

JULY/AUGUST 2026

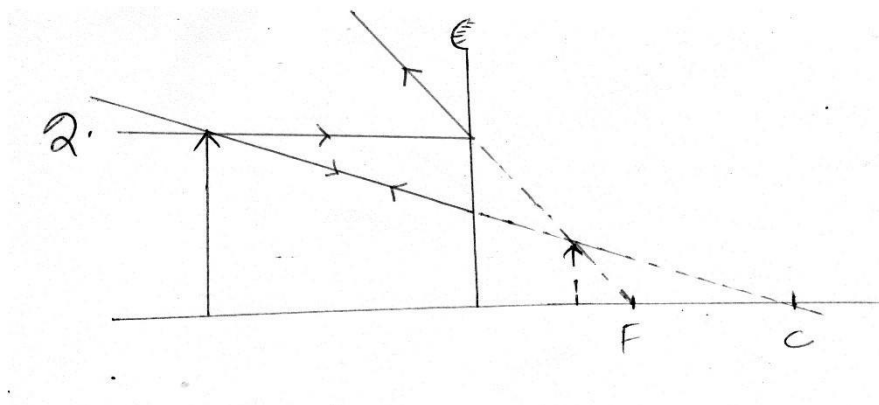
PHYSICS

PAPER 2

MARKING SCHEME

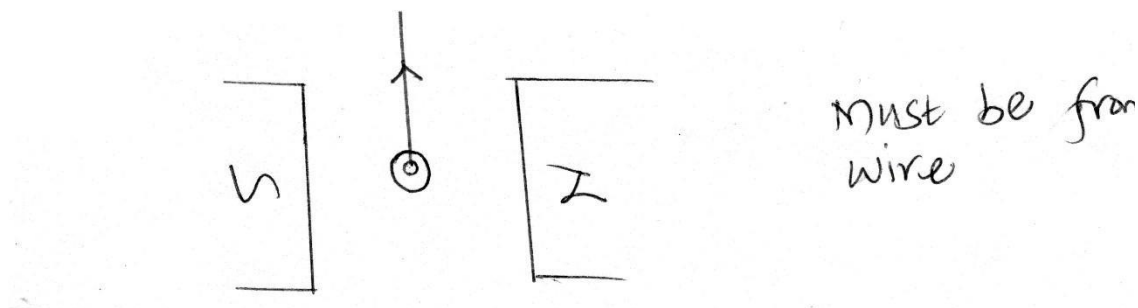
1. A - microwave ✓ 1
B - for vision ✓ 1

2.



Correct image; correct rays

3. (a)



- (b) moves on the opposite side. ✓ 1

$$4 \quad \frac{h_i}{h_o} = \frac{V}{U} \checkmark$$

$$h_o = \frac{0.025 \times 300}{0.2} \checkmark$$

$$= 37.5 \text{ m} \checkmark$$

$$5. \quad \frac{Ns}{Np} = \frac{Vs}{Vp}$$

$$\frac{5}{10} = \frac{Vs}{12} \checkmark 1$$

$$Vs = 6V \checkmark 1$$

6 i) like poles repel, unlike poles attract $\checkmark 1$

ii) Magnetic keepers become magnetized by induction; $\checkmark 1$
 keep dipoles aligned in a continuous loop of N-S poles pair $\checkmark 1$

7. the ratio of sine of angle of incidence to the sine of the angle of refraction is the same/constant for a given pair of media. $\checkmark 1$

λ

$$8. \quad \text{no. of cycles} = 2.75 \text{ or } 2\frac{3}{4}$$

$$\text{Frequency} = \frac{\text{no. of cycles}}{\text{time}} = \frac{2.75}{0.02} \checkmark 1$$

$$= 137.5 \text{ Hz} \checkmark 1$$

$$9. \quad f = V/\lambda \text{ and } f_1 = f_2 \quad \frac{v_1}{\lambda_1} = \frac{v_2}{\lambda_2}$$

$$2/1 = V_2/0.4 \checkmark 1$$

$$V_2 = 0.8 \text{ m/s} \checkmark 1$$

10. $90-35=55^\circ$ ✓ 1

11. White light is made up of seven colours; ✓ 1 which travel at different speed/ wavelength in the glass prism and hence dispersion ✓ 1

12. $2d = \text{speed} \times \text{time}$ ✓ 1

$$2d = 1600 \times 2.4 \quad \checkmark 1$$

$$d = \frac{1600 \times 2.4}{2} = 1920 \text{ m} \quad \checkmark 1$$

13. positive charges ✓ 1

14.(a) (i) Argon – to initiate the discharge. ✓ 1

(ii) Quenching agent. Absorb energy of positive ions before they cause secondary electron emission. ✓ 1

iii). Using an amplifier ✓ 1

iv) $a = 226$ ✓ 1

$$b = 88 \quad \checkmark 1$$

15. (a) (i) to provide heat for thermionic emission ✓ 1

(ii) to create high pd for the anode which acts as accelerating voltage for ejected Electrons ✓ 1

(b) Increasing heater current to produce more electrons ✓ 1

(c) **air undergoes ionization** due collision with cathode rays ; ✓ 1 or and
resulting **electrons have less kinetic energy** ✓ 1

(d) posses kinetic energy ✓ 1 travel in straight lines

(e) X-rays-formed have no charge while cathode rays are negatively charged ✓ 1

Any Icorrect answer

X rays are faster than cathode rays

X-rays are waves while cathode rays are particulate/ particles

X-rays are more energetic than cathode rays

(f) can measure both ac and dc voltages ✓ 1 (*any Icorrect answer*)
can measure larger voltages (g) (i) $T=5 \times 4 = 20\text{ms}$
 $f=1/T=1/0.02$ ✓ 1
 $f=50\text{Hz}$ ✓ 1

(ii) $V=10 \times 4$ ✓ 1 $=40\text{V}$ ✓ 1

16. (a) (i) electron emitted are repelled by the negative charges, so the leaf of
electroscope fall ✓ 1
(ii) electron emitted are attracted by the positive charged ✓ 1
(iii) its energy is lower than the energy need to dislodge an electron from
a metal surface/Work function ✓ 1

(b) (i). increase in the number of emitted electrons ✓ 1
(ii) speed /KE of electrons increases ✓ 1

(c) (i) $E=hf = h \frac{c}{\lambda}$

$$(6.63 \times 10^{-34} \times 3.0 \times 10^8) / (4.3 \times 10^{-7}) \checkmark 1$$

$$= 4.6256 \times 10^{-19} \text{ J } \checkmark 1$$

- (ii) Potassium, lower work function and also less energy than energy of radiation

$$(iii) \quad KE = \frac{1}{2}mv^2$$

$$v^2 = (2 \times 0.9456 \times 10^{-19}) / (9.1 \times 10^{-31})$$

$$v = 4.559 \times 10^5 \text{ m/s}$$

17. a)

- (i) A circuit which is not delivering current; $\checkmark 1$

- (ii) A circuit which is delivering current; $\checkmark 1$ b(i) Total resistance =

$$0.5 \text{ } \square \text{ } 0.3 \text{ } \square \text{ } \text{---} \text{ } 3 \text{ } \square \text{ } 6 \text{ } \square \text{ } \text{---}$$

$$\textcircled{P} 6 \text{ } \square \text{ } 3 \text{ } \text{---}$$

$$0.3 \text{ } \square \text{ } 0.5 \text{ } \square \text{ } 2 \text{ } \text{---} \text{ } 2.8 \text{ } \square \text{ } \checkmark 1$$

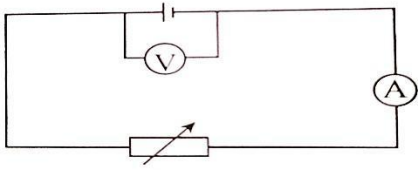
$$\text{---} \text{ } \square \text{ } 6.6 \text{ } \square \text{ } 2.357 \text{ A};$$

$$\text{---} \text{ } I \text{ } \bullet \text{ } \bullet \text{ } \square \text{ } \text{---} \text{ } \bullet$$

$$R \textcircled{P} 2.8 \text{ } \text{---} \checkmark 1$$

$$I_{3\Omega} = \frac{6}{9} \times 2.357 = 1.571 \text{ A } \checkmark 1$$

ii)



iii) E.m.f = voltage intercept = 9.6V; ✓

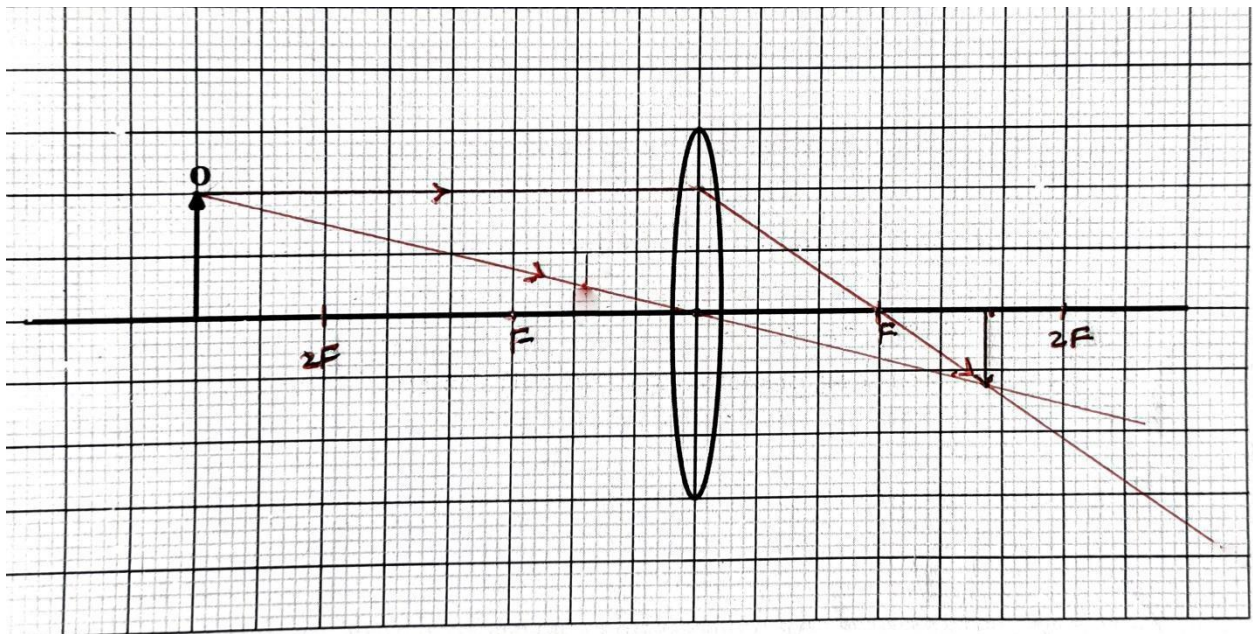
iv) Internal resistance = slope;

$$-r = \text{slope} \checkmark 1$$

$$-r = \frac{6-0}{2-5.4} = \frac{6}{-3.4} = -1.778\Omega \checkmark 1$$

$$r = 1.778\Omega \checkmark 1$$

18 a) correct rays ✓ 1 correct image ✓ 1



b) $u = 8 \text{ cm}$ $v = 4.7 \pm 0.1 \text{ cm}$

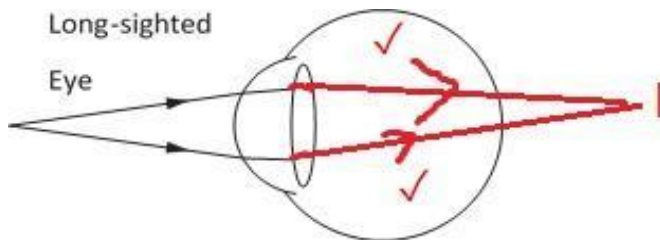
$$m = \frac{4.7}{8} = 0.5875 \checkmark 1 \checkmark 1$$

OR

$$m = \frac{4.6}{8} = 0.575 \checkmark 1 \checkmark 1$$

OR $m = \frac{4.8}{8} = 0.6 \checkmark$ $m =$
0.5875 to 0.6

c)



19. a) i) Step - down transformer; the power is to be stepped-down for domestic use $\checkmark$

ii) $\text{Water heater} = 2\text{kW} \times 2 \times 30 \times 9.50$
 $= 1140 \checkmark$

$\text{Electric bulb} = 0.075 \times 10 \times 30 \times 9.5$
 $= 213.75$

$\text{Iron box} = 1.5 \times 1 \times 30 \times 9.5$
 $= 427.5 \checkmark$

$\text{Total cost} = 1140 + 213.75 + 427.5 = \text{Kshs. } 1781.25 \checkmark$

b) i) B-live wire /plug $\checkmark$

ii) To open both the neutral and the live hole $\checkmark$

or

To earth the appliance before the user uses it just in case there is a current leak $\checkmark$

- c)) i) The ring mains circuit✓¹ ii) X – Neutral ✓¹ Y – Live ✓¹ iii) Disconnecting the circuit✓¹ or breaking the circuit✓¹ or opening the circuit✓¹
(any one)

END