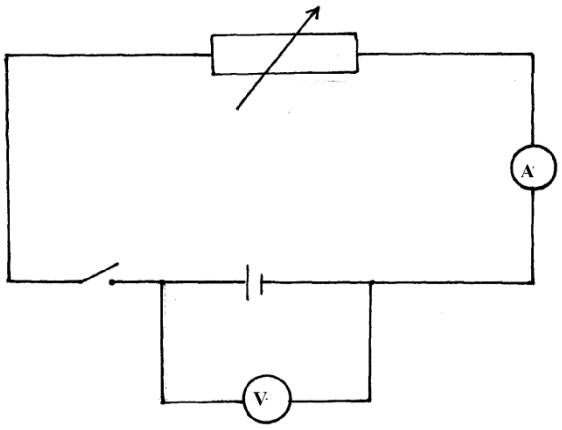
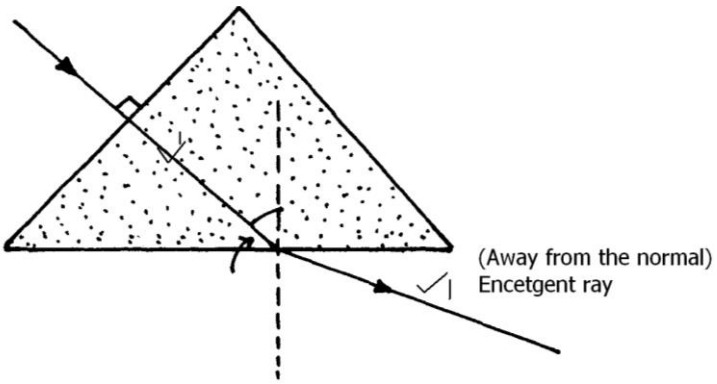
POST MOCK TERM 3 2019

Kenya Certificate of Secondary Education (KCSE)

232/2
PHYSICS
MARKING SCHEME
PAPER 2

(SECTION A 25 Marks)

1. Light travels in a straight light✓1 / Rectilinear propagation of light.
2. 

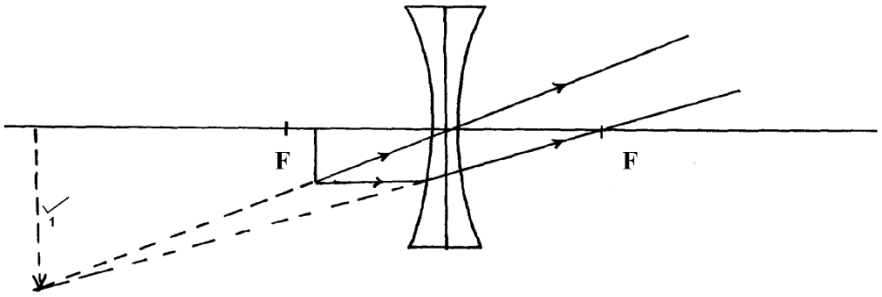
3. - When hammered the dipoles Vibrate/✓1 excited.
   - Then they align along the Earth's Magnetic field✓1
4. 1. Magnified
   2. Upright / erect any 2 x 1 = 2mks
   3. Virtual
5. The gold leaf becomes more positive as a result of attraction of the negative charge towards the metal cap✓2 (2mks tied)
6. $V = f\lambda$ ✓1
   V is constant✓1
   λ_2 is $3\lambda_1$ OR $\lambda_2 = 3\lambda_1$ 1✓1
7. 

8. P = VI✓1

$= 220 \times \frac{100}{240}$ ✓1

= 91.67 W✓1

9.



10. X – rays : Produced when cathode rays / fast moving electrons are suddenly stopped in an x – ray tube.
Gamma rays: Produced when nucleons in on unstablenundidrearrange to form a stable nudide.

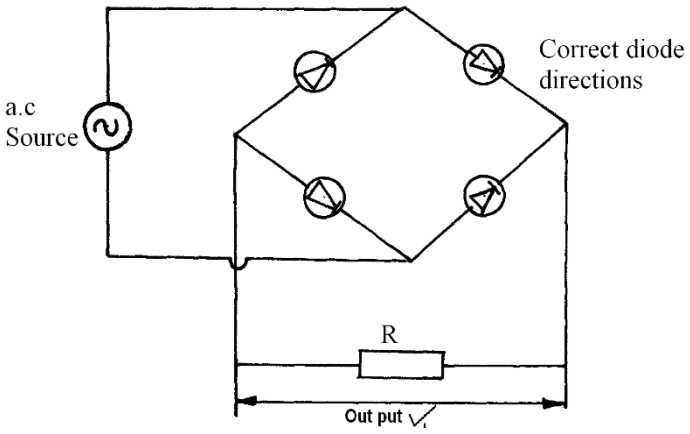
11. E. Energy = $\left(\frac{60\ x36}{1000}\right) kwh$ ✓1

= 2.160 kwh✓1

12. The spot moves up and down the screen.✓1

13. $f_0 = 4 \times 10^{14}$ Hz ✓1 (3.5 – 4.5) x 10^{14} Hz

14.



SECTION B (55 MARKS)

15. a) i) Suspend the iron bar and the bar magnet separately using the string✓1.
- Displace Both slightly horizontall1.
- Displace Both slightly horizontally.

ii) The bar magnet nettles pointing✓1 in the North – South direction.
- The iron bar nettles pointing in any direction✓1.

b) P requires less current✓1 for all the dispoles✓1 to be aligned in one direction/ to reach magnetic saturation while Q requires more current for all the dipoles to be aligned in one direction / to reach magnetic saturation.
- P is soft magnetic material while Q is hard magnetic material✓1

c) i) It turns anti clockwise✓1

ii) It turns clockwise✓1

iii) 1) Attach a pointer with scale on the left side of the metre rule.✓1

2. Vary the current by adjusting ✓1 the rheostat.

3. Calibrate or mark the scale for low and high current.✓1

16. a) i) In transverse wave, the vibration of particles is perpendicular to the direction of travel of the wave but in longitudinal the vibration is parallel to the direction of the wave travel✓1

ii) Sound wave requires medium for transgression but e.m waves does not require medium.✓1

- Sound wave is longitudinal and e.m wave is transverse.✓1

b) i) $V = \frac{2d}{c}$ ✓1 $= \frac{(2x400)m}{2.5s}$ ✓1

$= 320$ /s✓1

ii) $320 = 2\ \frac{2(x400)}{4.5}$ ✓1

$1280 = 2x - 800$

$2080 = 2x$

$1040 = x$

$\therefore x = 1040$✓1m

c) i) Produce coherent sources of light✓1

ii) Alternating dark and bright fringes✓1 are observed on the screen on both sides of the central brighter fringe✓1

iii) i) Dark and bright fringes get closer✓1

ii) A full spectrum is observed✓1

17. a) i) Dispersion of white light✓1

ii) X - Red✓1

Y - Violet✓1

iii) Red has the lowest frequency/ longest wavelength hence it is least deviated while violet has the highest frequency / shortest wavelength hence it is most deviated.✓1

iv) Acts as a point source of light✓1

b) i) $ang = \frac{c}{v}$ ✓1

$= \frac{3.0x10^8}{1.8x10^8}$ ✓1

$= 1.6667$✓1

ii) c on the diagram✓1

$\eta = \frac{1}{\sin c} \therefore \sin c = \frac{1}{\eta} = \frac{1}{1.6667}$ =✓1

Sin c = 0.5999 $\therefore$ C = 36.86^0

iii) $\frac{\sin\theta}{Sin\, r} = a\eta g$ ✓1

Sin θ = 1.6667 x Sin 31.2✓1

Sin θ = 0.8634

$\theta = 59.7^0$ ✓1

18. a) i) Hard x - rays✓1

ii) Have high penetrating power✓1

b) i) A = Cathod rays✓ / fast moving electrons

B = Anode✓1

ii) Change in heating current✓1 changes the number of electrons produced✓1

iii) Kinetic energy✓1 of cathode rays is converted to heat✓1 energy.

iv) Has high density ✓1

c) $eV = hf$✓1

$1.6 \times 10^{-19} \times 12000 = 6.62 \times 10^{-34} \times f$ ✓1

$$f = \frac{1.6 \times 10^{-19} \times 12000}{6.62 \times 10^{-34}}$$

$f = 2.900\ 10^{18}$ Hz✓1