength 2.0 cm is input into a cathode ray oscilloscope. Given that the speed of the generated wave is $3.0 \times 10^5 \text{ ms}^{-1}$, determine its frequency. (2 marks)

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18. (a) You are provided with a metre rule, a convex lens, a lens holder, and a screen. With the aid of a diagram, describe how the focal length of the lens can be estimated. (4 marks)

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- (b) **Figure 7** shows a graph of conductivity against temperature for a semiconductor.

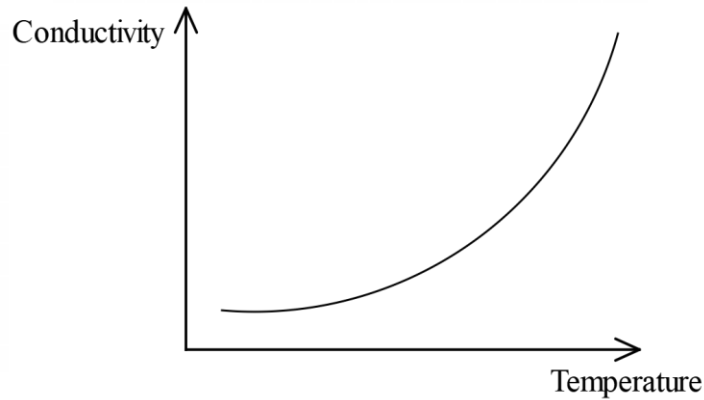


Figure 7

- (i) On the same axes, sketch the conductivity – temperature relationship for a conductor. (1 mark)
- (ii) Explain the shape of the curve sketched in (b)(i). (2 marks)

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- (c) **Figure 8** shows a circuit diagram in which a diode and a bulb are connected to an alternating current power source.

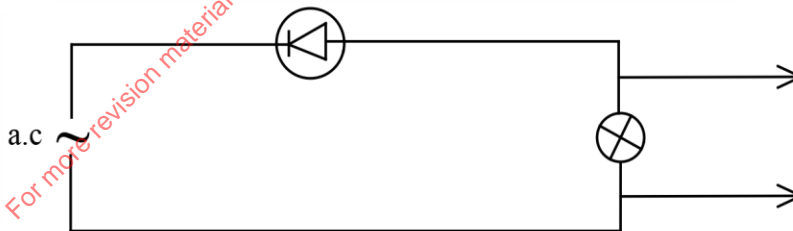


Figure 8

It is observed that the bulb goes on and off at regular intervals.

- (i) Explain the observation. (3 marks)

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- (ii) In the following space, sketch the graph of voltage against time for the set-up. (2 marks)

19. (a) State the meaning of the term *photoelectric effect*. (1 mark)

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- (b) A student is provided with a UV radiation and a zinc plate to demonstrate a photoelectric effect.

- (i) Identify the missing component. (1 mark)

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- (ii) Using the apparatus provided and the component identified in (b)(i), describe how photoelectric effect will be demonstrated. (3 marks)

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- (c) The work function of a certain metal surface is 4.8 eV. A radiation of wavelength 3×10^{-7} m is illuminated onto the metal surface.

Determine:

- (i) the work function of the metal in joules. (1 mark)

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- (ii) the energy of the radiation. (3 marks)

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- (iii) whether the radiation ejects photoelectrons from the metal surface. Give a reason. (2 marks)

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